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Resource-Oriented Architecture Patterns for Webs of DataGuide to Understanding Design Documentation in Trusted SystemsModel-Based System

ArchitectureArmy-NASA Aircrew/Aircraft Integration Program (A3I) Software Detailed Design Document: Phase IIIA Review of the Next Generation Air

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Testing PitfallsFreeBSD Architecture HandbookThe Software Architect ElevatorSoftware Architecture in PracticeHandbook On Sensor NetworksLandscape Architecture Documentation StandardsProcess-Centric Architecture for Enterprise Software Systems

Resource-Oriented Architecture Patterns for Webs of Data

The importance of computer security has increased dramatically during the past few years. Bishop provides a monumental reference for the theory and practice of computer security. Comprehensive in scope, this book covers applied and practical elements, theory, and the reasons for the design of applications and security techniques.

Guide to Understanding Design Documentation in Trusted Systems

This two volume set LNCS 7238 and LNCS 7239 constitutes the refereed proceedings of the 17th International Conference on Database Systems for Advanced Applications, DASFAA 2012, held in Busan, South Korea, in April 2012. The 44 revised full papers and 8 short papers presented together with 2 invited keynote papers, 8 industrial papers, 8 demo presentations, 4 tutorials and 1 panel paper were carefully reviewed and selected from a total of 159 submissions. The topics covered are query processing and optimization, data semantics, XML and semi-structured data, data mining and knowledge

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discovery, privacy and anonymity, data management in the Web, graphs and data mining applications, temporal and spatial data, top-k and skyline query processing, information retrieval and recommendation, indexing and search systems, cloud computing and scalability, memory-based query processing, semantic and decision support systems, social data, data mining.

Model-Based System Architecture

Introduction. Architectural styles. Case studies. Shared information systems. Architectural design guidance. Formal models and specifications. Linguistics issues. Tools for architectural design. Education of software architects.

Army-NASA Aircrew/Aircraft Integration Program (A3I) Software Detailed Design Document: Phase III

As the digital economy changes the rules of the game for enterprises, the role of software and IT architects is also transforming. Rather than focus on technical decisions alone, architects and senior technologists need to combine organizational and technical knowledge to effect change in their company's structure and processes. To accomplish that, they need to connect the IT engine room to the penthouse, where the business strategy is defined. In this guide, author Gregor Hohpe shares real-world advice and hard-learned lessons from actual IT transformations. His anecdotes help architects, senior developers, and

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other IT professionals prepare for a more complex but rewarding role in the enterprise. This book is ideal for: Software architects and senior developers looking to shape the company's technology direction or assist in an organizational transformation Enterprise architects and senior technologists searching for practical advice on how to navigate technical and organizational topics CTOs and senior technical architects who are devising an IT strategy that impacts the way the organization works IT managers who want to learn what's worked and what hasn't in large-scale transformation

A Review of the Next Generation Air Transportation System

Introduction to Electronic Document Management Systems provides an in-depth overview of the technology of electronic document management using modern electronic image processing. It will prove to be a key source of information for management and technical staff of organizations considering a transformation from traditional micrographics-based document storage and retrieval systems to new electronic document capture systems. It will also be useful for those organizations considering improving productivity through electronic management of large volumes of data records.

Software Architecture: A Case Based Approach

Based on more than 10 years of teaching experience,

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Blanken and his coeditors have assembled all the topics that should be covered in advanced undergraduate or graduate courses on multimedia retrieval and multimedia databases. The single chapters of this textbook explain the general architecture of multimedia information retrieval systems and cover various metadata languages such as Dublin Core, RDF, or MPEG. The authors emphasize high-level features and show how these are used in mathematical models to support the retrieval process. For each chapter, there's detail on further reading, and additional exercises and teaching material is available online.

