

Reliability Engineering Training

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The PROACT® Root Cause Analysis "O'Reilly Media, Inc."

The infrastructure-as-code revolution in IT is also affecting database administration. With this practical book, developers, system administrators, and junior to mid-level DBAs will learn how the modern practice of site reliability engineering applies to the craft of database architecture and operations. Authors Laine Campbell and Charity Majors provide a framework for professionals looking to join the ranks of today's database reliability engineers (DBRE). You'll begin by exploring core operational concepts that DBREs need to master. Then you'll examine a wide range of database persistence options, including how to implement key technologies to provide resilient, scalable, and performant data storage and retrieval. With a firm foundation in database reliability engineering, you'll be ready to dive into the architecture and operations of any modern database. This book covers: Service-level requirements and risk management Building and evolving an architecture for operational visibility Infrastructure engineering and infrastructure management How to facilitate the release management process Data storage, indexing, and replication Identifying datastore characteristics and best use cases Datastore architectural components and data-driven architectures

Implementing Service Level Objectives John Wiley & Sons

Can a system be considered truly reliable if it isn't fundamentally secure? Or can it be considered secure if it's unreliable? Security is crucial to the design and operation of scalable systems in production, as it plays an important part in product quality, performance, and availability. In this book, experts from Google share best practices to help your organization design scalable and reliable systems that are fundamentally secure. Two previous O'Reilly books from Google—*Site Reliability Engineering* and *The Site Reliability Workbook*—demonstrated how and why a commitment to the entire service lifecycle enables organizations to successfully build, deploy, monitor, and maintain software systems. In this latest guide, the authors offer insights into system design, implementation, and maintenance from practitioners who specialize in security and reliability. They also discuss how building and adopting their recommended best practices requires a culture that's supportive of such change. You'll learn about secure and reliable systems through: Design strategies Recommendations for coding, testing, and debugging practices Strategies to prepare for, respond to, and recover from incidents Cultural best practices that help teams across your organization collaborate effectively

Launching Your Asset Reliability Transformation Gulf Professional Publishing

"A revision of RCMII, by John Moubray"--Front cover.

The Certified Reliability Engineer Handbook O'Reilly Media

An Integrated Approach to Product Development Reliability Engineering presents an integrated approach to the design, engineering, and management of reliability activities throughout the life cycle of a product, including concept, research and development, design, manufacturing, assembly, sales, and service. Containing illustrative guides that include worked problems, numerical examples, homework problems, a solutions manual, and class-tested materials, it demonstrates to product development and manufacturing professionals how to distribute key reliability practices throughout an organization. The authors explain how to integrate reliability methods and techniques in the Six Sigma process and Design for Six Sigma (DFSS). They also discuss relationships between warranty and reliability, as well as legal and liability issues. Other topics covered include: Reliability engineering in the 21st Century Probability life distributions for reliability analysis Process control and process capability Failure modes, mechanisms, and effects analysis Health monitoring and prognostics Reliability tests and reliability estimation Reliability Engineering provides a comprehensive list of references on the topics covered in each chapter. It is an invaluable resource for those interested in gaining fundamental knowledge of the practical aspects of reliability in design, manufacturing, and testing. In addition, it is useful for implementation and management of

reliability programs.

Deep Learning for Coders with fastai and PyTorch "O'Reilly Media, Inc."

Reliability and safety are core issues that must be addressed throughout the life cycle of engineering systems. Reliability and Safety Engineering presents an overview of the basic concepts, together with simple and practical illustrations. The authors present reliability terminology in various engineering fields, viz., electronics engineering, software engineering, mechanical engineering, structural engineering and power systems engineering. The book describes the latest applications in the area of probabilistic safety assessment, such as technical specification optimization, risk monitoring and risk informed in-service inspection. Reliability and safety studies must, inevitably, deal with uncertainty, so the book includes uncertainty propagation methods: Monte Carlo simulation, fuzzy arithmetic, Dempster-Shafer theory and probability bounds. Reliability and Safety Engineering also highlights advances in system reliability and safety assessment including dynamic system modeling and uncertainty management. Case studies from typical nuclear power plants as well as from structural, software and electronic systems are also discussed. Reliability and Safety Engineering combines discussions of the existing literature on basic concepts and applications with state-of-the-art methods used in reliability and risk assessment of engineering systems. It is designed to assist practicing engineers, students and researchers in the areas of reliability engineering and risk analysis.

