

Uml Components A Simple Process For Specifying Component Based Software Component Based Development Series

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.

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.

The 2009 Symposium on Component-Based Software Engineering (CBSE 2009) was the 12th in a series of successful events that have grown into the main forum for industrial and academic experts to discuss component technology.

Component-based software engineering (CBSE) has emerged as the underlying technology for the assembly of flexible software systems. In essence, CBSE is about composing computational building blocks to construct larger building blocks that fulfill client needs. Most software engineers are involved in some form of component-based development. Nonetheless, the implications of CBSE adoption are wide-reaching and its challenges grow in tandem with its uptake, continuing to inspire our scientific speculation. Component-based development necessarily involves elements of software architecture, modular software design, software verification, testing, configuration and deployment. This year's submissions represent a cross-section of CBSE research that touches upon all these aspects. The theoretical foundations of component specification, composition, analysis, and verification continue to pose research challenges. What exactly constitutes an adequate semantics for communication and composition so that bigger things can be built from smaller things? How can formal approaches facilitate predictable assembly through better analysis? We have grouped the proceedings into two sub-themes that deal with these issues: component models and communication and composition. At the same time, the world is changing.

This book constitutes the refereed post-proceedings of the 13th International Conference on AI, Simulation, and Planning in High Autonomy Systems, AIS 2004, held in Jeju Island, Korea in October 2004. The 74 revised full papers presented together with 2 invited keynote papers were carefully reviewed and selected from 170 submissions; after the conference, the papers went through another round of revision. The papers are organized in topical sections on modeling and simulation methodologies, intelligent control, computer and network security, HLA and simulator interoperability, manufacturing, agent-based modeling, DEVS modeling and simulation, parallel and distributed modeling and simulation, mobile computer networks, Web-based simulation and natural systems, modeling and simulation environments, AI and simulation, component-based modeling, watermarking and semantics, graphics, visualization and animation, and business modeling.

This is the refereed proceedings of the 9th International Symposium on Component-Based Software Engineering, CBSE 2006, held in Västerås, Sweden in June/July 2006. The 22 revised full papers and 9 revised short papers presented cover issues concerned with the development of software-intensive systems from reusable parts, the development of reusable parts, and system maintenance and improvement by means of component replacement and customization.

"This publication contains papers that present original results in business modeling and enterprise engineering, database research, data engineering, data quality and data analysis, IS engineering, Web engineering, and application of AI methods. The contributions are from academics and practitioners from the entire world. We hope that the presented results will contribute to the further development of research in DB and IS field. The conference where these papers were presented has been approved by the IEEE Communication Society for Technical Cosponsorship. All papers have been extended significantly and rewritten completely. They have been reviewed by at least 3 reviewers from different countries who evaluated their originality, significance, relevance, and presentation and found their quality suitable for the publication in this volume."

Software is the essential enabler for the new economy and science. It creates new markets and new directions for a more reliable, flexible, and robust society. It empowers the exploration of our world in ever more depth. However, software often falls short behind our expectations. Current software methodologies, tools, and techniques remain expensive and not yet reliable for a highly changeable and evolutionary market. Many approaches have been proven only as case-by-case oriented methods. This book presents a number of new trends and theories in the direction in which we believe software science and engineering may develop to transform the role of software and science in tomorrow's information society. This book is an attempt to capture the essence of a new state of art in software science and its supporting technology. The book also aims at identifying the challenges such a technology has to master. This book

covers subjects on Ontology and Software Requirement, Enterprise and Conceptual Software Models, Declarative Representation for Software Development, Requirement Representation and Formalization, Formal Specification and Language Interpretation, Legacy Systems and Language Conversions, Software Quality and Development Measurement, and Software Development Practices Models examples. Each of these chapters contains well-reviewed and selected papers, so the reader can enjoy the state-of-the-art on the need on such new emerged technology. The book describes a method for developing the testing of components in parallel with their functionality based on models. UML models are used to derive the testing architecture for an application, the testing interfaces and the component testers. The method provides a process and guidelines for modeling and developing these artifacts. The book also discusses the implications of built-in contract testing with other component-based development technologies such as product-line engineering, middleware platforms, reuse principles etc. Still further, it describes a new method for specifying and checking real-time properties of object-oriented, component-based real-time systems that are based on dynamic execution time analysis with optimization algorithms.

