

Software Defect And Operational Profile Modeling International Series In Software Engineering

"This is the single best book on software quality engineering and metrics that I've encountered." —Capers Jones, from the Foreword**"Metrics and Models in Software Quality Engineering, Second Edition," is the definitive book on this essential topic of software development. Comprehensive in scope with extensive industry examples, it shows how to measure software quality and use measurements to improve the software development process. Four major categories of quality metrics and models are addressed: quality management, software reliability and projection, complexity, and customer view. In addition, the book discusses the fundamentals of measurement theory, specific quality metrics and tools, and methods for applying metrics to the software development process. New chapters bring coverage of critical topics, including: In-process metrics for software testing; Metrics for object-oriented software development; Availability metrics; Methods for conducting in-process quality assessments and software project assessment; Dos and Don'ts of Software Process Improvement, by Patrick O'Toole; Design Function Point Metrics to Measure Software Process Improvement, by Capers Jones. In addition to the excellent balance of theory, techniques, and examples, this book is highly instructive and practical, covering one of the most important topics in software development—quality engineering. 0201729156/08282802**
This book provides the latest research advances in the field of system reliability assurance and engineering. It contains reference material for applications of reliability in system engineering, offering a theoretical sound background with adequate numerical illustrations. Included are concepts pertaining to reliability analysis, assurance techniques and methodologies, tools, and practical applications of system reliability modeling and allocation. The collection discusses various soft computing techniques like artificial intelligence and particle swarm optimization approach for reliability assessment. Importance of differentiating between the optimal release time and testing stop time of the software has been explicitly discussed and presented in the book. Features: Creates understanding of the costs associated with complex systems Covers reliability measurement of engineering systems Incorporates an efficient effort-based expenditure policy incorporating cost and reliability criteria Provides information for optimal testing stop and release time of software system Presents software performance and security layout Addresses reliability prediction and its maintenance through advanced analytics techniques Overall, System Reliability Management: Solutions and Techniques is a collaborative and interdisciplinary approach for better communication of problems and solutions to increase the performance of the system for better utilization and resource management.

The development of Reliability and Maintenance theory and applications has become major concerns of engineers and managers engaged in order to design and product systems that are highly reliable. This book aims to cover the ongoing research topics in computer system, reliability analysis, reliability applications and maintenance policies, so as to provide awareness for those who engage systems design, being students, technicians, or research engineers, as a reference guidebook. Highly acclaimed and rigorously reviewed, 44 papers cover models and trends in digital product evolution, whether software could and should be more reliable than the world in which it is used, predicting and estimating reliability, improving process, maintaining software, reliability and testing, modelling and validating reliability, test planning and automation, simulation, special test methods, improving process, diagnosing faults, analyzing and optimizing reliability, evolutionary software, code defect classification and metrics, and safety-critical software and fault injection. In addition, materials from panel discussions cover the next generation of dependability standards, achieving adequate levels of reliability in practice, and assessing reliability in emerging techniques. No subject index. Annotation copyrighted by Book News, Inc., Portland, OR.

**Designing Security Architecture Solutions
 Software Defect and Operational Profile Modeling
 Design for Reliability
 Software Metrics**

**Foundations of Software Testing, 2/e
 Software Quality Engineering**

This book covers both theory and applications in the automation of software testing tools and techniques for various types of software (e.g. object-oriented, aspect-oriented, and web-based software). When software fails, it is most often due to lack of proper and thorough testing, an aspect that is even more acute for object-oriented, aspect-oriented, and web-based software. Further, since it is more difficult to test distributed and service-oriented architecture-based applications, there is a pressing need to discuss the latest developments in automated software testing. This book discusses the most relevant issues, models, tools, challenges, and applications in automated software testing. Further, it brings together academic researchers, scientists, and engineers from a wide range of industrial application areas, who present their latest findings and identify future challenges in this fledgling research area. This edition of Foundations of Software Testing is aimed at the undergraduate, the graduate students and the practicing engineers. It presents sound engineering approaches for test generation, ion, minimization, assessment, and enhancement. Using numerous examples, it offers a lucid description of a wide range of simple to complex techniques for a variety of testing-related tasks. It also discusses the comparative analyses of commercially available testing tools to facilitate the tool ion.

