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Process Improvement and CMMI for Systems and Software A Guide to the CMM Software Process Dynamics Software Process Improvement Concise Guide to Software Engineering Product Focused Software Process Improvement Quality Software Project Management Software Maintenance Management Software Process Improvement Quality of Numerical Software Software Engineering and Knowledge Engineering: Theory and Practice Software Engineering and Testing Software Engineering for Image Processing Systems Extreme Programming and Agile Processes in Software Engineering CMM Implementation Guide Software Management Process Improvement in Quality Management Systems Jumpstart CMM / CMMI?Software Process Improvements SOFTWARE ENGINEERING Software Engineering Software Applications: Concepts, Methodologies, Tools, and Applications Software Product Lines Interpreting the CMMI (R) Essentials of Software Engineering Software Engineering: Principles and Practices, 2nd Edition Product-Focused Software Process Improvement Essentials of Software Engineering Modern Software Engineering Concepts and Practices: Advanced Approaches Information Systems Innovation and Diffusion Testing Object-Oriented Software Integrating CMMI and Agile Development Software Process Quality SOFTWARE ENGINEERING Trust in Cyberspace Software Process Improvement with CMM Comparing ISO 9000, Malcolm Baldrige, and the SEI CMM for Software Lean Software Development Business-oriented Software Process Improvement Based on CMM and CMMI Using QFD Product-Focused Software Process Improvement Information Security Management Handbook, Volume 3

This book provides invaluable guidance on moving an organization from the chaotic environment of free-form software development towards a more controlled and documented process. It discusses how IEEE standards may be used to facilitate the development of internal plans and procedures in support of repeatable software engineering processes, or in achiving CMM/CMMI-SW Level 2. Using actual examples of software process improvement from the private sector and government, this work demonstrates how quality systems, measurement techniques and performance evaluations work. It presents a methodology for analyzing an ongoing software development process and establishing a rational plan for process improvement. Essentials of Software Engineering, Third Edition is a comprehensive, yet concise introduction to the core fundamental topics and methodologies of software development. Ideal for new students or seasoned professionals looking for a new career in the area of software

engineering, this text presents the complete life cycle of a software system, from inception to release and through support. The authors have broken the text into six distinct sections covering programming concepts, system analysis and design, principles of software engineering, development and support processes, methodologies, and product management. Presenting topics emphasized by the IEEE Computer Society sponsored Software Engineering Body of Knowledge (SWEBOK) and by the Software Engineering 2004 Curriculum Guidelines for Undergraduate Degree Programs in Software Engineering, the second edition of Essentials of Software Engineering is an exceptional text for those entering the exciting world of software development. Written by experienced process improvement professionals who have developed and implemented computer based systems in organizations around the world, Interpreting the CMMI®: A Process Improvement Approach, Second Edition provides you with specific techniques for performing process improvement. Employing everyday language and supported by real world examples, the authors describe the fundamental concepts of the CMMI model, covering goals, practices, architecture, and definitions, and provide a structured approach for implementing the concepts of the CMMI into any organization. They discuss getting started in the process improvement effort, as well as how to continue on to high maturity. They walk you through the myriad of charts and graphs involved in statistical process control and offer practical recommendations. They also provide information on blending different process improvement initiatives into organizational programs (including agile development), and in this edition include more in-depth information. The authors distill the knowledge gained in their combined 70 years of experience in project management, software engineering, systems engineering, metrics, quality assurance, appraisals, training, process improvement, and team building. Whether you are new to process improvement or an experienced professional, this volume will save you time wasted on false starts, false promises by marketers, and failed deadlines. The authors have been responsible for successfully implementing process improvement in several different organizations. This book is based on real-life experience, not on academic theories. It provides workable solutions to inherent challenges such as appropriate roles and responsibility, resistance to change, and meaningful documentation, thus transforming CMMI concepts into practical applications. In Lean Software Development, Mary and Tom Poppendieck identify seven fundamental "lean" principles, adapt them for the world of software development, and show how they can serve as the foundation for agile development approaches that work. Along the way, they introduce 22 "thinking tools" that can help you customize the right agile practices for any environment.

