Software Architecture Document Example

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Software architecture is a primary factor in the creation and evolution of virtually all products involving software. It is a topic of major interest in the research community where pronusmg formalisms, processes, and technologies are under development. Architecture is also of major interest in industry because it is recognized as a significant leverage point for manipulating such basic development factors as cost, quality, and interval. Its importance is attested to by the fact that there are several international workshop series as well as major conference sessions devoted to it. The First Working IFIP Conference on Software Architecture (WICSAl) provided a focused and dedicated forum for the international software architecture community to unify and coordinate its effort to advance the state of practice and research. WICSA 1 was organized to facilitate information exchange between practising software architects and software architecture researchers. The conference was held in San Antonio, Texas, USA, from February 22nd to February 24th, 1999; it was the initiating event for the new IFIP TC-2 Working Group on Software Architecture. This proceedings document contains the papers accepted for the conference. The papers in this volume comprise both experience reports and technical papers. The proceedings reflect the structure of the conference and are divided into six sections corresponding to the working groups established for the conference.

Software Design Methodology explores the theory of software architecture, with particular emphasis on general design principles rather than specific methods. This book provides in depth coverage of large scale software systems and the handling of their design problems. It will help students gain an understanding of the general theory of design methodology, and especially in analysing and evaluating software architectural designs, through the use of case studies and examples, whilst broadening their knowledge of large-scale software systems. This book shows how important factors, such as globalisation, modelling, coding, testing and maintenance, need to be addressed when creating a modern information system. Each chapter contains expected learning outcomes, a summary of key points and exercise questions to test knowledge and skills. Topics range from the basic concepts of design to software design quality; design strategies and processes; and software architectural styles. Theory and practice are reinforced with many worked examples and exercises, plus case studies on extraction of keyword vector from text; design space for user interface architecture; and document editor. Software Design Methodology is intended for IT industry professionals as well as software engineering and computer science undergraduates and graduates on Msc conversion courses. * In depth coverage of large scale software systems and the handling of their design problems * Many worked examples, exercises and case studies to reinforce theory and practice * Gain an understanding of the general theory of design methodology

What is this book about? Open source technology enables you to build customized enterprise portal frameworks with more flexibility and fewer limitations. This book explains the fundamentals of a powerful set of open source tools and shows you how to use them. An outstanding team of authors provides a complete tutorial and reference guide to Java Portlet API, Lucene, James, and Slide, taking you step-by-step through constructing and deploying portal applications. You trace the anatomy of a search engine and understand the Lucene query syntax, set up Apache James configuration for a variety of servers, explore object to relational mapping concepts with Jakarta OJB, and acquire many other skills necessary to create J2EE portals uniquely suited to the needs of your organization. Loaded with code-intensive examples of portal applications, this book offers you the know-how to free your development process from the restrictions of pre-packaged solutions. What does this book cover? Here's what you will learn in this book: How to evaluate business requirements and plan the portal How to develop an effective browser environment How to provide a search engine, messaging, database inquiry, and content management services in an integrated portal application How to develop Web services for the portal How to monitor, test, and administer the portal How to create portlet applications compliant with the Java Portlet API How to reduce the possibility of errors while managing the portal to accommodate change How to plan for the next generation application portal Who is this book for? This book is for professional Java developers who have some experience in portal development and want to take advantage of the options offered by open source tools.

The purpose of large-scale software architecture is to capture and describe practical representations to make development teams more effective. In this book the authors show how to utilise software architecture as a tool to guide the development instead of capturing the architectural details after all the design decisions have been made. * Offers a concise description of UML usage for large-scale architecture * Discusses software architecture and design principles * Technology and vendor independent