Database Systems for Advanced Applications

Modern-day projects require software and systems engineers to work together in realizing architectures of large and complex software-intensive systems. To date, the two have used their own tools and methods to deal with similar issues when it comes to the requirements, design, testing, maintenance, and evolution of these architectures. *Software and Systems Architecture in Action* explores practices that can be helpful in the development of architectures of large-scale systems in which software is a major component. Examining the synergies that exist between the disciplines of software and systems engineering, it presents concepts, techniques, and methods for creating and documenting architectures. The book describes an approach to architecture design that is driven from systemic quality attributes

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determined from both the business and technical goals of the system, rather than just its functional requirements. This architecture-centric design approach utilizes analytically derived patterns and tactics for quality attributes that inform the architect's design choices and help shape the architecture of a given system. The book includes coverage of techniques used to assess the impact of architecture-centric design on the structural complexity of a system. After reading the book, you will understand how to create architectures of systems and assess their ability to meet the business goals of your organization. Ideal for anyone involved with large and complex software-intensive systems, the book details powerful methods for engaging the software and systems engineers on your team. The book is also suitable for use in undergraduate and graduate-level courses on software and systems architecture as it exposes students to the concepts and techniques used to create and manage architectures of software-intensive systems.

Software Architecture

“a much-needed handbook with contributions from well-chosen practitioners. A primary accomplishment is to provide guidance for those involved in modeling and simulation in support of Systems of Systems development, more particularly guidance that draws on well-conceived academic research to define concepts and terms, that identifies primary challenges for developers, and that suggests fruitful approaches grounded in theory and successful

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examples.” Paul Davis, The RAND Corporation Modeling and Simulation Support for System of Systems Engineering Applications provides a comprehensive overview of the underlying theory, methods, and solutions in modeling and simulation support for system of systems engineering. Highlighting plentiful multidisciplinary applications of modeling and simulation, the book uniquely addresses the criteria and challenges found within the field. Beginning with a foundation of concepts, terms, and categories, a theoretical and generalized approach to system of systems engineering is introduced, and real-world applications via case studies and examples are presented. A unified approach is maintained in an effort to understand the complexity of a single system as well as the context among other proximate systems. In addition, the book features: Cutting edge coverage of modeling and simulation within the field of system of systems, including transportation, system health management, space mission analysis, systems engineering methodology, and energy State-of-the-art advances within multiple domains to instantiate theoretic insights, applicable methods, and lessons learned from real-world applications of modeling and simulation The challenges of system of systems engineering using a systematic and holistic approach Key concepts, terms, and activities to provide a comprehensive, unified, and concise representation of the field A collection of chapters written by over 40 recognized international experts from academia, government, and industry A research agenda derived from the contribution of experts that guides scholars and researchers towards open questions Modeling

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and Simulation Support for System of Systems Engineering Applications is an ideal reference and resource for academics and practitioners in operations research, engineering, statistics, mathematics, modeling and simulation, and computer science. The book is also an excellent course book for graduate and PhD-level courses in modeling and simulation, engineering, and computer science.

A Practical Guide to Enterprise Architecture

"Addresses the evolution of database management, technologies and applications along with the progress and endeavors of new research areas."--P. xiii.

Managing Software Requirements

Software and Systems Architecture in Action

Praise for the first edition: "This excellent text will be useful to every system engineer (SE) regardless of the domain. It covers ALL relevant SE material and does so in a very clear, methodical fashion. The breadth and depth of the author's presentation of SE principles and practices is outstanding." -Philip Allen This textbook presents a comprehensive, step-by-step guide to System Engineering analysis, design, and development via an integrated set of concepts, principles, practices, and methodologies. The methods presented in this text apply to any type of human

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system -- small, medium, and large organizational systems and system development projects delivering engineered systems or services across multiple business sectors such as medical, transportation, financial, educational, governmental, aerospace and defense, utilities, political, and charity, among others. Provides a common focal point for “bridging the gap” between and unifying System Users, System Acquirers, multi-discipline System Engineering, and Project, Functional, and Executive Management education, knowledge, and decision-making for developing systems, products, or services. Each chapter provides definitions of key terms, guiding principles, examples, author’s notes, real-world examples, and exercises, which highlight and reinforce key SE&D concepts and practices. Addresses concepts employed in Model-Based Systems Engineering (MBSE), Model-Driven Design (MDD), Unified Modeling Language (UML/TM) / Systems Modeling Language (SysML/TM), and Agile/Spiral/V-Model Development such as user needs, stories, and use cases analysis; specification development; system architecture development; User-Centric System Design (UCSD); interface definition & control; system integration & test; and Verification & Validation (V&V). Highlights/introduces a new 21st Century Systems Engineering & Development (SE&D) paradigm that is easy to understand and implement. Provides practices that are critical staging points for technical decision making such as Technical Strategy Development; Life Cycle requirements; Phases, Modes, & States; SE Process; Requirements Derivation; System Architecture Development, User-

