Uml Model Inconsistencies

This book constitutes a collection of the best papers selected from 9 workshops and 2 symposia held in conjunction with MODELS 2009, the 12 International Conference on Model Driven Engineering Languages and Systems, in Denver, CO, USA, in October 2009. The first two sections contain selected papers from the Doctoral Symposium and the Educational Symposium, respectively. The other contributions are organized according to the workshops at which they were presented: 2nd International Workshop on Model Based Architecting and Construction of Embedded Systems (ACES-MB'09); 14th International Workshop on Aspect-Oriented Modeling (AOM); Models@run.time (Models@run.time); Model-driven Engineering, Verification, and Validation: Integrating Verification and Validation in MDE (MoDeVVa09); Models and Evolution (MoDSE-MCCM); Third International Workshop on Multi-Paradigm Modeling (MPM09); The Pragmatics of OCL and Other Textual Specification Languages (OCL); 2nd International Workshop on Non-Functional System Properties in Domain Specific Modeling Languages (NFPinDSML); and 2nd Workshop on Transformation and Weaving OWL Ontologies and MDE/MDA (TWOMDE2009). Each section includes a summary of the workshop.

Covers important concepts, issues, trends, methodologies, and technologies in quality assurance for model-driven software development.

This book constitutes the thoroughly refereed postproceedings of the 18th International Workshop on Algebraic Development Techniques, WADT 2006, held in La Roche en Ardenne, Belgium, June 2006. The 10 revised full papers focus on the algebraic approach to the specification

and development of systems and address topics such as formal methods for system development, specification languages and methods, and distributed and mobile systems. "Reports on the recent advances in UML and XML based software evolution in terms of a wider range of techniques and applications"--Provided by publisher.

This book comprises selected papers of the International Conferences, ASEA, DRBC and EL 2011, held as Part of the Future Generation Information Technology Conference, FGIT 2011, in Conjunction with GDC 2011, Jeju Island, Korea, in December 2011. The papers presented were carefully reviewed and selected from numerous submissions and focuse on the various aspects of advances in software engineering and its Application, disaster recovery and business continuity, education and learning.

This Volume contains the papers presented during the 6th International Conference on Innovations in Bio-Inspired Computing and Applications IBICA 2015 which was held in Kochi, India during December 16-18, 2015. The 51 papers presented in this Volume were carefully reviewed and selected. The 6th International Conference IBICA 2015 has been organized to discuss the state-of-the-art as well as to address various issues in the growing research field of Bio-inspired Computing which is currently one of the most exciting research areas, and is continuously demonstrating exceptional strength in solving complex real life problems. The Volume will be a valuable reference to researchers, students and practitioners in the computational intelligence field..

Formal methods have been applied successfully to the verification of medium-sized programs in protocol and hardware design. However, their application to more complex systems, resulting from the object-oriented and the more recent component-based software engineering paradigms,

requires further development of specification and verification techniques supporting the concepts of reusability and modifiability. This book presents revised tutorial lectures given by invited speakers at the Second International Symposium on Formal Methods for Components and Objects, FMCO 2003, held in Leiden, The Netherlands, in November 2003. The 17 revised lectures by leading researchers present a comprehensive account of the potential of formal methods applied to large and complex software systems such as component-based systems and object systems. The book makes a unique contribution to bridging the gap between theory and practice in software engineering.

The two-volume set LNCS 5592 and 5593 constitutes the refereed proceedings of the International Conference on Computational Science and Its Applications, ICCSA 2009, held in Seoul, Korea, in June/July, 2009. The two volumes contain papers presenting a wealth of original research results in the field of computational science, from foundational issues in computer science and mathematics to advanced applications in virtually all sciences making use of computational techniques. The topics of the fully refereed papers are structured according to the five major conference themes: computational methods, algorithms and scientific applications, high performance technical computing and networks, advanced and emerging applications, as well as information systems and information technologies. Moreover, submissions from more than 20 workshops and technical sessions contribute to this publication.These cover topics such as geographical analysis, urban modeling, spatial statistics, wireless and ad hoc networking, logical, scientific and computational aspects of pulse phenomena in transitions, high-performance computing and information visualization, sensor network and its applications, molecular simulations structures and processes, collective evolutionary

systems, software engineering processes and applications, molecular simulations structures and processes, internet communication security, security and privacy in pervasive computing environments, and mobile communications.
This festschrift volume, published in honor of Manfred Nagl on the occasion of his 65th birthday, contains 30 refereed contributions, that cover graph transformations, software architectures and reengineering, embedded systems engineering, and more.
This book constitutes the refereed proceedings of the 13th International Conference on Formal Engineering Methods, ICFEM 2011, held in Durham, UK, October 2011. The 40 revised full papers together with 3 invited talks presented were carefully reviewed and selected from 103 submissions. The papers address all current issues in formal methods and their applications in software engineering. They are organized in topical sections on formal models; model checking and probability; specification and development; security; formal verification; cyber physical systems; event-B; verification, analysis and testing; refinement; as well as theorem proving and rewriting.
This book constitutes the refereed proceedings of the 21st International Conference on Advanced Information Systems Engineering, CAiSE 2009, held in Amsterdam, The Netherlands, on June 8-12, 2009. The 36 papers presented in this book together

with 6 keynote papers were carefully reviewed and selected from 230 submissions. The topics covered are model driven engineering, conceptual modeling, quality and data integration, goal-oriented requirements engineering, requirements and architecture, service orientation, Web service orchestration, value-driven modeling, workflow, business process modeling, and requirements engineering.