"Per Kroll and Philippe Kruchten are especially well suited to explain the RUP...because they have been the central forces inside Rational Software behind the creation of the RUP and its delivery to projects around the world." --From the Foreword by Grady Booch This book is a comprehensive guide to modern software development practices, as embodied in the Rational Unified Process, or RUP. With the help of this book's practical advice and insight, software practitioners will learn how to tackle challenging development projects--small and large--using an iterative and risk-driven development approach with a proven track record. The Rational Unified Process Made Easy will teach you the key points involved in planning and managing iterative projects, the fundamentals of component design and software architecture, and the proper employment of use cases. All team members--from project managers to analysts, from developers to testers--will learn how to immediately apply the RUP to their work. You will learn that the RUP is a flexible, versatile process framework that can be tailored to suit the needs of development projects of all types and sizes. Key topics covered include: How to use the RUP to develop iteratively, adopt an architecture-centric approach, mitigate risk, and verify software quality Tasks associated with the four phases of the RUP: Inception, Elaboration, Construction, and Transition Roles and responsibilities of project managers, architects, analysts, developers, testers, and process engineers in a RUP

project Incrementally adopting the RUP with minimal risk Common patterns for failure with the RUP--and how to avoid them Use this book to get quickly up to speed with the RUP, so you can easily employ the significant power of this process to increase the productivity of your team.

This coherently written book is the final report on the IPSEN project on Integrated Software Project Support Environments devoted to the integration of tools for the development and maintenance of large software systems. The theoretical and application-oriented findings of this comprehensive project are presented in the following chapters: Overview: introduction, classification, and global approach; The outside perspective: tools, environments, their integration, and user interface; Internal conceptual modeling: graph grammar specifications; Realization: derivation of efficient tools, Current and future work, open problems; Conclusion: summary, evaluation, and vision. Also included is a comprehensive bibliography listing more than 1300 entries and a detailed index.

The most comprehensive General, Organic, and Biochemistry book available, Introduction to General, Organic, and Biochemistry, 11th Edition continues its tradition of a solid development of problem-solving skills, numerous examples and practice problems, along with coverage of current applications. Written by an experienced author team, they skillfully anticipate areas of difficulty and pace the book accordingly. Readers will find the right mix of general chemistry compared to the discussions on organic and biochemistry. Introduction to General, Organic, and Biochemistry, 11th Edition has clear & logical explanations of chemical concepts and great depth of coverage as well as a clear, consistent writing style which provides great readability. An emphasis on Real-World aspects of chemistry makes the reader comfortable in seeing how the chemistry will apply to their career.

The right software architecture is essential for a software-intensive system to meet its functional requirements as well as its quality requirements that govern real-time performance, reliability, maintainability, and a host of other quality attributes. Because an architecture comprises the earliest, most important, and most far-reaching design decisions, it is important for an acquisition organization to exercise its oversight prerogatives with respect to software architecture. Having the right software architecture documentation is a prerequisite for managing and guiding a software development effort and conducting in situ software architecture evaluations. Conducting an architecture evaluation to determine the software architecture's fitness for purpose is one of the most powerful, technical risk mitigation strategies available to a program office. This report provides an example reference standard for a Software Architecture Document (SAD). An acquisition organization can use this standard to contractually acquire the documentation needed for communicating the software architecture design and conducting software architecture evaluations. The example used in this report is drawn from an actual SAD written by a major U.S. Department of Defense contractor in a weapon system acquisition. The intent of this report is to provide an example for other acquisition efforts to use (and adapt as appropriate) in their own procurements.

This volume provides an overview of current work in software engineering techniques that can enhance the quality of software. The chapters of this volume, organized by key topic area, create an agenda for the IFIP Working Conference on Software Engineering Techniques, SET 2006. The seven sections of the volume address the following areas: software architectures, modeling, project management, software quality, analysis and verification methods, data management, and software maintenance.

Architecture is crucial to the success of any large software system -- but even a superb architecture will fail if it isn't communicated well. Now, there's a language- and notation-independent guide to capturing architecture so it can be used successfully by every analyst, software designer, and developer. The authors review the diverse goals and uses of software architecture documentation, providing documentation strategies for several common scenarios. They identify the basic unit of software architecture documentation: the viewtype, which specifies the type of information to be provided in an architectural view. For each viewtype -- Modules, Component-and-Connectors, and Allocation -- they offer detailed guidance on documenting what really matters. Next, they demonstrate how to package architecture documentation in coherent, usable form: augmenting architectural views with documentation of interfaces and behavior; accounting for architectural variability and dynamic systems; and more.