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Centric System Design (UCSD); Engineering Standards, Coordinate Systems, and Conventions; et al. Thoroughly illustrated, with end-of-chapter exercises and numerous case studies and examples, Systems Engineering Analysis, Design, and Development, Second Edition is a primary textbook for multi-discipline, engineering, system analysis, and project management undergraduate/graduate level students and a valuable reference for professionals.

Designing Software-Intensive Systems: Methods and Principles

The software development ecosystem is constantly changing, providing a constant stream of new tools, frameworks, techniques, and paradigms. Over the past few years, incremental developments in core engineering practices for software development have created the foundations for rethinking how architecture changes over time, along with ways to protect important architectural characteristics as it evolves. This practical guide ties those parts together with a new way to think about architecture and time.

Documenting Software Architectures

This is the digital version of the printed book (Copyright © 2000). Derek Hatley and Imtiaz Pirbhai—authors of Strategies for Real-Time System Specification—join with influential consultant Peter Hruschka to present a much anticipated update to their widely implemented Hatley/Pirbhai methods. Process for System Architecture and Requirements

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Engineering introduces a new approach that is particularly useful for multidisciplinary system development: It applies equally well to all technologies and thereby provides a common language for developers in widely differing disciplines. The Hatley-Pirbhai-Hruschka approach (H/H/P) has another important feature: the coexistence of the requirements and architecture methods and of the corresponding models they produce. These two models are kept separate, but the approach fully records their ongoing and changing interrelationships. This feature is missing from virtually all other system and software development methods and from CASE tools that only automate the requirements model. System managers, system architects, system engineers, and managers and engineers in all of the diverse engineering technologies will benefit from this comprehensive, pragmatic text. In addition to its models of requirements and architecture and of the development process itself, the book uses in-depth case studies of a hospital monitoring system and of a multidisciplinary groundwater analysis system to illustrate the principles. Compatibility Between the H/H/P Methods and the UML: The Hatley/Pirbhai architecture and requirements methods—described in Strategies for Real-Time System Specification—have been widely used for almost two decades in system and software development. Now known as the Hatley/Hruschka/Pirbhai (H/H/P) methods, they have always been compatible with object-oriented software techniques, such as the UML, by defining architectural elements as classes, objects, messages, inheritance relationships, and so on. In Process for System Architecture and Requirements Engineering, that

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compatibility is made more specific through the addition of message diagrams, inheritance diagrams, and new notations that go with them. In addition, state charts, while never excluded, are now specifically included as a representation of sequential machines. These additions make definition of the system/software boundary even more straightforward, while retaining the clear separation of requirements and design at the system levels that is a hallmark of the H/H/P methods—not shared by most OO techniques. Once the transition to software is made, the developer is free to continue using the H/H/P methods, or to use the UML or any other software-specific technique.

Modeling Telecom Networks and Systems Architecture

The increasing adoption of Business Process Management (BPM) has inspired pioneering software architects and developers to effectively leverage BPM-based software and process-centric architecture (PCA) to create software systems that enable essential business processes. Reflecting this emerging trend and evolving field, Process-Centric Architecture

Document Analysis Systems II

This book provides an overview of the state of the art in research and development of systems for document image analysis. Topics covered include a variety of systems and architectures for processing document images as well as methods for converting

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those images into formats that can be manipulated by a computer. The chapters are written by recognized experts in the field and describe Systems and Architectures, Recognition Techniques, Graphics Analysis, Document Image Retrieval, and World Wide Web Applications.