Doing Hard Time is written to facilitate the daunting process of developing real-time systems. It presents an embedded systems programming methodology that has been proven successful in practice. The process outlined in this book allows application developers to apply practical techniques - garnered from the mainstream areas of object-oriented software development - to meet the demanding qualifications of real-time programming. Bruce Douglass offers ideas that are up-to-date with the latest concepts and trends in programming. By using the industry standard Unified Modeling Language (UML), as well as the best practices from object technology, he guides you through the intricacies and specifics of real-time systems development. Important topics such as schedulability, behavioral patterns, and real-time frameworks are demystified, empowering you to become a more effective real-time programmer.

This book presents a set of principles for designing frameworks and practical techniques for adapting them efficiently. It also describes how UML may be used to model frameworks and their applications and proposes a set of extensions to the UML which apply specifically to framework design.

Component-based software development, CBSD, is no longer just one more new paradigm in software engineering, but is effectively used in development and practice. So far, however, most of the efforts from the software engineering community have concentrated on the functional aspects of CBSD, leaving aside the treatment of the quality issues and extra-functional properties of software components and component-based systems. This book is the first one focusing on quality issues of components and component-based systems. The 16 revised chapters presented were carefully reviewed and selected for inclusion in the book; together with an introductory survey, they give a coherent and competent survey of the state of the art in the area. The book is organized in topical parts on COTS selection, testing and certification, software component quality models, formal models to quality assessment, and CBSD management.

Martin Fowler is a consultant specializing in object-oriented analysis and design. This book presents and discusses a number of object models derived from various problem domains. All patterns and models presented have been derived from the author's own consulting work and are based on real business cases.

"Designing a large software system is an extremely complicated undertaking that requires juggling differing perspectives and differing goals, and evaluating differing options. Applied Software Architecture is the best book yet that gives guidance as to how to sort out and organize the conflicting pressures and produce a successful design." -- Len Bass, author of Software Architecture in Practice. Quality software architecture design has always been important, but in today's fast-paced, rapidly changing, and complex development environment, it is essential. A solid, well-thought-out design helps to manage complexity, to resolve trade-offs among conflicting requirements, and, in general, to bring quality software to market in a more timely fashion. Applied Software Architecture provides practical guidelines and techniques for producing quality software designs. It gives an overview of software architecture basics and a detailed guide to architecture design tasks, focusing on four fundamental views of architecture--conceptual, module, execution, and code. Through four real-life case studies, this book reveals the insights and best practices of the most skilled software architects in designing software architecture. These case studies, written with the masters who created them, demonstrate how the book's concepts and techniques are embodied in state-of-the-art architecture design. You will learn how to: create designs flexible enough to incorporate tomorrow's technology; use architecture as the basis for meeting performance, modifiability, reliability, and safety requirements; determine priorities among conflicting requirements and arrive at a successful solution; and use software architecture to help integrate system components. Anyone involved in software architecture will find this book a valuable compendium of best practices and an insightful look at the critical role of architecture in software development. 0201325713B07092001

This book contains a range of essays on topics in the emerging field of 'constitutional political economy'. This field of enquiry is strongly associated with the name of James M. Buchanan whose research program has been the point of departure for this field. The essays are a selection of those written by colleagues and researchers in the field to honor Buchanan on the occasion of his 80th birthday. They cover a wide range of topics but fall primarily into two sets: one set dealing with methodological aspects of the c.p.e. approach; the other dealing with specific applications in a variety of policy areas, ranging from 'economic transformation' to monetary policy regimes to health care. One particular issue in the methodological area relates to the model of motivation used - and more especially, the role of 'morality' in economic and political behavior. The five essays on this topic make up one of the sections of the book, and justify reference to the issue in the volume's title.