In this comprehensive introduction to software measurement, Ebert and Dumke detail knowledge and experiences about the subject in an easily understood, hands-on presentation. The book describes software measurement in theory and practice as well as provides guidance to all relevant measurement tools and online references. In addition, it presents hands-on experience from industry leaders and provides many examples and case studies from Global 100 companies. Besides the many practical hints and checklists, readers will also appreciate the large reference list, which includes links to metrics communities where project experiences are shared.

A Framework for Managing, Measuring, and Predicting Attributes of Software Development Products and Processes Reflecting the immense progress in the development and use of software metrics in the past decades, Software Metrics: A Rigorous and Practical Approach, Third Edition provides an up-to-date, accessible, and comprehensive introduction to software metrics. Like its popular predecessors, this third edition discusses important issues, explains essential concepts, and offers new approaches for tackling long-standing problems. New to the Third Edition This edition contains new material relevant to object-oriented design, design patterns, model-driven development, and agile development processes. It includes a new chapter on causal models and Bayesian networks and their application to software engineering. This edition also incorporates recent references to the latest software metrics activities, including research results, industrial case studies, and standards. Suitable for a Range of Readers With numerous examples and exercises, this book continues to serve a wide audience. It can be used as a textbook for a software metrics and quality assurance course or as a useful supplement in any software engineering course. Practitioners will appreciate the important results that have previously only appeared in research-oriented publications. Researchers will welcome the material on new results as well as the extensive bibliography of measurement-related information. The book also gives software managers and developers practical guidelines for selecting metrics and planning their use in a measurement program.

**Essays in Honor of Professor Shunji Osaki on his 70th Birthday
 Practical Software Testing
 Software Measurement and Estimation
 Early Software Reliability Prediction**

**Reliability Modeling With Computer And Maintenance Applications
 A Study Guide for the Certified Tester Exam ISTQB Advanced Level**

The rigors of engineering must soon be applied to the software development process, or the complexities of new systems will initiate the collapse of companies that attempt to produce them. Software Specification and Design: An Engineering Approach offers a foundation for rigorously engineered software. It provides a clear picture of what occurs as:

Introducing a groundbreaking companion book to a bestselling reliability text Reliability is one of the most important characteristics defining the quality of a product or system, both for the manufacturer and the purchaser. One achieves high reliability through careful monitoring of design, materials and other input, production, quality assurance efforts, ongoing maintenance, and a variety of related decisions and activities. All of these factors must be considered in determining the costs of production, purchase, and ownership of a product. Case Studies in Reliability and Maintenance serves as a valuable addition to the current literature on the subject of reliability by bridging the gap between theory and application. Conceived during the preparation of the editors' earlier work, Reliability: Modeling, Prediction, and Optimization (Wiley, 2000), this new volume features twenty-six actual case studies written by top experts in their fields, each illustrating exactly how reliability models are applied. A valuable companion book to Reliability: Modeling, Prediction, and Optimization, or any other textbook on the subject, the book features: Case studies from fields such as aerospace, automotive, mining, electronics, power plants, dikes, computer software, weapons, photocopyers, industrial furnaces, granite building cladding, chemistry, and aircraft engines A logical organization according to the life cycle of a product or system A unified format of discussion enhanced by tools, techniques, and models for drawing one's own conclusions Pertinent exercises for reinforcement of ideas applicable to both students of reliability theory as well as professionals in industry, Case Studies in Reliability and Maintenance should be required reading for anyone seeking to understand how reliability and maintenance issues can be addressed and resolved in the real world. Software engineering requires specialized knowledge of a broad spectrum of topics, including the construction of software and the platforms, applications, and environments in which the software operates as well as an understanding of the people who build and use the software. Offering an authoritative perspective, the two volumes of the Encyclopedia of Software Engineering cover the entire multidisciplinary scope of this important field. More than 200 expert contributors and reviewers from industry and academia across 21 countries provide easy-to-read entries that cover software requirements, design, construction, testing, maintenance, configuration management, quality control, and software engineering management tools and methods. Editor Phillip A. Laplante uses the most universally recognized definition of the areas of relevance to software engineering, the Software Engineering Body of Knowledge (SNEBOK®), as a template for organizing the material. Also available in an electronic format, this encyclopedia supplies software engineering students, IT professionals, researchers, managers, and scholars with unrivaled coverage of the topics that encompass this ever-changing field. Also Available Online This Taylor & Francis encyclopedia is available through online subscription, offering a number of extra benefits for researchers, students, and librarians, including: Citation tracking and alert Active reference linking Save searches and marked lists HTML and PDF format options Contact Taylor and Francis for more information or to inquire about subscription options and print/online edition packages. US: (Tel) 1 888 318 2367; (E-mail) e-reference@taylorandfrancis.com International: (Tel) +44 (0) 20 7017 6062; (E-mail) online_sales@tandf.co.uk