Multimedia Retrieval

The Next Generation Air Transportation System's (NextGen) goal is the transformation of the U.S. national airspace system through programs and initiatives that could make it possible to shorten routes, navigate better around weather, save time and fuel, reduce delays, and improve capabilities for monitoring and managing of aircraft. A Review of the Next Generation Air Transportation provides an overview of NextGen and examines the technical activities, including human-system design and testing, organizational design, and other safety and human factor aspects of the system, that will be necessary to successfully transition current and planned modernization programs to the future system. This report assesses technical, cost, and schedule risk for the software development that will be necessary to achieve the expected benefits from a highly automated air traffic management system and the implications for ongoing modernization projects. The recommendations of this report will help the Federal Aviation Administration anticipate and respond to the challenges of implementing NextGen.

Encyclopedia of Database Technologies

and Applications

Sensor networks have many interesting applications with great utility; however, their actual deployment and realization rely on continuous innovations and solutions to many challenging problems. Thus, sensor networks have recently attracted the attention of many researchers and practitioners. The compilation of the Handbook on Sensor Networks will meet the demand of the sensor network community for a comprehensive reference and summary of the current state of the area. The Handbook on Sensor Networks is a collection of approximately 40 chapters on sensor network theory and applications. The book spans a wide spectrum and includes topics in medium access control, routing, security and privacy, coverage and connectivity, modeling and simulations, multimedia, energy efficiency, localization and tracking, design and implementation, as well as sensor network applications.

Systems Opportunities and Requirements

Architect and design highly scalable, robust, clean, and highly performant applications in Python About This Book Identify design issues and make the necessary adjustments to achieve improved performance Understand practical architectural quality attributes from the perspective of a practicing engineer and architect using Python Gain knowledge of architectural principles and how they can be used to provide accountability and rationale for

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architectural decisions Who This Book Is For This book is for experienced Python developers who are aspiring to become the architects of enterprise-grade applications or software architects who would like to leverage Python to create effective blueprints of applications. What You Will Learn Build programs with the right architectural attributes Use Enterprise Architectural Patterns to solve scalable problems on the Web Understand design patterns from a Python perspective Optimize the performance testing tools in Python Deploy code in remote environments or on the Cloud using Python Secure architecture applications in Python In Detail This book starts off by explaining how Python fits into an application architecture. As you move along, you will understand the architecturally significant demands and how to determine them. Later, you'll get a complete understanding of the different architectural quality requirements that help an architect to build a product that satisfies business needs, such as maintainability/reusability, testability, scalability, performance, usability, and security. You will use various techniques such as incorporating DevOps, Continuous Integration, and more to make your application robust. You will understand when and when not to use object orientation in your applications. You will be able to think of the future and design applications that can scale proportionally to the growing business. The focus is on building the business logic based on the business process documentation and which frameworks are to be used when. We also cover some important patterns that are to be taken into account while solving design problems as well as those in relatively new domains

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such as the Cloud. This book will help you understand the ins and outs of Python so that you can make those critical design decisions that not just live up to but also surpass the expectations of your clients. Style and approach Filled with examples and use cases, this guide takes a no-nonsense approach to help you with everything it takes to become a successful software architect.

Advanced Use Case Modeling

More and more Agile projects are seeking architectural roots as they struggle with complexity and scale - and they're seeking lightweight ways to do it Still seeking? In this book the authors help you to find your own path Taking cues from Lean development, they can help steer your project toward practices with longstanding track records Up-front architecture? Sure. You can deliver an architecture as code that compiles and that concretely guides development without bogging it down in a mass of documents and guesses about the implementation Documentation? Even a whiteboard diagram, or a CRC card, is documentation: the goal isn't to avoid documentation, but to document just the right things in just the right amount Process? This all works within the frameworks of Scrum, XP, and other Agile approaches

Lean Architecture

Scenario -- Groundwork -- Structure -- Meaning -- Modeling processes -- Communication -- Navigation

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and discovery -- Presentation formats -- Infrastructure -- Solutions.

Computer Security

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.