Annotation The instruction put forth in this new book is all related to successfully using Select Perspective, a process conceived and marketed by Select Business solutions, a division of Aonix. Select Perspective is a pragmatic, component-based software development process that can be implemented by all roles in software development, and includes the

business people that specify, accept, verify and use software solutions. Every individual who is involved in the specification, acceptance, construction, testing, delivery or budgetary control of software solutions will benefit from this book. The authors have helped organizations realize the benefit of component-based development with Select Perspective, and this book shows how it can be done, taking into account varying team sizes, uneven skill levels, and different industries. The book uses the UML for expression of designs, and will allow the reader to meet the demands of web services.

This book provides a good opportunity for software engineering practitioners and researchers to get in sync with the current state-of-the-art and future trends in component-based embedded software research. The book is based on a selective compilation of papers that cover the complete component-based embedded software spectrum, ranging from methodology to tools. Methodology aspects covered by the book include functional and non-functional specification, validation, verification, and component architecture. As tools are a critical success factor in the transfer from academia-generated knowledge to industry-ready technology, an important part of the book is devoted to tools. This state-of-the-art survey contains 16 carefully selected papers organised in topical sections on specification and verification, component compatibility, component architectures, implementation and tool support, as well as non-functional properties.

Computing has been an enormous accelerator to science and industry alike and it has led to an information explosion in many different fields. The unprecedented volume of data acquired from sensors, derived by simulations and data analysis processes, accumulated in warehouses, and often shared on the Web, has given rise to a new field of research: provenance management. Provenance (also referred to as audit trail, lineage, and pedigree) captures information about the steps used to generate a given data product. Such information provides important documentation that is key to preserving data, to determining the data's quality and authorship, to understanding, reproducing, as well as validating results. Provenance management has become an active field of research, as evidenced by recent specialized workshops, surveys, and tutorials. Provenance solutions are needed in many different domains and applications, from environmental science and physics simulations, to business processes and data integration in warehouses. Not surprisingly, different techniques and provenance models have been proposed in many areas such as workflow systems, visualization, databases, digital libraries, and knowledge representation. An important challenge we face today is how to integrate these techniques and models so that complete provenance can be derived for complex data products. The International Provenance and Annotation Workshop (IPAW 2008) was a follow-up to previous workshops in Chicago (2006, 2002) and Edinburgh (2003). It was held during June 17-18, in Salt Lake City, at the University of Utah campus. IPAW 2008 brought together computer scientists from different areas and provenance users to discuss open problems related to the provenance of computational and non-computational artifacts. A total of 55 people attended the workshop.

Overviews the process of building and compiling executable UML models for software development. The book focuses on the BridgePoint tool suite and object action language developed by Project Technology. The authors discuss identifying system requirements, diagramming classes and attributes, constraints on the class diagram, ways of building sets of communicating statechart diagrams, and model verification. Annotation copyrighted by Book News, Inc., Portland, OR.

On behalf of the Organizing Committee we are pleased to present the proceedings of the 2008 Symposium on Component-Based Software Engineering (CBSE). CBSE is concerned with the development of software-intensive systems from independently developed software-building blocks (components), the development of components, and system maintenance and improvement by means of component replacement and customization. CBSE 2008 was the 11th in a series of events that promote a science and technology foundation for achieving predictable quality in software systems through the use of software component technology and its associated software engineering practices.

We were fortunate to have a dedicated Program Committee comprising many internationally recognized researchers and industrial practitioners. We would like to thank the members of the Program Committee and associated reviewers for their contribution in making this conference a success. We received 70 submissions and each paper was reviewed by at least three Program Committee members (four for papers with an author on the Program Committee). The entire reviewing process was supported by the Conference Management Toolkit provided by Microsoft. In total, 20 submissions were accepted as full papers and 3 submissions were accepted as short papers.

A guide to using UML describes major UML diagrams, their creation, and how to decipher them.