A Comprehensive Process for Defining Software Architectures That Work A good software architecture is the foundation of any successful software system. Effective architecting requires a clear understanding of organizational roles, artifacts, activities performed, and the optimal sequence for performing those activities. With The Process of Software Architecting , Peter Eeles and Peter Cripps provide guidance on these challenges by covering all aspects of architecting a software system, introducing best-practice techniques that apply in every environment, whether based on Java EE, Microsoft .NET, or other technologies. Eeles and Cripps first illuminate concepts related to software architecture, including architecture documentation and reusable assets. Next, they present an accessible, task-focused guided tour through a typical project, focusing on the architect’s role, with common issues illuminated and addressed throughout. Finally, they conclude with a set of best practices that can be applied to today’s most complex systems. You will come away from this book understanding The role of the architect in a typical software development project How to document a software architecture to satisfy the needs of different stakeholders The applicability of reusable assets in the process of architecting The role of the architect with respect to requirements definition The derivation of an architecture based on a set of requirements The relevance of architecting in creating complex systems The Process of Software Architecting will be an indispensable resource for every working and aspiring software architect—and for every project manager and other software professional who needs to understand how architecture influences their work.

Software Development is the most thorough, realistic guide to "what works" in software development - and how to make it happen in your organization. Leading consultant Marc Hamilton tackles all three key elements of successful development: people, processes, and technology. From streamlining infrastructures to retraining programmers, choosing tools to implementing service level agreements, Hamilton unifies all of today's best practices - in management, architecture, and software engineering.

A software architecture manifests the major early design decisions, which determine the system’s development, deployment and evolution. Thus, making better architectural decisions is one of the large challenges in software engineering. Software architecture knowledge management is about capturing practical experience and translating it into generalized architectural knowledge, and using this knowledge in the communication with stakeholders during all phases of the software lifecycle. This book presents a concise description of knowledge management in the software architecture discipline. It explains the importance of sound knowledge management practices for improving software architecture processes and products, and makes clear the role of knowledge management in software architecture and software development processes. It presents many approaches that are in use in software companies today, approaches that have been used in other domains, and approaches under development in academia. After an initial introduction by the editors, the contributions are grouped in three parts on "Architecture Knowledge Management", "Strategies and Approaches for Managing Architectural Knowledge", and "Tools and Techniques for Managing Architectural Knowledge". The presentation aims at information technology and software engineering professionals, in particular software architects and software architecture researchers. For the industrial audience, the book gives a broad and concise understanding of the importance of knowledge management for improving software architecture process and building capabilities in designing