Arc42 by Example

Presents modeling approaches that can be performed in SysML and other modeling languages This book combines the emerging discipline of systems architecting with model-based approaches using SysML. The early chapters of the book provide the fundamentals of systems architecting; discussing what systems architecting entails and how it benefits systems engineering. Model-based systems engineering is then defined, and its capabilities to develop complex systems on time and in a feasible quality are discussed. The remainder of the book covers important topics such as: architecture descriptions; architecture patterns; perspectives, viewpoints, views and their relation to system architecture; the roles of a system architect, their team, and stakeholders; systems architecting processes; agile approaches to systems architecting; variant modeling techniques; architecture frameworks; and architecture assessment. The book's organization allows experts to read the chapters out of sequence. Novices can read the chapters sequentially to gain a systematic introduction to

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system architecting. Model-Based System Architecture: Provides comprehensive coverage of the Functional Architecture for Systems (FAS) method created by the authors and based on common MBSE practices Covers architecture frameworks, including the System of Systems, Zachman Frameworks, TOGAF®, and more Includes a consistent example system, the “Virtual Museum Tour” system, that allows the authors to demonstrate the systems architecting concepts covered in the book Model-Based System Architecture is a comprehensive reference for system architects and systems engineers in technology companies. This book will also serve as a reference to students and researchers interested in functional architectures. Tim Weilkiens is the CEO at the German consultancy oose Innovative Informatik and co-author of the SysML specification. He has introduced model-based systems engineering to a variety of industry sectors. He is author of several books about modeling and the MBSE methodology SYSMOD. Jesko G. Lamm is a Senior Systems Engineer at Bernafon, a Swiss manufacturer for hearing instruments. With Tim Weilkiens, Jesko G. Lamm founded the Functional Architectures working group of the German chapter of INCOSE. Stephan Roth is a coach, consultant, and trainer for systems and software engineering at the German consultancy oose Innovative Informatik. He is a state-certified technical assistant for computer science from Physikalisch-Technische Lehranstalt (PTL) Wedel and a certified systems engineer (GfSE)®- Level C. Markus Walker works at Schindler Elevator in the research and development division as elevator system architect. He is an INCOSE Certified Systems Engineering

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Professional (CSEP) and is engaged in the committee of the Swiss chapter of INCOSE.

System Engineering Analysis, Design, and Development

Document the architecture of your software easily with this highly practical, open-source template. Key Features Get to grips with leveraging the features of arc42 to create insightful documents Learn the concepts of software architecture documentation through real-world examples Discover techniques to create compact, helpful, and easy-to-read documentation Book Description When developers document the architecture of their systems, they often invent their own specific ways of articulating structures, designs, concepts, and decisions. What they need is a template that enables simple and efficient software architecture documentation. arc42 by Example shows how it's done through several real-world examples. Each example in the book, whether it is a chess engine, a huge CRM system, or a cool web system, starts with a brief description of the problem domain and the quality requirements. Then, you'll discover the system context with all the external interfaces. You'll dive into an overview of the solution strategy to implement the building blocks and runtime scenarios. The later chapters also explain various cross-cutting concerns and how they affect other aspects of a program. What you will learn Utilize arc42 to document a system's physical infrastructure Learn how to identify a system's scope and boundaries Break a system down into building blocks

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and illustrate the relationships between them Discover how to describe the runtime behavior of a system Know how to document design decisions and their reasons Explore the risks and technical debt of your system Who this book is for This book is for software developers and solutions architects who are looking for an easy, open-source tool to document their systems. It is a useful reference for those who are already using arc42. If you are new to arc42, this book is a great learning resource. For those of you who want to write better technical documentation will benefit from the general concepts covered in this book.

Essential Software Architecture

The surge of interest in the REpresentational State Transfer (REST) architectural style, the Semantic Web, and Linked Data has resulted in the development of innovative, flexible, and powerful systems that embrace one or more of these compatible technologies. However, most developers, architects, Information Technology managers, and platform owners have only been exposed to the basics of resource-oriented architectures. This book is an attempt to catalog and elucidate several reusable solutions that have been seen in the wild in the now increasingly familiar "patterns book" style. These are not turn key implementations, but rather, useful strategies for solving certain problems in the development of modern, resource-oriented systems, both on the public Web and within an organization's firewalls.