The four-volume set LNCS 3480-3483 constitutes the refereed proceedings of the International Conference on Computational Science and Its Applications, ICCSA 2005, held in Singapore in May 2005. The four volumes present a total of 540 papers selected from around 2700 submissions. The papers span the whole range of computational science, comprising advanced applications in virtually all sciences making use of computational techniques as well as foundations, techniques, and methodologies from computer science and mathematics, such as high performance computing and communication, networking, optimization, information systems and technologies, scientific visualization, graphics, image processing, data analysis, simulation and modelling, software systems, algorithms, security, multimedia etc.

This book constitutes the thoroughly refereed post-conference proceedings of the 4th IFIP TC2 Central and East European Conference on Software Engineering Techniques, CEE-SET 2009, held in Krakow, Poland, in October 2009. The 19 revised full papers presented were carefully reviewed and selected from 63 submissions. The papers are organized in topical sections on software architectures and development; modelling and formal methods in software development; measurements, testing, and quality of software.

This Three-Volume-Set constitutes the refereed proceedings of the Second International Conference on Software Engineering and Computer Systems, ICSECS 2011, held in Kuantan, Malaysia, in June 2011. The 190 revised full papers presented together with invited papers in the three volumes were carefully reviewed and selected from numerous submissions. The papers are organized in topical sections on software engineering; network; bioinformatics and e-health; biometrics technologies; Web engineering; neural network; parallel and distributed; e-learning; ontology; image processing; information and data management; engineering; software security; graphics and multimedia; databases; algorithms; signal processing; software design/testing; e-technology; ad hoc networks; social networks; software process modeling; miscellaneous topics in software engineering and computer systems.

Thoroughly updated and fully compliant with Rational Rose 2002, the latest release of the industry's most popular software modeling tool, this edition contains simplified, useful case studies and helps the reader understand the core concepts of modeling and how to use UML effectively.

The UML was conceived and first implemented as a language for describing the design of object-oriented programs. Its widespread adoption and inherent flexibility has, inevitably, led to its use in other areas, including the design of component-based systems. While it is not a perfect fit for component-based development, this book describes how best to use UML 1.3 in the specification and design of medium to large systems that utilize server-side component technologies.

This book constitutes the thoroughly refereed post-proceedings of the Fourth International Workshop on Formal Aspects in Security and Trust, FAST 2006, held in Hamilton, Ontario, Canada, August 26-27, 2006. The 18 revised papers presented were

carefully reviewed and selected from 47 submissions. The papers include focus of formal aspects in security and trust policy models, security protocol design and analysis, and formal models of trust and reputation.

This book constitutes the refereed proceedings of the First German Conference on Multiagent System Technologies, MATES 2003, held in Erfurt, Germany, in September 2003. The 18 revised full papers presented together with an invited paper were carefully reviewed and selected from 49 submissions. The papers are organized in topical sections on engineering agent-based systems, systems and applications, models and architectures, the semantic Web and interoperability, and collaboration and negotiation.

Five years on from its adoption in 1997 by the Object Management Group (OMG), the Unified Modeling Language is the de facto standard for creating - agrammatic models of software systems. More than 100 books have been written about UML, and it is taught to students throughout the world. The definition of UML version 2 is well under way, and should be largely completed within the year. This will not only improve and enhance UML itself, including standard facilities for diagram interchange, but also make it fully integrated with other modeling technologies from the OMG, such as Meta-Object Facility (MOF) and XML Metadata Interchange (XMI). The Object Constraint Language, which has become an important vehicle for communicating detailed insights between UML researchers and practitioners, will have a much expanded specification and be better integrated with the UML. The popularity of UML signifies the possibility of a shift of immense proportions in the practice of software development, at least comparable to the shift from the use of assembly language to "third-generation" or "high-level" programming languages. We dream of describing the behavior of software systems in terms of models, closely related to the needs of the enterprise being served, and being able to routinely translate these models automatically into executing programs on distributed computing systems. The OMG is promoting Model-Driven Architecture (MDA) as a significant step towards this vision, and the MDA concept has received considerable support within the IT industry.