Reliability Engineering and Computational Intelligence RIAC

The overwhelming majority of a software system's lifespan is spent in use, not in design or implementation. So, why does conventional wisdom insist that software engineers focus primarily on the design and development of large-scale computing systems? In this collection of essays and articles, key members of Google's Site Reliability Team explain how and why their commitment to the entire lifecycle has enabled the company to successfully build, deploy, monitor, and maintain some of the largest software systems in the world. You'll learn the principles and practices that enable Google engineers to make systems more scalable, reliable, and efficient—lessons directly applicable to your organization. This book is divided into four sections: Introduction Learn what site reliability engineering is and why it differs from conventional IT industry practices Principles Examine the patterns, behaviors, and areas of concern that influence the work of a site reliability engineer (SRE) Practices Understand the theory and practice of an SRE's day-to-day work: building and operating large distributed computing systems Management Explore Google's best practices for training, communication, and meetings that your organization can use

Gas and Oil Reliability Engineering O'Reilly Media

This classic textbook/reference contains a complete integration of the processes which influence quality and reliability in product specification, design, test, manufacture and support. Provides a step-by-step explanation of proven techniques for the development and production of reliable engineering equipment as well as details of the highly regarded work of Taguchi and Shainin. New to this edition: over 75 pages of self-assessment questions plus a revised bibliography and references. The book fulfills the requirements of the qualifying examinations in reliability engineering of the Institute of Quality Assurance, UK and the American Society of Quality Control.

Introduction to Finite Elements in Engineering John Wiley & Sons

This handbook is a comprehensive reference designed to help professionals address organizational issues from the application of the basic principles of management to the development of strategies needed to deal with today's technological and societal concerns. The fifth edition of the ASQ Certified Manager of Quality/Organizational Excellence Handbook (CMQ/OE) has undergone some significant content changes in order to provide more clarity regarding the items in the body of knowledge (BoK). Examples have been updated to reflect more current perspectives, and new topics introduced in the most recent BoK are included as well. This handbook addresses: • Historical perspectives relating to the continued improvement of specific aspects of quality management • Key principles, concepts, and terminology • Benefits associated with the application of key concepts and quality management principles • Best practices describing recognized approaches for good quality management • Barriers to success, common problems you may encounter, and

reasons why some quality initiatives fail • Guidance for preparation to take the CMQ/OE examination A well-organized reference, this handbook will certainly help individuals prepare for the ASQ CMQ/OE exam. It also serves as a practical, day-to-day guide for any professional facing various quality management challenges.

Effective FMEAs Cambridge University Press

This book presents the state-of-the-art methodology and detailed analytical models and methods used to assess the reliability of complex systems and related applications in statistical reliability engineering. It is a textbook based mainly on the author's recent research and publications as well as experience of over 30 years in this field. The book covers a wide range of methods and models in reliability, and their applications, including: statistical methods and model selection for machine learning; models for maintenance and software reliability; statistical reliability estimation of complex systems; and statistical reliability analysis of k out of n systems, standby systems and repairable systems. Offering numerous examples and solved problems within each chapter, this comprehensive text provides an introduction to reliability engineering graduate students, a reference for data scientists and reliability engineers, and a thorough guide for researchers and instructors in the field. Reliability Engineering Statistics Training Course Springer Nature

Gas and Oil Reliability Engineering: Modeling and Analysis, Second Edition, provides the latest tactics and processes that can be used in oil and gas markets to improve reliability knowledge and reduce costs to stay competitive, especially while oil prices are low. Updated with relevant analysis and case studies covering equipment for both onshore and offshore operations, this reference provides the engineer and manager with more information on lifetime data analysis (LDA), safety integrity levels (SILs), and asset management. New chapters on safety, more coverage on the latest software, and techniques such as ReBi (Reliability-Based Inspection), ReGBI (Reliability Growth-Based Inspection), RCM (Reliability Centered Maintenance), and LDA (Lifetime Data Analysis), and asset integrity management, make the book a critical resource that will arm engineers and managers with the basic reliability principles and standard concepts that are necessary to explain their use for reliability assurance for the oil and gas industry. - Provides the latest tactics and processes that can be used in oil and gas markets to improve reliability knowledge and reduce costs - Presents practical knowledge with over 20 new internationally-based case studies covering BOPs, offshore platforms, pipelines, valves, and subsea equipment from various locations, such as Australia, the Middle East, and Asia - Contains expanded explanations of reliability skills with a new chapter on asset integrity management, relevant software, and techniques training, such as THERP, ASEP, RBI, FMEA, and RAMS