Introduction to Electronic Document Management Systems

Software Systems Architecture is a practitioner-oriented guide to designing and implementing effective architectures for information systems. It is both a readily accessible introduction to software architecture and an invaluable handbook of well-established best practices. It shows why the role of the architect is central to any successful information-systems development project, and, by presenting a set of architectural viewpoints and perspectives, provides specific direction for improving your own and your organization's approach to software systems architecture. With this book you will learn how to Design an architecture that reflects and balances the different needs of its stakeholders Communicate the architecture to stakeholders and demonstrate that it has met their requirements Focus on architecturally significant aspects of design, including frequently overlooked areas such as performance, resilience, and location Use scenarios and patterns to drive the creation and validation of your architecture Document your architecture as a set of related views Use perspectives to ensure that your architecture exhibits important qualities such as performance, scalability, and security The architectural viewpoints and perspectives presented in the book also provide a valuable long-term reference source for new and experienced architects alike. Whether you are an aspiring or practicing software architect, you will find yourself referring repeatedly to the practical advice in this book throughout the lifecycle of your projects. A

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supporting Web site containing further information can be found at www.viewpoints-and-perspectives.info

Software Systems Architecture

An in-depth guide of the FreeBSD Operating System Architecture. This manual is available online for free at freebsd.org. This manual is printed in grayscale.

Building Evolutionary Architectures

Software architecture—the conceptual glue that holds every phase of a project together for its many stakeholders—is widely recognized as a critical element in modern software development.

Practitioners have increasingly discovered that close attention to a software system’s architecture pays valuable dividends. Without an architecture that is appropriate for the problem being solved, a project will stumble along or, most likely, fail. Even with a superb architecture, if that architecture is not well understood or well communicated the project is unlikely to succeed. *Documenting Software Architectures, Second Edition*, provides the most complete and current guidance, independent of language or notation, on how to capture an architecture in a commonly understandable form. Drawing on their extensive experience, the authors first help you decide what information to document, and then, with guidelines and examples (in various notations, including UML), show you how to express an architecture so that others can successfully build,

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use, and maintain a system from it. The book features rules for sound documentation, the goals and strategies of documentation, architectural views and styles, documentation for software interfaces and software behavior, and templates for capturing and organizing information to generate a coherent package. New and improved in this second edition: Coverage of architectural styles such as service-oriented architectures, multi-tier architectures, and data models Guidance for documentation in an Agile development environment Deeper treatment of documentation of rationale, reflecting best industrial practices Improved templates, reflecting years of use and feedback, and more documentation layout options A new, comprehensive example (available online), featuring documentation of a Web-based service-oriented system Reference guides for three important architecture documentation languages: UML, AADL, and SysML

Modeling and Simulation Support for System of Systems Engineering Applications

Job titles like “Technical Architect” and “Chief Architect” nowadays abound in software industry, yet many people suspect that “architecture” is one of the most overused and least understood terms in professional software development. Gorton’s book tries to resolve this dilemma. It concisely describes the essential elements of knowledge and key skills required to be a software architect. The explanations encompass the essentials of architecture thinking,

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practices, and supporting technologies. They range from a general understanding of structure and quality attributes through technical issues like middleware components and service-oriented architectures to recent technologies like model-driven architecture, software product lines, aspect-oriented design, and the Semantic Web, which will presumably influence future software systems. This second edition contains new material covering enterprise architecture, agile development, enterprise service bus technologies, RESTful Web services, and a case study on how to use the MeDICi integration framework. All approaches are illustrated by an ongoing real-world example. So if you work as an architect or senior designer (or want to someday), or if you are a student in software engineering, here is a valuable and yet approachable knowledge source for you.

Software Architecture with Python

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 America'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

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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.