Better, cheaper, faster software development. You can have all three - if you adopt the same lean principles that have already revolutionized manufacturing, logistics, and product development: Iterating toward excellence: software development as an exercise in discovery; managing uncertainty: "decide as late as possible" by building change into the system; compressing the value stream: rapid development, feedback, and improvement; empowering teams and individuals without compromising coordination; software with integrity, promoting coherence, usability, fitness, maintainability, and adaptability; and how to "see the whole" - even when your developers are scattered across multiple locations and contractors. Simply put, Lean Software Development helps you refocus development on value, flow, and people - so you can achieve breakthrough quality, savings, speed, and business alignment. This book is designed for use as an introductory software engineering course or as a reference for programmers. Up-to-date text uses both theory applications to design reliable, error-free software. Includes a companion CD-ROM with source code third-party software engineering applications. The SEI's Capability Maturity Model (CMM) has been widely adopted by companies seeking enhanced quality and heightened productivity in software development. This guide provides detailed instruction on how to put this model into practice and thereby raise an organization to the next level. Templates, sample documents and presentation materials are included on the CD-ROM. This book constitutes the refereed proceedings of the 9th International Conference on Product Focused Software Process Improvement, PROFES 2008, held in Monte Porzio Catone, Italy, in June 2008. The 31 revised full papers presented together with 4 reports on workshops and tutorials and 3 keynote addresses were carefully reviewed and selected from 61 submissions. The papers address different development modes, roles in the value chain, stakeholders' viewpoints, collaborative development, as well as economic and quality aspects. The papers are organized in topical sections on quality and measurement, cost estimation, capability and maturity models, systems and software quality, software process improvement, lessons learned and best practices, and agile software development. Includes articles in topic areas such as autonomic computing, operating system architectures, and open source software technologies and applications. Software Engineering for Image Processing Systems creates a modern engineering framework for the specification, design, coding, testing, and maintenance of image processing software and systems. The text is designed to benefit not only software engineers, but also workers with backgrounds in mathematics, the physical sciences, and other engineering Whether or not you use a computer, you probably use a telephone, electric power, and a bank. Although you may not be aware of

their presence, networked computer systems are increasingly becoming an integral part of your daily life. Yet, if such systems perform poorly or don't work at all, then they can put life, liberty, and property at tremendous risk. Is the trust that weâ€"as individuals and as a societyâ€"are placing in networked computer systems justified? And if it isn't, what can we do to make such systems more trustworthy? This book provides an assessment of the current state of the art procedures for building trustworthy networked information systems. It proposes directions for research in computer and network security, software technology, and system architecture. In addition, the book assesses current technical and market trends in order to better inform public policy as to where progress is likely and where incentives could help. Trust in Cyberspace offers insights into: The strengths and vulnerabilities of the telephone network and Internet, the two likely building blocks of any networked information system. The interplay between various dimensions of trustworthiness: environmental disruption, operator error, "buggy" software, and hostile attack. The implications for trustworthiness of anticipated developments in hardware and software technology, including the consequences of mobile code. The shifts in security technology and research resulting from replacing centralized mainframes with networks of computers. The heightened concern for integrity and availability where once only secrecy mattered. The way in which federal research funding levels and practices have affected the evolution and current state of the science and technology base in this area. You will want to read this book if your life is touched in any way by computers or telecommunications. But then, whose life isn't? This book constitutes the refereed proceedings of the Second International Conference on Product Focused Software Process Improvement, PROFES 2000, held in Oulu, Finland, in June 2000. The 30 revised full papers presented were carefully reviewed and selected from a total of 60 submitted full papers. The book is divided into topical sections on process improvement, empirical software engineering, industrial experiences, methods and tools, software process and modeling, software and process measurement, and organizational learning and experience factory. Written for the undergraduate, 1-term course, Essentials of Software Engineering provides students with a systematic engineering approach to software engineering principles and methodologies. Drawing on best practices identified at the Software Quality Institute and embodied in bodies of knowledge from the Project Management Institute, the American Society of Quality, IEEE, and the Software Engineering Institute, Quality Software Project Management teaches 34 critical skills that allow any manager to minimize costs, risks, and time-to-market. Written by leading practitioners Robert T. Futrell, Donald F. Shafer, and Linda I. Shafer, it addresses the