A coherent and integrated account of the leading UML 2 semantics work and the practical applications of UML semantics development With contributions from leading experts in the field, the book begins with an introduction to UML and goes on to offer in-depth and up-to-date coverage of: The role of semantics Considerations and rationale for a UML system model Definition of the UML system model UML descriptive semantics Axiomatic semantics of UML class diagrams The object constraint language Axiomatic semantics of state machines A coalgebraic semantic framework for reasoning about interaction designs Semantics of activity diagrams Verification of UML models State invariants Model transformation specification and verification Additionally, readers are provided with expert guidance on how to resolve semantic problems and a section on applications of UML semantics with model analysis. UML 2 Semantics and Applications is an ideal resource for researchers and tool-builders

working in UML, among others. It is also an excellent textbook for postgraduate teaching and research. This book constitutes the proceedings of the 6th Euro Symposium on Systems Analysis and Design, SIGSAND/PLAIS 2013, held in Gda?sk, Poland, in September 2013. The objective of this symposium is to promote and develop high-quality research on all issues related to systems analysis and design (SAND). It provides a forum for SAND researchers and practitioners in Europe and beyond to interact, collaborate, and develop their field. The 8 papers were carefully reviewed and selected with an acceptance rate of 40% and reflect the current trends in systems analysis and design. The contributions are organized into topical sections on information systems development, information systems security and information systems learning. The MODELS series of conferences is the premier venue for the exchange of - novative technical ideas and experiences focusing on a very important new te- nical discipline: model-driven software and systems engineering. The expansion ofthisdisciplinei sadirectconsequenceoftheincreasingsigni?canceand success of model-based methods in practice. Numerous e?orts resulted in the invention of concepts, languagesand tools for the de?nition, analysis,transformation, and veri?cationofdomain-sp eci?cmodelinglanguagesandgeneral-purposemodeling language standards, as well as

their use for software and systems engineering. MODELS 2010, the 13th edition of the conference series, took place in Oslo, Norway, October 3-8, 2010, along with numerous satellite workshops, symposia and tutorials. The conference was fortunate to have three prominent keynote speakers: Ole Lehrmann Madsen (Aarhus University, Denmark), Edward A. Lee (UC Berkeley, USA) and Pamela Zave (AT&T Laboratories, USA). To provide a broader forum for reporting on scienti?c progress as well as on experience stemming from practical applications of model-based methods, the 2010 conference accepted submissions in two distinct tracks: Foundations and Applications. The primary objective of the ?rst track is to present new research results dedicated to advancing the state-of-the-art of the discipline, whereas the second aims to provide a realistic and veri?able picture of the current state--the-practice of model-based engineering, so that the broader community could be better informed of the capabilities and successes of this relatively young discipline. This volume contains the ?nal version of the papers accepted for presentation at the conference from both tracks.
This book constitutes the refereed proceedings of the 8th European Conference on Modelling Foundations and Applications, held in Kgs. Lyngby, Denmark, in July 2012. The 20 revised full foundations track papers and 10 revised full

applications track papers presented were carefully reviewed and selected from 81 submissions. Papers on all aspects of MDE were received, including topics such as architectural modelling and product lines, code generation, domain-specic modeling, metamodeling, model analysis and verication, model management, model transformation and simulation. The breadth of topics, as well as the high quality of the results presented in these accepted papers, demonstrate the maturity and vibrancy of the field. This title provides a forum where expert insights are presented on the subject of linking three current phenomena: software evolution, UML and XML. This book constitutes the thoroughly refereed post-conference proceedings of the 5th International Conference on Software and Data Technologies, ICSOFT 2010, held in Athens, Greece, in July 2010. The 30 revised full papers presented together with 1 invited lecture were carefully reviewed and selected from a total of 410 submissions in two rounds of reviewing and improvement. The papers cover a wide range of topics and are organized in four general topical sections on healthinf, biodevices, biosignals, and bioinformatics. MODELS2008wasthe11theditionoftheseriesofconferencesonModel-Driven Engineering Languages and Systems. The conference was held in Toulouse, France, during the week of September 28 to October 3, 2008. The local arran- ments were provided by the