also in: THE KLUWER INTERNATIONAL SERIES ON ASIAN STUDIES IN COMPUTER AND INFORMATION SCIENCE, Volume 1

**Solutions and Technologies
 System Reliability Management**

**Advances in Software Engineering
 Advances in Computers**

Foundations, Applications and Challenges

Many enterprises are moving their applications and IT services to the cloud. Better risk management results in fewer operational surprises and failures, greater stakeholder confidence and reduced regulatory concerns; proactive risk management maximizes the likelihood that an enterprise's objectives will be achieved, thereby enabling organizational success. This work methodically considers the risks and opportunities that an enterprise taking their applications or services onto the cloud must consider to obtain the cost reductions and service velocity improvements they desire without suffering the consequences of unacceptable user service quality.

This invaluable textbook/reference provides an easy-to-read guide to the fundamentals of formal methods, highlighting the rich applications of formal methods across a diverse range of areas of computing. Topics and features: introduces the key concepts in software engineering, software reliability and dependability, formal methods, and discrete mathematics; presents a short history of logic, from Aristotle's syllogistic logic and the logic of the Stoics, through Boole's symbolic logic, to Frege's work on predicate logic; covers propositional and predicate logic, as well as more advanced topics such as fuzzy logic, temporal logic, intuitionistic logic, undefined values, and the applications of logic to AI; examines the Z specification language, the Vienna Development Method (VDM) and Irish School of VDM, and the unified modelling language (UML); discusses Dijkstra's calculus of weakest preconditions, Hoare's axiomatic semantics of programming languages, and the classical approach of Parnas and his tabular expressions; provides coverage of automata theory, probability and statistics, model checking, and the nature of proof and theorem proving; reviews a selection of tools available to support the formal methodist, and considers the transfer of formal methods to industry; includes review questions and highlights key topics in every chapter, and supplies a helpful glossary at the end of the book. This stimulating guide provides a broad and accessible overview of formal methods for students of computer science and mathematics curious as to how formal methods are applied to the field of computing. Dependability and cost effectiveness are primarily seen as instruments for conducting international trade in the free market environment. These factors cannot be considered in isolation of each other. This handbook considers all aspects of performativity engineering. The book provides a holistic view of the entire life cycle of activities of the product, along with the associated cost of environmental preservation at each stage, while maintaining the performance.

The one resource needed to create reliable software This text offers a comprehensive and integrated approach to software quality engineering. By following the author's clear guidance, readers learn how to master the techniques to produce high-quality, reliable software, regardless of the software system's level of complexity. The first part of the publication introduces major topics in software quality engineering and presents quality planning as an integral part of the process. Providing readers with a solid foundation in key concepts and practices, the book moves on to offer in-depth coverage of software testing as a primary means to ensure software quality; alternatives for quality assurance, including defect prevention, process improvement, inspection, formal verification, fault tolerance, safety assurance, and damage control; and measurement and analysis to close the feedback loop for quality assessment and quantifiable improvement. The text's approach and style evolved from the author's hands-on experience in the classroom. All the pedagogical tools needed to facilitate quick learning are provided: * Figures and tables that clarify concepts and provide quick topic summaries * Examples that illustrate how theory is applied in real-world situations * Comprehensive bibliography that leads to in-depth discussion of specialized topics * Problem sets at the end of each chapter that test readers' knowledge This is a superior textbook for software engineering, computer science, information systems, and electrical engineering students, and a dependable reference for software and computer professionals and engineers.