Seeking SRE Wiley

Since most applications today are distributed in some fashion, monitoring their health and performance requires a new approach. Enter distributed tracing, a method of profiling and monitoring distributed applications—particularly those that use microservice architectures. There's just one problem: distributed tracing can be hard. But it doesn't have to be. With this guide, you'll learn what distributed tracing is and how to use it to understand the performance and operation of your software. Key players at LightStep and other organizations walk you through instrumenting your code for tracing, collecting the data that your instrumentation produces, and turning it into useful operational insights. If you want to implement distributed tracing, this book tells you what you need to know. You'll learn: The pieces of a distributed tracing deployment: instrumentation, data collection, and analysis Best practices for instrumentation: methods for generating trace data from your services How to deal with (or avoid) overhead using sampling and other techniques How to use distributed tracing to improve baseline performance and to mitigate regressions quickly Where distributed tracing is headed in the future

System Reliability Toolkit John Wiley & Sons

An introduction and explanation of pragmatic methods and techniques for reliability and risk studies, and a discussion of their uses and limitations. It features computer software that illustrates numerous examples found in the book, offering to help engineers and students solve problems. There is a module on Bayesian estimation. The computer disk is written in Visual Basic and is compatible with Microsoft Excel spreadsheets.

Reliability Centered Maintenance – Reengineered "O'Reilly Media, Inc."

As more companies move toward microservices and other distributed technologies, the complexity of these systems increases. You can't remove the complexity, but through Chaos Engineering you can discover vulnerabilities and prevent outages before they impact your customers. This practical guide shows engineers how to navigate complex systems while optimizing to meet business goals. Two of

the field's prominent figures, Casey Rosenthal and Nora Jones, pioneered the discipline while working together at Netflix. In this book, they expound on the what, how, and why of Chaos Engineering while facilitating a conversation from practitioners across industries. Many chapters are written by contributing authors to widen the perspective across verticals within (and beyond) the software industry. Learn how Chaos Engineering enables your organization to navigate complexity Explore a methodology to avoid failures within your application, network, and infrastructure Move from theory to practice through real-world stories from industry experts at Google, Microsoft, Slack, and LinkedIn, among others Establish a framework for thinking about complexity within software systems Design a Chaos Engineering program around game days and move toward highly targeted, automated experiments Learn how to design continuous collaborative chaos experiments

[Practical Reliability Engineering](#) CRC Press

Although service-level objectives (SLOs) continue to grow in importance, there ' s a distinct lack of information about how to implement them. Practical advice that does exist usually assumes that your team already has the infrastructure, tooling, and culture in place. In this book, recognized SLO expert Alex Hidalgo explains how to build an SLO culture from the ground up. Ideal as a primer and daily reference for anyone creating both the culture and tooling necessary for SLO-based approaches to reliability, this guide provides detailed analysis of advanced SLO and service-level indicator (SLI) techniques. Armed with mathematical models and statistical knowledge to help you get the most out of an SLO-based approach, you ' ll learn how to build systems capable of measuring meaningful SLIs with buy-in across all departments of your organization. Define SLIs that meaningfully measure the reliability of a service from a user ' s perspective Choose appropriate SLO targets, including how to perform statistical and probabilistic analysis Use error budgets to help your team have better discussions and make better data-driven decisions Build supportive tooling and resources required for an SLO-based approach Use SLO data to present meaningful reports to leadership and your users