System Architecture with XML

Software Engineering

bull; Written by expert practitioners who have hands-on experience solving real-world problems for large corporations bull; Helps enterprise architects make sense of data, systems, software, services, product lines, methodologies, and much more bull; Provides explanation of theory and implementation with real-world business examples to support key points

Process for System Architecture and Requirements Engineering

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Software Systems Architecture, Second Edition is a highly regarded, practitioner-oriented guide to designing and implementing effective architectures for information systems. It is both a readily accessible introduction to software architecture and an invaluable handbook of well-established best practices. With this book you will learn how to Design and communicate an architecture that reflects and balances the different needs of its stakeholders Focus on architecturally significant aspects of design, including frequently overlooked areas such as performance, resilience, and location Use scenarios and patterns to drive the creation and validation of your architecture Document your architecture as a set of related views Reflecting new standards and developments in the field, this new edition extends and updates much of the content, and Adds a “system context viewpoint” that documents the system's interactions with its environment Expands the discussion of architectural principles, showing how they can be used to provide traceability and rationale for architectural decisions Explains how agile development and architecture can work together Positions requirements and architecture activities in the project context Presents a new lightweight method for architectural validation Whether you are an aspiring or practicing software architect, you will find yourself referring repeatedly to the practical advice in this book throughout the lifecycle of your projects. A supporting Web site containing further information can be found at www.viewpoints-and-perspectives.info.

Software Systems Architecture

Software Architecture: A Case Based Approach discusses the discipline using real-world case studies and posing pertinent questions that arouse objective thinking. It encourages the reader to think about the subject in the context of problems that s

Common System and Software Testing Pitfalls

"This book addresses the complex issues associated with software engineering environment capabilities for designing real-time embedded software systems"--Provided by publisher.

FreeBSD Architecture Handbook

This introduction to software engineering and practice addresses both procedural and object-oriented development. Is thoroughly updated to reflect significant changes in software engineering, including modeling and agile methods. Emphasizes essential role of modeling design in software engineering. Applies concepts consistently to two common examples a typical information system and a real-time system. Combines theory with real, practical applications by providing an abundance of case studies and examples from the current literature. A useful reference for software engineers.

The Software Architect Elevator

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"This book isn't just another introduction to use cases. The authors have used their wealth of experience to produce an excellent and insightful collection of detailed examples, explanations, and advice on how to work with use cases." –Maria Ericsson

The toughest challenge in building a software system that meets the needs of your audience lies in clearly understanding the problems that the system must solve. Advanced Use Case Modeling presents a framework for discovering, identifying, and modeling the problem that the software system will ultimately solve. Software developers often employ use cases to specify what should be performed by the system they're constructing. Although use case-driven analysis, design, and testing of software systems has become increasingly popular, little has been written on the role of use cases in the complete software cycle. This book fills that need by describing how to create use case models for complex software development projects, using practical examples to explain conceptual information. The authors extend the work of software visionary Ivar Jacobson, using the Unified Modeling Language (UML) as the notation to describe the book's models. Aimed primarily at software professionals, Advanced Use Case Modeling also includes information that relates use case technique to business processes. This book presents a process for creating and maintaining use case models in a framework that can be fully customized for your organization. The authors, pioneers in the application of use cases in software development, bring their extensive experience to cover topics such as:

- A process model for applying a use case model
- How to keep your use case modeling effort on track
- Tips and

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pitfalls in use case modeling How to organize your use case model for large-system development Similarities between Advanced Use Case Modeling and the Rational Unified Process framework Effect of use cases on user interface design Guidelines for quality use case modeling

Software Architecture in Practice

“Don’s book is a very good addition both to the testing literature and to the literature on quality assurance and software engineering... . [It] is likely to become a standard for test training as well as a good reference for professional testers and developers. I would also recommend this book as background material for negotiating outsourced software contracts. I often work as an expert witness in litigation for software with very poor quality, and this book might well reduce or eliminate these lawsuits....”
–Capers Jones, VP and CTO, Namcook Analytics LLC

Software and system testers repeatedly fall victim to the same pitfalls. Think of them as “anti-patterns”: mistakes that make testing far less effective and efficient than it ought to be. In *Common System and Software Testing Pitfalls*, Donald G. Firesmith catalogs 92 of these pitfalls. Drawing on his 35 years of software and system engineering experience, Firesmith shows testers and technical managers and other stakeholders how to avoid falling into these pitfalls, recognize when they have already fallen in, and escape while minimizing their negative consequences. Firesmith writes for testing professionals and other stakeholders involved in large