entire project lifecycle, covering process, project, and people. It contains extensive practical resources-including downloadable checklists, templates, and forms. This revised edition of Software Engineering-Principles and Practices has become more comprehensive with the inclusion of several topics. The book now offers a complete understanding of software engineering as an engineering discipline. Like its previous edition, it provides an in-depth coverage of fundamental principles, methods and applications of software engineering. In addition, it covers some advanced approaches including Computer-aided Software Engineering (CASE), Component-based Software Engineering (CBSE), Clean-room Software Engineering (CSE) and formal methods.Taking into account the needs of both students and practitioners, the book presents a pragmatic picture of the software engineering methods and tools. A thorough study of the software industry shows that there exists a substantial difference between classroom study and the practical industrial application. Therefore, earnest efforts have been made in this book to bridge the gap between theory and practical applications. The subject matter is well supported by examples and case studies representing the situations that one actually faces during the software development process.The book meets the requirements of students enrolled in various courses both at the undergraduate and postgraduate levels, such as BCA, BE, BTech, BIT, BIS, BSc, PGDCA, MCA, MIT, MIS, MSc, various DOEACC levels and so on. It will also be suitable for those software engineers who abide by scientific principles and wish to expand their knowledge. With the increasing demand of software, the software engineering discipline has become important in education and industry. This thoughtfully organized second edition of the book provides its readers a profound knowledge of software engineering concepts and principles in a simple, interesting and illustrative manner. Foreword After more than two decades since the advent of Total Quality Management, one might think there was nothing left to say regarding its application, but Walter Ray McCollum shows that one would be wrong. Process Improvement in Quality Management Systems: Case Study of Carnegie Mellon's Capability Maturity Model (CMM) explores how a company can obtain Level 3 compliance where an organization's processes for management and engineering activities are formally defined, documented, and integrated into a standard process that is understood and followed by the organization's staff in the development and maintenance of software. Once an organization has reached this level, it has a foundation for continuing progress. New processes and tools can be added with minimal disruption, and new staff members can be easily trained to adapt to the organization's practices. Numerous case studies have been enacted across industries to describe successful, and

unsuccessful, implementation of quality management systems and programs. Several generic frameworks for quality management implementation have been proposed to help organizations achieve quality, productivity, and gain a competitive edge. However, few attempts have been made to synthesize frameworks for measuring quality management practices, especially with regard to managing software quality. Phan (2001) found the best-known work concerned with process improvement was the Software Engineering Institute Capability Maturity Model (CMM). However, very few studies have examined the effects of process improvement on quality management systems, and no studies have addressed the variables that impact the effective use of SW-CMM. McCollom mitigates these gaps to offer software development professionals, and developers of quality management systems, the information they need to enhance their effective use of SW-CMM. This book empowers projects, teams, and organizations by giving them the foundation to support reasoned choice, and identify fi ndings relative to the effects of process improvement in quality management systems using SW-CMM, process focus, and risk management training. Marilyn K. Simon, Ph.D. President Math Power Software engineering has advanced rapidly in recent years in parallel with the complexity and scale of software systems. New requirements in software systems yield innovative approaches that are developed either through introducing new paradigms or extending the capabilities of well-established approaches. Modern Software Engineering Concepts and Practices: Advanced Approaches provides emerging theoretical approaches and their practices. This book includes case studies and real-world practices and presents a range of advanced approaches to reflect various perspectives in the discipline. For some companies, ISO 9000 and SEI CMM have become a mandatory requirement for doing business with other companies and governments. For other companies, the need for quality improvement has been recognized as an important element of long term survival. This book compares three quality management system assessment methodologies, the Malcolm Baldrige National Quality Award, which was created by Public Law in 1987 to promote the improvement of quality in the US; the International Organization for standardization ISO 9000, a set of quality standards whose purpose is to standardize quality systems, implemented by organizations; and the Software Engineering Institute (SEI) Capability Maturity Model (CMM) for Software, a federally funded research and development center operated by Carnegie Mellon Univ. under contract and sponsorship by the US Dept. of Defense. The LNCS series reports state-of-the-art results in computer science research, development, and education, at a high level and in both printed and electronic form. Enjoying tight cooperation with the R & D community, with