[Statistical Reliability Engineering](#) John Wiley & Sons

A unique, design-based approach to reliability engineering Design for Reliability provides engineers and managers with a range of tools and techniques for incorporating reliability into the design process for complex systems. It clearly explains how to design for zero failure of critical system functions, leading to enormous savings in product life-cycle costs and a dramatic improvement in the ability to compete in global markets. Readers will find a wealth of design practices not covered in typical engineering books, allowing them to think outside the box when developing reliability requirements. They will learn to address high failure rates associated with systems that are not properly designed for reliability, avoiding expensive and time-consuming engineering changes, such as excessive testing, repairs, maintenance, inspection, and logistics. Special features of this book include: A unified approach that integrates ideas from computer science and reliability engineering Techniques applicable to reliability as well as safety, maintainability, system integration, and logistic engineering Chapters on design for extreme environments, developing reliable software, design for trustworthiness, and HALT influence on design Design for Reliability is a must-have guide for engineers and managers in R&D, product development, reliability engineering, product safety, and quality assurance, as well as anyone who needs to deliver high product performance at a lower cost while minimizing system failure.

[Reliability and Availability Engineering](#) Springer Nature

Learn about the techniques used for evaluating the reliability and availability of engineered systems with this comprehensive guide.

[Design for Reliability](#) Pearson College Division

Root Cause Analysis, or RCA, "What is it?" Everyone uses the term, but everyone does it differently. How can we have any uniformity in our approach, much less accurately compare our results, if we ' re applying different definitions? At a high level, we will explain the difference between RCA and Shallow Cause Analysis, because that is the difference between allowing a failure to recur or dramatically reducing the risk of recurrence. In this book, we will get down to basics about RCA, the fundamentals of blocking and tackling, and explain the common steps of any investigative occupation. Common investigation steps include: Preserving evidence (data)/not allowing hearsay to fly as fact Organizing an appropriate team/minimizing potential bias Analyzing the events/reconstructing the incident based on actual evidence Communicating findings and recommendations/ensuring effective recommendations are actually developed and implemented Tracking bottom-line results/ensuring that identified, meaningful metrics were attained We explore, "Why don ' t things always go as planned?" When our actual plans deviate from our intended plans, we usually experience some type of undesirable or unintended outcome. We analyze the anatomy of a failure (undesirable outcome) and provide a step-by-step guide to conducting a comprehensive RCA based on our 3+ decades of applying RCA as we have successfully practiced it in the field. This book is written as a how-to guide to effectively apply the PROACT® RCA methodology to any undesirable outcome, is directed at practitioners who have to do the real work, focuses on the core elements of any investigation, and provides a field-proven case as a model for effective application. This book is for anyone charged with having a thorough understanding of why something went wrong, such as those in EH&S, maintenance, reliability, quality, engineering, and operations to name just a few.

[Training for Reliability and Quality Control](#) CRC Press

As the Lead Reliability Engineer for Ford Motor Company, Guangbin Yang is involved with all aspects of the design and production of complex automotive systems. Focusing on real-world problems and solutions, Life Cycle Reliability Engineering covers the gamut of the techniques used for reliability assurance throughout a product's life cycle. Yang pulls real-world examples from his work and other industries to explain the methods of robust design (designing reliability into a product or system ahead of time), statistical and real product testing, software testing, and ultimately verification and warranting of the final product's reliability

[Rules of Thumb for Maintenance and Reliability Engineers](#) John Wiley & Sons

Written by one of the foremost authorities on the subject, the Second Edition is completely revised to reflect the latest changes to the ASQ Body of Knowledge for the Certified Quality Engineer (CQE). This handbook covers every essential topic required by the quality engineer for day-to-day practices in planning, testing, finance, and management an

[RCM3](#) O'Reilly Media

Rules of Thumb for Maintenance and Reliability Engineers will give the engineer the "have to have information. It will help instill knowledge on a daily basis, to do his or her job and to maintain and assure reliable equipment to help reduce costs. This book will be an easy reference for engineers and managers needing immediate solutions to everyday problems. Most civil, mechanical, and electrical engineers will face issues relating to maintenance and reliability, at some point in their jobs. This will become their "go to book. Not an oversized handbook or a theoretical treatise, but a handy collection of graphs, charts, calculations, tables, curves, and explanations, basic "rules of thumb that any engineer working with equipment will need for basic maintenance and reliability of that equipment. • Access to quick information which will help in day to day and long term engineering solutions in reliability and maintenance • Listing of short articles to help assist engineers in resolving problems they face • Written by two of the top experts in the country