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or medium-sized projects. His anti-patterns and solutions address both “pure software” applications and “software-reliant systems,” encompassing heterogeneous subsystems, hardware, software, data, facilities, material, and personnel. For each pitfall, he identifies its applicability, characteristic symptoms, potential negative consequences and causes, and offers specific actionable recommendations for avoiding it or limiting its consequences. This guide will help you Pinpoint testing processes that need improvement—before, during, and after the project Improve shared understanding and collaboration among all project participants Develop, review, and optimize future project testing programs Make your test documentation far more useful Identify testing risks and appropriate risk-mitigation strategies Categorize testing problems for metrics collection, analysis, and reporting Train new testers, QA specialists, and other project stakeholders With 92 common testing pitfalls organized into 14 categories, this taxonomy of testing pitfalls should be relatively complete. However, in spite of its comprehensiveness, it is also quite likely that additional pitfalls and even missing categories of pitfalls will be identified over time as testers read this book and compare it to their personal experiences. As an enhancement to the print edition, the author has provided the following location on the web where readers can find major additions and modifications to this taxonomy of pitfalls: <http://donald.firesmith.net/home/common-testing-pitfalls> Please send any recommended changes and additions to dgf (at) sei (dot) cmu (dot) edu, and the author will consider them for publication both on the website and in future

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editions of this book.

Handbook On Sensor Networks

A set of good practices related to design documentation in automated data processing systems employed for processing classified and other sensitive information. Helps vendor and evaluator community understand what deliverables are required for design documentation and the level of detail required of design documentation at all classes in the Trusted Computer Systems Evaluation Criteria.

Landscape Architecture Documentation Standards

Stockholm, home to the author and also known as "Beauty on the Sea", has much to offer, including a rare insight into ship construction and architecture in the early seventeenth century. Sweden was busy building an empire around the Baltic Sea in northern Europe and a strong navy was essential. During the 1620s Sweden was at war with Poland, and in 1625 the Swedish king Gustavus Adolphus ordered new warships, among them the Vasa. The Vasa was built at the Stockholm shipyard by Henrik Hybertsson-an experienced Dutch shipbuilder. In the seventeenth century, however, architectural drawings and engineering specifications did not exist. Instead of using calculations, shipbuilders used so-called reckoning, which recorded certain ship measurements. The reckoning used in building the Vasa were intended for smaller ships with only one

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gun deck. The Vasa was built quite differently. When in 1628, in the presence of spectators among them foreign diplomats, the Vasa heeled over and sank on its maiden voyage, the experience of the master builder and the skills of the carpenters he employed were not much above what we today would call the component level of the time. The knowledge of buoyancy, ballast, center of gravity and stability was basic at best.

Process-Centric Architecture for Enterprise Software Systems

Achieve better execution with the documentation standards behind an industry-leading firm. Construction Documentation Standards and Best Practices for Landscape Architectural Design offers guidelines, methods, and techniques for creating more robust project documents. Developed and authored by one of the world's leading landscape architectural firms, this material has been field tested by Design Workshop's ten offices and 150 designers to ensure completeness, practicality, and effectiveness. The book provides an overview of the entire design and construction process in the context of actual documentation, with best practice standards for design document content, format, and graphics. Readers learn how to apply these practices to serve the specific needs of different projects, gaining a comprehensive understanding of how complete documentation better serves the project as a whole. Good documentation leads to good execution, which leads to better performance from the perspectives of

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durability, safety, and user enjoyment. This book presents a set of standards that serve as a roadmap of the design process, helping designers provide the complete documentation that the most highly executed projects require. Discover how documentation ties into project performance Learn the best practices for documenting every stage of the process Study actual project documents serving various project needs Gain documentation insights from one of the world's top firms Design Workshop has been an industry leader since 1969, with projects ranging from resorts, to wildlife refuges, to county master plans. The value of their insight is proven by the continued high performance of their projects across the U.S. and beyond, and this book contains the standards, techniques, and actual documentation behind this success. Better outcomes require better execution, which starts with the documentation standards presented in Construction Documentation Standards and Best Practices for Landscape Architectural Design.

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