numerous individuals, as well as with prestigious organizations and societies, LNCS has grown into the most comprehensive computer science research forum available. The scope of LNCS, including its subseries LNAI, spans the whole range of computer science and information technology including interdisciplinary topics in a variety of application fields. Book jacket. "Software Process Improvement (SPI) has become the key to the survival of many software development organizations. Many international SPI models/standards are developed for SPI. The Capability Maturity Model (CMM) and Capability Maturity Model Integrated (CMMI)) from the Software Engineering Institute are two SPI models. In this study, several existing SPI models and approaches are reviewed, their advantages are identified, and their drawbacks are discussed. A set of new SPI frameworks integrating Quality Function Deployment (QFD) with both CMM and CMMI are developed by combining the best features of previous approaches and addressing their limitations"--Abstract, p. iii. This book explores the domain of software maintenance management and provides road maps for improving software maintenance organizations. It describes full maintenance maturity models organized by levels 1, 2, and 3, which allow for benchmarking and continuous improvement paths. Goals for each key practice area are also provided, and the model presented is fully aligned with the architecture and framework of software development maturity models of CMMI and ISO 15504. It is complete with case studies, figures, tables, and graphs. This book constitutes the refereed proceedings of the 7th International Conference on Product-Focused Software Process Improvement, PROFES 2006, held in Amsterdam, June 2006. The volume presents 26 revised full papers and 12 revised short papers together with 6 reports on workshops and tutorials. The papers constitute a balanced mix of academic and industrial aspects, organized in topical sections on decision support, embedded software and system development, measurement, process improvement, and more. The text is a collection of original and republished papers providing a significant survey on the use of SPI and software process assessment (SPA) as practiced by companies such as Lockheed Martin, Siemens, and Hewlett Packard. Among the important features of the book are chapters on software process evaluation, how to best perform SPI, ISO 9000 and TickIT-an alternative approach to SPA, as well as the latest information on the CMM integration project. The text also provides vivid descriptions on the most important international and national standards for SPI, in particular ISO 9001, ISO 9000-3, ISO. The volume includes a set of selected papers extended and revised from the I2009 Pacific-Asia Conference on Knowledge Engineering and Software Engineering (KESE 2009) was held on December 19~ 20, 2009, Shenzhen, China. Volume 1 is to provide a forum for researchers, educators,

engineers, and government officials involved in the general areas of Computer and Software Engineering to disseminate their latest research results and exchange views on the future research directions of these fields. 140 high-quality papers are included in the volume. Each paper has been peer-reviewed by at least 2 program committee members and selected by the volume editor Prof. Yanwen Wu. On behalf of this volume, we would like to express our sincere appreciation to all of authors and referees for their efforts reviewing the papers. Hoping you can find lots of profound research ideas and results on the related fields of Computer and Software Engineering. This Seventh Edition of Donald Reifer's popular, bestselling tutorial summarizes what software project managers need to know to be successful on the job. The text provides pointers and approaches to deal with the issues, challenges, and experiences that shape their thoughts and performance. To accomplish its goals, the volume explores recent advances in dissimilar fields such as management theory, acquisition management, globalization, knowledge management, licensing, motivation theory, process improvement, organization dynamics, subcontract management, and technology transfer. Software Management provides software managers at all levels of the organization with the information they need to know to develop their software engineering management strategies for now and the future. The book provides insight into management tools and techniques that work in practice. It also provides sufficient instructional materials to serve as a text for a course in software management. This new edition achieves a balance between theory and practical experience. Reifer systematically addresses the skills, knowledge, and abilities that software managers, at any level of experience, need to have to practice their profession effectively. This book contains original articles by leaders in the software management field written specifically for this tutorial, as well as a collection of applicable reprints. About forty percent of the material in this edition has been produced specifically for the tutorial. Contents: * Introduction * Life Cycle Models * Process Improvement * Project Management * Planning Fundamentals * Software Estimating * Organizing for Success * Staffing Essentials * Direction Advice * Visibility and Control * Software Risk Management * Metrics and Measurement * Acquisition Management * Emerging Management Topics "The challenges faced by software project managers are the gap between what the customers can envision and the reality on the ground and how to deal with the risks associated with this gap in delivering a product that meets requirements on time and schedule at the target costs. This tutorial hits the mark by providing project managers, practitioners, and educators with source materials on how project managers can effectively deal with this risk." -Dr. Kenneth E.