and evaluating better architectures for their mission- and business-critical systems. For researchers, the book will help to understand the applications of various knowledge management approaches in an industrial setting and to identify research challenges and opportunities.
Software Testing Concepts and Tools provide experience-based practices and key concepts that can be used by any organization to implement a successful and efficient testing process. This book provides experience-based practices and key concepts that can be used by an organization to implement a successful and efficient testing process. The prime aim of this book is to provide a distinct collection of technologies and discussions that are directly applicable in software development organizations to improve the quality and avoid major mistakes and human errors.· Software Engineering Evaluation· System Testing Process· WinRunner 8.0· QTP 8.2· LoadRunner 8.0· TestDirector 8.0
This tutorial reference takes the reader from use cases to complete architectures for real-time embedded systems using SysML, UML, and MARTE and shows how to apply the COMET/RTE design method to real-world problems. The author covers key topics such as architectural patterns for distributed and hierarchical real-time control and other real-time software architectures, performance analysis of real-time designs using real-time scheduling, and timing analysis on single and multiple processor systems. Complete case studies illustrating design issues include a light rail control system, a microwave oven control system, and an automated highway toll system. Organized as an introduction followed by several self-contained chapters, the book is perfect for experienced software engineers wanting a quick reference at each stage of the analysis, design, and development of large-scale real-time embedded systems, as well as for advanced undergraduate or graduate courses in software engineering, computer engineering, and software design.
Modeling complex systems is a difficult challenge and all too often one in which modelers are left to their own devices. Using a multidisciplinary approach, The Art of Software Modeling covers theory, practice, and presentation in detail. It focuses on the importance of model creation and demonstrates how to create meaningful models. Presenting three self-contained sections, the text examines the background of modeling and frameworks for organizing information. It identifies techniques for researching and capturing client and system information and addresses the challenges of presenting models to specific audiences. Using concepts from art theory and aesthetics, this broad-based approach encompasses software practices, cognitive science, and information presentation. The book also looks at perception and cognition of diagrams, view composition, color theory, and presentation techniques. Providing practical methods for investigating and organizing complex information, The Art of Software Modeling demonstrates the effective use of modeling techniques to improve the development process and establish a functional, useful, and maintainable software system.
Part of the new series, Advanced Topics in Science and Technology in China, this book aims to introduce the theoretical foundations, various sub-fields, current research, and practical methods of software architecture. First off, readers can acquire a basic knowledge of software architecture, including why software architecture is necessary. They are then shown how to describe a system’s architecture with formal language. The authors continue by delineating which architecture styles are popular in practice.
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.
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 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 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.
Agile software development approaches have had significant impact on industrial software development practices. Today, agile software development has penetrated to most IT companies across the globe, with an intention to increase quality, productivity, and profitability. Comprehensive knowledge is needed to understand the architectural challenges involved in adopting and using agile approaches and industrial practices to deal with the development of large, architecturally challenging systems in an agile way. Agile Software Architecture focuses on gaps in the requirements of applying architecture-centric approaches and principles of agile software development and demystifies the agile architecture paradox. Readers will learn how agile and architectural cultures can co-exist and support each other according to the context. Moreover, this book will also provide useful leads for future research in architecture and agile to bridge such gaps by developing appropriate approaches that incorporate architecturally sound practices in agile methods. Presents a consolidated view of the state-of-art and state-of-practice as well as the newest research findings Identifies gaps in the requirements of applying architecture-centric approaches and principles of agile software development and demystifies the agile architecture paradox Explains whether or not and how agile and architectural cultures can co-exist and support each other depending upon the context Provides useful leads for future research in both architecture and agile to bridge such gaps by developing appropriate approaches, which incorporate architecturally sound practices in agile methods

Abstract: "A data model is commonly created to describe the structure of the data handled in information systems and persisted in database management systems. That structure is often represented in entity-relationship diagrams or UML class diagrams. These diagrams basically show data entities and their relationships. The data model for a given system can be seen as an architectural view. Code units (e.g., classes, packages) and runtime components (e.g., processes, threads) are most commonly regarded as software architecture elements. However, a software architecture document may contain architectural views that show other types of elements beyond these first class software elements -- a deployment view showing hardware nodes and deployment files is an example. The data model showing the structure of the database in terms of data entities and their relationships is another example. Among other practical purposes, the data model serves as the blueprint for the physical database, helps implementation of the data access layer of the system, and has strong impact on performance and modifiability. This technical note describes the elements, relations, constraints, and notations for the data model."

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, 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.

This book fills a gap between high–level overview texts that are often too general and low–level detail oriented technical handbooks that lose sight the "big picture". This book discusses SOA from the low–level perspective of middleware, various XML–based technologies, and basic service design. It also examines broader implications of SOA, particularly where it intersects with business process management and process modeling. Concrete overviews will be provided of the methodologies in those fields, so that students will have a hands–on grasp of how they may be used in the context of SOA.

bull; Fully revised and updated to reflect the latest trends in software architecture bull; Allows you to execute heavyweight or lightweight approaches to architecture and identify the best architectural model for any project bull; Added coverage of UML 2.0 and Model-Driven Architecture