"Highlights of this book include: the MDA framework, including the Platform Independent Model (PIM) and Platform Special Model (PSM); OMG standards and the use of UML; MDA and Agile, Extreme Programming, and Rational Unified Process (RUP) development; how to apply MDA, including PIM-to-PSM and PSM-to-code transformations for Relational, Enterprise JavaBean (EJB), and Web models; transformations, including controlling and tuning, traceability, incremental consistency, and their implications; metamodeling; and relationships between different standards, including Meta Object Facility (MOF), UML, and Object Constraint Language (OCL)."--Jacket.

This book constitutes the thoroughly refereed post-proceedings of the International Dagstuhl-Seminar on Architecting Systems with Trustworthy Components, held in Dagstuhl Castle, Germany, in December 2004. Presents 10 revised full papers together with 5 invited papers contributed by outstanding researchers. Discusses core problems in measurement and normalization of non-functional properties, modular reasoning over non-functional properties, capture of component requirements in interfaces and protocols, interference and synergy of top-down and bottom-up aspects, and more.

"This book manages to convey the practical use of UML 2 in clear and understandable terms with many examples and guidelines. Even for people not working with the Unified Process, the book is still of great use. UML 2 and the Unified Process, Second Edition is a must-read for every UML 2 beginner and a helpful guide and reference for the experienced practitioner." --Roland Leibundgut, Technical Director, Zuehlke Engineering Ltd. "This book is a good starting point for organizations and individuals who are adopting UP and need to understand how to provide visualization of the different aspects needed to satisfy it." --Eric Naiburg, Market Manager, Desktop Products, IBM Rational Software This thoroughly revised edition provides an indispensable and practical guide to the complex process of object-oriented analysis and design using UML 2. It describes how the process of OO analysis and design fits into the software development lifecycle as defined by the Unified Process (UP). UML 2 and the Unified Process contains a wealth of practical, powerful, and useful techniques that you can apply immediately. As you progress through the text, you will learn OO analysis and design techniques, UML syntax and semantics, and the relevant aspects of the UP. The book provides you with an accurate and succinct summary of both UML and UP from the point of view of the OO analyst and designer. This book provides Chapter roadmaps, detailed diagrams, and margin notes allowing you to focus on your needs Outline summaries for each chapter, making it ideal for revision, and a comprehensive index that can be used as a reference New to this edition: Completely revised and updated for UML 2 syntax Easy to understand explanations of the new UML 2 semantics More real-world examples A new section on the Object Constraint Language (OCL) Introductory material on the OMG's Model Driven Architecture (MDA) The accompanying website provides A complete example of a simple e-commerce system Open source tools for requirements engineering and use case modeling Industrial-strength UML course materials based on the book

This book constitutes the refereed proceedings of the 9th International Conference on Software Reuse, ICSR 2006, held in Torino, Italy, in June 2006. The book presents 27 revised full papers and 13 revised short papers, carefully reviewed and selected from numerous submissions. The Coverage includes COTS selection and integration; product lines, domain analysis, and variability; reengineering maintenance; programming languages and retrieval; aspect-oriented software development; approaches and models; and components.

This book constitutes the thoroughly refereed post-proceedings of the Second International Conference on Software Engineering Research and Applications, SERA 2004, held in May 2004. The 18 revised full papers presented together with four keynote addresses were carefully selected from 103 initial submissions during two rounds of reviewing and improvement. The papers are organized in topical sections. These include formal methods and tools, requirements engineering and reengineering, and information engineering.

This book constitutes the refereed proceedings of the 5th European Conference on Software Architecture, ECSA 2011, held in Essen, Germany, in September 2011. The 13 revised full papers presented together with 24 emerging research papers, and 7 research challenge poster papers were carefully reviewed and selected from over 100 submissions. The papers are organized in topical sections on requirements and software architectures; software architecture, components, and compositions; quality attributes and software architectures; software product line architectures; architectural models, patterns and styles; short papers; process and management of architectural decisions; software architecture run-time aspects; ADLs and metamodels; and services and software architectures.