Nidiffer, Systems & Software Consortium, Inc. "The volume has evolved into a solid set of foundation works for anyone trying to practice software management in a world that is increasingly dependent on software release quality, timeliness, and productivity." -Walker Royce, Vice President, IBM Software Services-Rational Many organizations that have improved process maturity through Capability Maturity Model Integration (CMMI®) now also want greater agility. Conversely, many organizations that are succeeding with Agile methods now want the benefits of more mature processes. The solution is to integrate CMMI and Agile. Integrating CMMI® and Agile Development offers broad guidance for melding these process improvement methodologies. It presents six detailed case studies, along with essential real-world lessons, big-picture insights, and mistakes to avoid. Drawing on decades of process improvement experience, author Paul McMahon explains how combining an Agile approach with the CMMI process improvement framework is the fastest, most effective way to achieve your business objectives. He offers practical, proven techniques for CMMI and Agile integration, including new ways to extend Agile into system engineering and project management and to optimize performance by focusing on your organization's unique, culture-related weaknesses. Since 1993, the Information Security Management Handbook has served not only as an everyday reference for information security practitioners but also as an important document for conducting the intense review necessary to prepare for the Certified Information System Security Professional (CISSP) examination. Now completely revised and updated and i Software Engineering discusses the major issues associated with different phases of software development life cycle. Starting from the basics, the book discusses several advanced topics. Topics like software project management, software process models, developing methodologies, software specification, software testing and quality, software implementation, software security, software maintenance and software reuse are discussed. This book also gives an introduction to the new emerging technologies, trends and practices in software engineering field. New topics such as MIMO technology, AJAX, etc. are included in the book. The topics like .NET framework, J2EE, etc. are also dealt with. Case Studies, discussions on real-life situations of dealing with IT related problems and finding their solutions in an easy manner, are given in each chapter. Elegant and simple style of presentation makes the reading of this book a pleasant experience. Students of Computer Science and Engineering, Information Technology and Computer Applications should find this book highly useful. It would also be useful for IT technology professionals who are interested to get acquainted with the latest and the newest technologies. This book constitutes the refereed proceedings of the Third

International Software Product Line Conference, SPLC 2004, held in Boston, MA, USA in August/September 2004. The 18 revised full technical papers presented together with a keynote abstract and summaries of panels, tutorials, and workshops were carefully reviewed and selected for inclusion in the book. Organized in sections on business, architecture, and quality assurance, the papers address topics ranging from how to start a software product line in a company, to case studies of mature product lines and the technology used, to test strategies of product lines, to strategies and notations for creating product line architectures, and to the importance of binding times in creating product lines. Process Improvement and CMMI for Systems and Software provides a workable approach for achieving cost-effective process improvements for systems and software. Focusing on planning, implementation, and management in system and software processes, it supplies a brief overview of basic strategic planning models and covers fundamental concepts and appr Addressing various aspects of object-oriented software techniques with respect to their impact on testing, this text argues that the testing of object-oriented software is not restricted to a single phase of software development. The book concentrates heavily on the testing of classes and of components or sub-systems, and a major part is devoted to this subject. C++ is used throughout this book that is intended for software practitioners, managers, researchers, students, or anyone interested in object-oriented technology and its impacts throughout the software engineering life-cycle. The concepts, trends and practices in different phases of software development have taken sufficient advancement from the traditional ones. With these changes, methods of developing software, system architecture, software design, software coding, software maintenance and software project management have taken new shapes. Software Engineering discusses the principles, methodologies, trends and practices associated with different phases of software engineering. Starting from the basics, the book progresses slowly to advanced and emerging topics on software project management, process models, developing methodologies, software specification, testing, quality control, deployment, software security, maintenance and software reuse. Case study is a special feature of this book that discusses real life situation of dealing with IT related problems and finding their practical solutions in an easy manner. Elegant and simple style of presentation makes reading of this book a pleasant experience.Students of Computer Science and Engineering, Information Technology and Computer Applications should find this book highly useful. It would also be useful for IT technology professionals who are interested to get acquainted with the latest and the newest technologies. Organizations report that as much as 50% of investments in IS and IT