**Data and Patterns
 Security Measurements and Metrics**

**Software Specification and Design
 Metrics and Models in Software Quality Engineering**

**Risk Thinking for Cloud-Based Application Services
 Product Focused Software Process Improvement**

Since its first volume in 1960, Advances in Computers has presented detailed coverage of innovations in hardware and software and in computer theory, design, and applications. It has also provided contributors with a medium in which they can examine their subjects in greater depth and breadth than that allowed by standard journal articles. As a result, many articles have become standard references that continue to be of significant, lasting value despite the rapid growth taking place in the field.

The first guide to tackle security architecture at the software engineering level Computer security has become a critical business concern, and, as such, the responsibility of all IT professionals. In this groundbreaking book, a security expert with AT&T Business' renowned Network Services organization explores system security architecture from a software engineering perspective. He explains why strong security must be a guiding principle of the development process and identifies a common set of features found in top security products, explaining how they can and should impact the development cycle. The book also offers in-depth discussions of security technologies, cryptography, database security, application and operating system security, and more.

Based on the needs of the educational community, and the software professional, this book takes a unique approach to teaching software testing. It introduces testing concepts that are managerial, technical, and process oriented, using the Testing Maturity Model (TMM) as a guiding framework. The TMM levels and goals support a structured presentation of fundamental and advanced test-related concepts to the reader. In this context, the introduction of ideas through online subscription, offering a number of extra benefits for researchers, students, and librarians, including: Citation tracking and alert Active reference linking Save searches and marked lists HTML and PDF format options Contact Taylor and Francis for more information or to inquire about subscription options and print/online edition packages. US: (Tel) 1 888 318 2367; (E-mail) e-reference@taylorandfrancis.com International: (Tel) +44 (0) 20 7017 6062; (E-mail) online_sales@tandf.co.uk

Moreover, the number of universities with graduate courses that cover this material will grow, even the evolution in software development as an engineering discipline and the creation of degree programs in software engineering. Fuzzy Logic and Soft Computing contains contributions from world-leading experts from both the academic and industrial communities. The first part of the volume consists of invited papers by international authors describing both heuristic logic in decision analysis, fuzzy dynamic programming in optimization, linguistic modifiers for word computation, and theoretical treatments and applications of fuzzy reasoning. The second part is composed of eleven contributions from Chinese authors focusing on some of the key issues in the fields: stable adaptive fuzzy control systems, partial evaluations and fuzzy reasoning, fuzzy wavelnet neural networks, analysis and applications of genetic algorithms, partial repeatability, rough set reduction for data enriching, limits of agents in process calculus, medium logic and its evolution, and factor spaces cases. These contributions are not only theoretically sound and well-formulated, but are also coupled with applicability implications and/or implementation treatments. The domains of applications realized or implied are: decision analysis, word computation, databases and knowledge discovery, power systems, control systems, and multi-destination routing. Furthermore, the articles contain materials that are an outgrowth of recently conducted research, addressing fundamental and important issues of Fuzzy logic and soft computing.

**A Process-Oriented Approach
 Software Testing Practice: Test Management**

**A Practical Approach
 Volume 16 - Socio-Organizational Aspects of Expert Systems Design to Storage and Retrieval: Signature File Access**

**Establish - Extract - Evaluate - Execute
 Analytic Methods in Systems and Software Testing**

This book includes a set of rigorously reviewed world-class manuscripts addressing and detailing state-of-the-art research projects in the areas of Computing Sciences, Software Engineering and Systems. The book presents selected papers from the conference proceedings of the International Conference on Systems, Computing Sciences and Software Engineering (SCSS 2006). All aspects of the conference were managed online.