Industrial development of software systems needs to be guided by recognized engineering principles. Commercial-off-the-shelf (COTS) components enable the systematic and cost-effective reuse of prefabricated tested parts, a characteristic approach of mature engineering disciplines. This reuse necessitates a thorough test of these components to make sure that each works as specified in a real context. Beydeda and Gruhn invited leading researchers in the area of component testing to contribute to this monograph, which covers all related aspects from testing components in a context-independent manner through testing components in the context of a specific system to testing complete systems built from different components. The authors take the viewpoints of both component developers and component users, and

their contributions encompass functional requirements such as correctness and functionality compliance as well as non-functional requirements like performance and robustness. Overall this monograph offers researchers, graduate students and advanced professionals a unique and comprehensive overview of the state of the art in testing COTS components and COTS-based systems.

The authors explain the underlying software development principles behind theRUP, and guide readers in its application in their organization. Business Component-Based Software Engineering, an edited volume, aims to complement some other reputable books on CBSE, by stressing how components are built for large-scale applications, within dedicated development processes and for easy and direct combination. This book will emphasize these three facets and will offer a complete overview of some recent progresses. Projects and works explained herein will prompt graduate students, academics, software engineers, project managers and developers to adopt and to apply new component development methods gained from and validated by the authors. The authors of Business Component-Based Software Engineering are academic and professionals, experts in the field, who will introduce the state of the art on CBSE from their shared experience by working on the same projects. Business Component-Based Software Engineering is designed to meet the needs of practitioners and researchers in industry, and graduate-level students in Computer Science and Engineering.

Comprehensive coverage of critical issues related to information science and technology.

More than ever, mission-critical and business-critical applications depend on object-oriented (OO) software. Testing techniques tailored to the unique challenges of OO technology are necessary to achieve high reliability and quality. "Testing Object-Oriented Systems: Models, Patterns, and Tools" is an authoritative guide to designing and automating test suites for OO applications. This comprehensive book explains why testing must be model-based and provides in-depth coverage of techniques to develop testable models from state machines, combinational logic, and the Unified Modeling Language (UML). It introduces the test design pattern and presents 37 patterns that explain how to design responsibility-based test suites, how to tailor integration and regression testing for OO code, how to test reusable components and frameworks, and how to develop highly effective test suites from use cases. Effective testing must be automated and must leverage object technology. The author describes how to design and code specification-based assertions to offset testability losses due to inheritance and polymorphism. Fifteen micro-patterns present oracle strategies--practical solutions for one of the hardest problems in test design. Seventeen design patterns explain how to automate your test suites with a coherent OO test harness framework. The author provides thorough coverage of testing issues such as: The bug hazards of OO programming and differences from testing procedural code How to design responsibility-based tests for classes, clusters, and subsystems using class invariants, interface data flow models, hierarchic state machines, class associations, and scenario analysis How to support reuse by effective testing of abstract classes, generic classes, components, and frameworks How to choose an integration strategy that supports iterative and incremental development How to achieve comprehensive system testing with testable use cases How to choose a regression test approach How to develop expected test results and evaluate the post-test state of an object How to automate testing with assertions, OO test drivers, stubs, and test frameworks Real-world experience, world-class best practices, and the latest research in object-oriented testing are included. Practical examples illustrate test design and test automation for Ada 95, C++, Eiffel, Java, Objective-C, and Smalltalk. The UML is used throughout, but the test design patterns apply to systems developed with any OO language or methodology. 0201809389B04062001

From the basics to the most advanced quality of service (QoS) concepts, this all encompassing, first-of-its-kind book offers an in-depth understanding of the latest technical issues raised by the emergence of new types, classes and qualities of Internet services. The book provides end-to-end QoS guidance for real time multimedia communications over the Internet. It offers you a multiplicity of hands-on examples and simulation script support, and shows you where and when it is preferable to use these techniques for QoS support in networks and Internet traffic with widely varying characteristics and demand profiles. This practical resource discusses key standards and protocols, including real-time transport, resource reservation, and integrated and differentiated service models, policy based management, and mobile/wireless QoS. The book features numerous examples, simulation results and graphs that illustrate important concepts, and pseudo codes are used to explain algorithms. Case studies, based on freely available Linux/FreeBSD systems, are presented to show you how to build networks supporting Quality of Service. Online support material including presentation foils, lab exercises and additional exercises are available to text adopters.

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