solutions are judged to be outright failures or deemed highly unsatisfactory. Information Systems Innovation and Diffusion: Issues and Directions reports on innovation and diffusion research and presents theory-based guidelines that will increase the business value of IS/IT investments. Numerical software is central to our computerized society. It is used to control aeroplanes and bridges, operate manufacturing lines, control power plants and refineries, and analyse financial markets. Such software must be accurate, reliable, robust, efficient, easy to use, maintainable and adaptable. Quality assessment and control of numerical software is still not well understood. Although measurement is a key element, it remains difficult to assess many components of software quality and to evaluate the trade-offs between them. Fortunately, as numerical software is built upon a long established foundation of mathematical and computational knowledge, there is great potential for dramatic breakthroughs. This volume will address enabling techniques and tools such as benchmarks, testing methodologies, quality standards, metrics, and accuracy control mechanisms, and their application to software for differential equations, linear algebra, data analysis, as well as the evaluation of integrals, derivatives and elementary and special functions. This textbook presents a concise introduction to the fundamental principles of software engineering, together with practical guidance on how to apply the theory in a real-world, industrial environment. The wide-ranging coverage encompasses all areas of software design, management, and quality. Topics and features: presents a broad overview of software engineering, including software lifecycles and phases in software development, and project management for software engineering; examines the areas of requirements engineering, software configuration management, software inspections, software testing, software quality assurance, and process quality; covers topics on software metrics and problem solving, software reliability and dependability, and software design and development, including Agile approaches; explains formal methods, a set of mathematical techniques to specify and derive a program from its specification, introducing the Z specification language; discusses software process improvement, describing the CMMI model, and introduces UML, a visual modelling language for software systems; reviews a range of tools to support various activities in software engineering, and offers advice on the selection and management of a software supplier; describes such innovations in the field of software as distributed systems, service-oriented architecture, software as a service, cloud computing, and embedded systems; includes key learning topics, summaries and review questions in each chapter, together with a useful glossary. This practical and easy-to-follow textbook/reference is ideal for computer science

students seeking to learn how to build high quality and reliable software on time and on budget. The text also serves as a self-study primer for software engineers, quality professionals, and software managers. This book is designed for professionals and students in software engineering or information technology who are interested in understanding the dynamics of software development in order to assess and optimize their own process strategies. It explains how simulation of interrelated technical and social factors can provide a means for organizations to vastly improve their processes. It is structured for readers to approach the subject from different perspectives, and includes descriptive summaries of the best research and applications. Here's a practical, step-by-step approach for improving your organization's software development process, using the Software Engineering Institute's Capability Maturity Model (CMM). The book gives software project managers and administrators a real-world understanding of software process improvement with CMM and how it can be implemented in each stage of the software development lifecycle. This book constitutes the refereed proceeding of the 14th European Software Process Improvement Conference, EuroSPI 2007, held in Potsdam, Germany, in September 2007. The papers are organized in topical sections on enforcement, alignment, tailoring. There is focus on SME issues, improvement analysis and empirical studies, new avenues of SPI, SPI methodologies, as well as testing and reliability.