Welcome to the European Conference on Software Architecture (ECSA), which is the premier European software engineering conference. ECSA provides researchers and practitioners with a platform to present and discuss the most recent, innovative, and significant findings and experiences in the field of software architecture research and practice. The fourth edition of ECSA was built upon a history of a successful series of European workshops on software architecture held from 2004 through 2006 and a series of European software architecture conferences from 2007 through 2009. The last ECSA was merged with the 8th Working IEEE/IFIP Conference on Software Architecture (WICSA). Apart from the traditional technical program consisting of keynote talks, a main - search track, and a poster session, the scope of the ECSA 2010 was broadened to incorporate other tracks such as an industry track, doctoral symposium track, and a tool demonstration track. In addition, we also offered several workshops and tutorials on diverse topics related to software architecture. We received more than 100 submissions in the three main categories: full research and experience papers, emerging research papers, and research challenges papers. The conference attracted papers (co-)authored by researchers, practitioners, and academics from 30 countries (Algeria, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Colombia, Czech Republic, Denmark, Finland, France, Germany, Hong Kong, I- land, India, Ireland, Israel, Italy, The Netherlands, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Tunisia, United Kingdom, United States).

Component-based software development (CBD) is an emerging discipline that promises to take software engineering into a new era. Building on the achievements of object-oriented software construction, CBD aims to deliver software engineering from a cottage industry into an industrial age for Information Technology, wherein software can be assembled from components, in the manner that hardware systems are currently constructed from kits of parts. This volume provides a survey of the current state of CBD, as reflected by activities that have been taking place recently under the banner of CBD, with a view to giving pointers to future trends. The contributions report case studies - self-contained, fixed-term investigations with a finite set of clearly defined objectives and measurable outcomes - on a sample of the myriad aspects of CBD. The book includes chapters dealing with COTS (commercial off-the-shelf) components; methodologies for CBD; compositionality, i.e. how to calculate or predict properties of a composite from those of its constituents; component software testing; and grid computing.

Internet-based information systems, the second covering the large-scale in- gration of heterogeneous computing systems and data resources with the aim of providing a global computing space.

Eachofthesefourconferencesencouragesresearcherstotreattheirrespective topics within a framework that incorporates jointly (a) theory, (b) conceptual design and development, and (c) applications, in particular case studies and industrial solutions. Following and expanding the model created in 2003, we again solicited and selected quality workshop proposals to complement the more “archival” nature of the main conferences with research results in a number of selected and more “avant-garde” areas related to the general topic of Web-based distributed c- puting. For instance, the so-called Semantic Web has given rise to several novel research areas combining linguistics, information systems technology, and ar- ?cial intelligence, such as the modeling of (legal) regulatory systems and the ubiquitous nature of their usage. We were glad to see that ten of our earlier s- cessful workshops (ADI, CAMS, EI2N, SWWS, ORM, OnToContent, MONET, SEMELS, COMBEK, IWSSA) re-appeared in 2008 with a second, third or even ?fth edition, sometimes by alliance with other newly emerging workshops, and that no fewer than three brand-new independent workshops could be selected from proposals and hosted: ISDE, ODIS and Beyond SAWSDL. Workshop - diences productively mingled with each other and with those of the main c- ferences, and there was considerable overlap in authors.

This book introduces the concept of software architecture as one of the cornerstones of software in modern cars. Following a historical overview of the evolution of software in modern cars and a discussion of the main challenges driving that evolution, Chapter 2 describes the main architectural styles of automotive software and their use in cars' software. Chapter 3 details this further by presenting two modern architectural styles, i.e. centralized and federated software architectures. In Chapter 4, readers will find a description of the software development processes used to develop software on the car manufacturers' side. Chapter 5 then introduces AUTOSAR - an important standard in automotive software. Chapter 6 goes beyond simple architecture and describes the detailed design process for automotive software using Simulink, helping readers to understand how detailed design links to high-level design.^The new chapter 7 reports on how machine learning is exploited in automotive software e.g. for image recognition and how both on-board and off-board learning are applied. Next, Chapter 8 presents a method for assessing the quality of the architecture - ATAM (Architecture Trade-off Analysis Method) - and provides a sample assessment, while Chapter 9 presents an alternative way of assessing the architecture, namely by using quantitative measures and indicators. Subsequently Chapter 10 dives deeper into one of the specific properties discussed in Chapter 8 - safety - and details an important standard in that area, the ISO/IEC 26262 norm. Lastly, Chapter 11 presents a set of future trends that are currently emerging and have the potential to shape automotive software engineering in the coming years. This book explores the concept of software architecture for modern cars and is intended for both beginning and advanced software designers.^It mainly aims at two different groups of audience - professionals working with automotive software who need to understand concepts related to automotive architectures, and students of software engineering or related fields who need to understand the specifics of automotive software to be able to construct cars or their components. Accordingly, the book also contains a wealth of real-world examples illustrating the concepts discussed and requires no prior background in the automotive domain. Compared to the first edition, besides the two new chapters 3 and 7 there are considerable updates in chapters 5 and 8 especially.