Socio-organizational Aspects of Expert Systems to Storage and Retrieval: Signature File Access

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

the development of software systems with acceptable level of reliability and quality within available time frame and budget becomes a challenging objective. The objective could be achieved to some extent through early prediction of number of faults present in the software, which reduces the cost of development as it provides an opportunity to make early corrections during development process. The book presents an early software reliability prediction model that will help to grow the reliability of the software systems by monitoring it in each development phase, i.e. from requirement phase to testing phase. Different approaches are discussed in this book to tackle this challenging issue. An important approach presented in this book is a model to classify the modules into two categories (a) fault-prone and (b) not fault-prone. The models presented in this book for assessing expected number of faults present in the software, assessing expected number of faults present at the end of each phase and classification of software modules in fault-prone or no fault-prone category are easy to understand, develop and use for any practitioner. The practitioners are expected to gain more information about their development process and product reliability, which can help to optimize the resources used.

**Automated Software Testing
 Case Studies in Reliability and Maintenance**

**Quality Software Project Management
 Software Measurement**

**Encyclopedia of Software Engineering Three-Volume Set (Print)
 Proceedings of the 2014 International Conference on Informatics, Networking and Intelligent Computing (INIC 2014), 16-17 November 2014, Shenzhen, China**

Machine learning deals with the issue of how to build computer programs that improve their performance at some tasks through experience. Machine learning algorithms have proven to be of great practical value in a variety of application domains. Not surprisingly, the field of software engineering turns out to be a fertile ground where many software development and maintenance tasks could be formulated as learning problems and approached in terms of learning algorithms. This book deals with the subject of machine learning applications in software engineering. It provides an introduction to machine learning, summarizes the state-of-the-practice in this niche area, gives a classification of the existing work, and offers some application guidelines. Also included in the book is a collection of previously published papers in this research area.

Software Defect and Operational Profile Modeling Springer Science & Business Media

An effective, quantitative approach for estimating and managing software projects How many people do I need? When will the quality be good enough for commercial sale? Can this really be done in two weeks? Rather than relying on instinct, the authors of Software Measurement and Estimation offer a new, tested approach that includes the quantitative tools, data, and knowledge needed to make sound estimations. The text begins with the foundations of measurement, identifies the appropriate metrics, and then focuses on techniques and tools for estimating the effort needed to reach a given level of quality and performance for a software project. All the factors that impact estimations are thoroughly examined, giving you the tools needed to regularly adjust and improve your estimations to complete a project on time, within budget, and at an expected level of quality. This text includes several features that have proven to be successful in making the material accessible and easy to master: * Simple, straightforward style and logical presentation and organization enables you to build a solid foundation of theory and techniques to tackle complex estimations * Examples, provided throughout the text, illustrate how to use theory to solve real-world problems * Projects, included in each chapter, enable you to apply your newfound knowledge and skills * Techniques for effective communication of quantitative data help you convey your findings and recommendations to peers and management Software Measurement and Estimation: A Practical Approach allows practicing software engineers and managers to better estimate, manage, and effectively communicate the plans and progress of their software projects. With its classroom-tested features, this is an excellent

textbook for advanced undergraduate-level and graduate students in computer science and software engineering. An Instructor Support FTP site is available from the Wiley editorial department. A future generation of software engineering (FGIT) becomes specialized and fragmented, it is easy to lose sight that many topics in FGIT have common threads and, because of this, advances in one discipline may be transmitted to others. Presentation of recent results obtained in different disciplines encourages this interchange for the advancement of FGIT as a whole. Of particular interest are hybrid solutions that combine ideas taken from multiple disciplines in order to achieve something more significant than the sum of the individual parts. Through such hybrid philosophy, a new principle can be discovered, which has the propensity to propagate throughout multifaceted disciplines. FGIT 2009 was the first mega-conference that attempted to follow the above idea of hybridization in FGIT in a form of multiple events related to particular disciplines of IT, conducted by separate scientific committees, but coordinated in order to expose the most important contributions. It included the following international conferences: Advanced Software Engineering and Its Applications (ASEA), Bio-Science and Bio-Technology (BSBT), Control and Automation (CA), Database Theory and Application (DTA), Disaster Recovery and Business Continuity (DRBC; published independently), Future Generation Communication and Networking (FGCN) that was combined with Advanced Communication and Networking (ACN), Grid and Distributed Computing (GDC), Multimedia, Computer Graphics and Broadcasting (MulGrab), Security Technology (SecTech), Signal Processing, Image Processing and Pattern Recognition (SIP), and u- and e-Service, Science and Technology (UNESST).