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 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.

Conallen introduces architects and designers and client/server systems to issues and techniques of developing software for the Web. He expects readers to be familiar with object-oriented principles and concepts, particularly with UML (unified modeling language), and at least one Web application architecture or environment. The second edition incorporates both technical developments and his experience since 1999. He does not provide a bibliography. Annotation copyrighted by Book News, Inc., Portland, OR

This work provides a comprehensive overview of research and practical issues relating to component-based development information systems (CBIS). Spanning the organizational, developmental, and technical aspects of the subject, the original research included here provides fresh insights into successful CBIS technology and application. Part I covers component-based development methodologies and system architectures. Part II analyzes different aspects of managing component-based development. Part III investigates component-based development versus commercial off-the-shelf products (COTS), including the selection and trading of COTS products.

As a software architect you work in a wide-ranging and dynamic environment. You have to understand the needs of your customer, design architectures that satisfy both functional and non-functional requirements, and lead development teams in implementing the architecture. And it is an environment that is constantly changing: trends such as cloud computing, service orientation, and model-driven procedures open up new architectural possibilities. This book will help you to develop a holistic architectural awareness and knowledge base that extends beyond concrete methods, techniques, and technologies. It will also help you to acquire or expand the technical, methodological, and social competences that you need. The authors place the spotlight on you, the architect, and offer you long-term architectural orientation. They give you numerous guidelines, checklists, and best practices to support you in your practical work. "Software Architecture" offers IT students, software developers, and software architects a holistic and consistent orientation across relevant topics. The book also provides valuable information and suggestions for system architects and enterprise architects, since many of the topics presented are also relevant for their work. Furthermore, IT project leads and other IT managers can use the book to acquire an enhanced understanding of architecture. Further information is available at www.software-

architecture-book.org.
Architectural design is a crucial first step in developing complex software intensive systems. Early design decisions establish the structures necessary for achieving broad systemic properties. However, today's organizations lack synergy between software their development processes and technological methodologies. Providing a thorough treatment of
Presents three methods for evaluating the structure of large software systems during the design phase. The three techniques separately test for whether quality goals are met and how they interact; for modifiability and functionality; and for the feasibility and suitability of a set of services provided by a portion of the system. The authors, who are members of Carnegie Mellon's Software Engineering Institute, illustrate how to apply each step of the methods through case studies. c. Book News Inc.
Computer Architecture/Software Engineering
Software patterns have revolutionized the way developers think about how software is designed, built, and documented, and this unique book offers an in-depth look of what patterns are, what they are not, and how to use them successfully The only book to attempt to develop a comprehensive language that integrates patterns from key literature, it also serves as a reference manual for all pattern-oriented software architecture (POSA) patterns Addresses the question of what a pattern language is and compares various pattern paradigms Developers and programmers operating in an object-oriented environment will find this book to be an invaluable resource
The complexity of software is continuously growing as a result of today’s interconnected business processes. Governance of architecture and technology strategy helps to ensure coherence of software and avoid excessive complexity. At the same time software development needs room for creativity and empowerment to provide solutions to business problems of increasing complexity. The book looks at this software dilemma from the perspectives of CIOs/CTOs, software architects, and auditors. Each of these groups has different interests which need to be considered, reconciled, and balanced. CIOs/CTOs are provided with the boundary conditions they have to establish assuring the achievement of strategic objectives. Architects and auditors find proven concepts for effectively assessing software projects and architectures, as well as for effectively communicating identified issues to responsible persons. The book is based on the author’s long experience in software engineering, governance, and auditing.
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