**Handbook of Performability Engineering
 Second International Conference, PROFES 2009, Oulu, Finland, June 20-22, 2009 Proceedings
 Concise Guide to Formal Methods
 Simple Statistical Methods for Software Engineering**

**System Reliability Toolkit
 Advances and Innovations in Systems, Computing Sciences and Software Engineering**

Quality of Protection: Security Measurements and Metrics is an edited volume based on the Quality of Protection Workshop in Milano, Italy (September 2005). This volume discusses how security research can progress towards quality of protection in security comparable to quality of service in networking and software measurements, and metrics in empirical software engineering. Information security in the business setting has matured in the last few decades. Standards such as ISO17799, the Common Criteria (ISO15408), and a number of industry certifications and risk analysis methodologies have raised the bar for good security solutions from a business perspective. Designed for a professional audience composed of researchers and practitioners in industry, Quality of Protection: Security Measurements and Metrics is also suitable for advanced-level students in computer science.

Aimed at experts who are dedicated to software testing, The Software Testing Process: Test Management addresses the major issues related to advanced, state-of-the-art test management. This book covers the syllabus required to pass the Certified Tester Examination - Advanced Level as defined by the International Software Testing Qualifications Board (ISTQB). Software developers, project managers, quality managers, and team leaders will benefit from the comprehensive coverage of risk oriented management and the way testing is shown to be an integral, though independent part of software development. Included are best practices in the field of testing, as well as detailed descriptions of involved tasks, roles, and responsibilities. Well suited for self-study, the reader is "taken by the hand" but not "held by the hand" and is able to apply the knowledge and skills in this field, anyone wanting to become a true testing professional will find this book a must for a successful, well-founded education in advanced test management. Topics include: Test process and test tool Testing in the software life cycle Test policy and test manual Test plan and test planning Test control and management Risk management Risk-based testing Staff qualification Test metrics

The "System Reliability Toolkit" represents a distinct departure from previous editions of the RIAC Toolkit series. It represents our first major collaboration with a sister IAC, the Data and Analysis Center for Software (DACS), whose charter includes software acquisition and development practices and processes. This new Toolkit continues to concentrate on reliability activities that have payoff, but now extends its coverage to more distinctly address the contributions of software and human factors to overall system reliability. Having expanded its content by 70% over its "Reliability Toolkit: Commercial Practitioner's Edition" predecessor, the "System Reliability Toolkit" represents a significant revision to our previous work. It includes numerous new and modified topics that have been added to better represent every aspect of system reliability over its life cycle.

A comprehensive treatment of systems and software testing using state-of-the-art methods and tools This book provides valuable insights into state-of-the-art software testing methods and explains, with examples, the statistical and analytic methods used in this field. Numerous examples are used to provide understanding in applying these methods to real-world problems. Leading authorities apply statistics, computer science, and terminology of software testing in a variety of scenarios and case studies (as featured in the first book in this series, Software Testing Foundations). Not only will testers and test managers find this a must-read, but anyone requiring advanced professional knowledge and skills in this field, anyone wanting to become a true testing professional will find this book a must for a successful, well-founded education in advanced test management. Topics include: Test process and test tool Testing in the software life cycle Test policy and test manual Test plan and test planning Test control and management Risk management Risk-based testing Staff qualification Test metrics

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