Institut de Recherche en Informatique de Toulouse (IRIT). The conference program included three keynote presentations, technical - per presentations, two panels, and several workshops and tutorials. The invited keynote speakers were Don Batory (University of Texas, USA), Je? Kramer (Imperial College London, UK), and Patrick Rauhut (Airbus, Germany). Thisvolumecontainsthe?nalversionsofthe papersacceptedforpresentation attheconference.The paperscoverawiderangeoftopicsfromthe?eldincluding model transformation, model management, domain-speci?c modeling, modeling language semantics, model analysis, and applications. We received a record number of 271 full paper submissions from 40 di?erent countries. Of these, 43 papers were submitted by authors from more than one country. The top three countries submitting papers were France (40), Germany (38), and Canada (24). A total of 58 papers were accepted for inclusion in the proceedings. The acceptance rate was therefore 21%, which is somewhat lower than those of the previous MODELS conferences. At least three Program Committee or Expert Reviewer Panel members - viewed each paper. Reviewing wasthorough,and most authors received detailed comments on their submissions. Con?icts of interest were taken very seriously. No-oneparticipatedinany wayin the decisionprocessofanypaper wherea c- ?ict of interest was identi?ed. In particular, PC members

who submitted papers did not have access to information concerning the reviews of their papers. This book constitutes the proceedings of the 10th European Conference on Modelling Foundations and Applications, ECMFA 2014, held as part of STAF 2014, in York, UK, in July 2014. The 14 foundation track papers and the 3 applications track papers presented in this volume were carefully reviewed and selected from 58 submissions. They are on all aspects of MDE, including topics such as model provenance; model transformations and code generation; model synthesis; model-driven testing; formal modeling approaches; business modeling; and usability of models.

This book constitutes the refereed proceedings of the 44th International Conference on Current Trends in Theory and Practice of Computer Science, SOFSEM 2018, held in Krems, Austria, in January/February 2018. The 48 papers presented in this volume were carefully reviewed and selected from 97 submissions. They were organized in topical sections named: foundations of computer science; software engineering: advances methods, applications, and tools; data, information and knowledge engineering; network science and parameterized complexity; model-based software engineering; computational models and complexity; software quality assurance and transformation; graph structure and computation; business

processes, protocols, and mobile networks; mobile
robots and server systems; automata, complexity,
completeness; recognition and generation;
optimization, probabilistic analysis, and sorting;
filters, configurations, and picture encoding; machine
learning; text searching algorithms; and data model
engineering.
Software architectures that contain many
dynamically interacting components, each with its
own thread of control, engaging in complex
coordination protocols, are difficult to correctly and
efficiently engineer. Agent-oriented modelling
techniques are important for the design and
development of such applications. This book
provides a diverse and interesting overview of the
work that is currently being undertaken by a growing
number of researchers in the area of Agent-Oriented
Software Engineering. The papers represent a state-
of-the-art report of current research in this field,
which is of critical importance in facilitating industry
take-up of powerful agent technologies. This volume
constitutes the thoroughly refereed post-conference
proceedings of the 9th International Workshop on
Agent-Oriented Software Engineering, AOSE 2008,
held in Estoril, Portugal, in May 2008 as part of
AAMAS 2008. The 20 revised full papers were
carefully selected from 50 initial submissions during
two rounds of reviewing and improvement. The
papers have been organized into four sections on:

multi-agent organizations, method engineering and software development processes, testing and debugging, as well as tools and case studies. Real-Time Simulation Technologies: Principles, Methodologies, and Applications is an edited compilation of work that explores fundamental concepts and basic techniques of real-time simulation for complex and diverse systems across a broad spectrum. Useful for both new entrants and experienced experts in the field, this book integrates coverage of detailed theory, acclaimed methodological approaches, entrenched technologies, and high-value applications of real-time simulation—all from the unique perspectives of renowned international contributors. Because it offers an accurate and otherwise unattainable assessment of how a system will behave over a particular time frame, real-time simulation is increasingly critical to the optimization of dynamic processes and adaptive systems in a variety of enterprises. These range in scope from the maintenance of the national power grid, to space exploration, to the development of virtual reality programs and cyber-physical systems. This book outlines how, for these and other undertakings, engineers must assimilate real-time data with computational tools for rapid decision making under uncertainty. Clarifying the central concepts behind real-time simulation tools and techniques, this one-of-

a-kind resource: Discusses the state of the art, important challenges, and high-impact developments in simulation technologies Provides a basis for the study of real-time simulation as a fundamental and foundational technology Helps readers develop and refine principles that are applicable across a wide variety of application domains As science moves toward more advanced technologies, unconventional design approaches, and unproven regions of the design space, simulation tools are increasingly critical to successful design and operation of technical systems in a growing number of application domains. This must-have resource presents detailed coverage of real-time simulation for system design, parallel and distributed simulations, industry tools, and a large set of applications.

The Unified Modeling Language (UML) has been designed to be a full standard notation for Object-Oriented Modeling. UML 2.0 consists of thirteen types of diagrams: class, composite structure, component, deployment, object, package, activity, use case, state, sequence, communication, interaction overview, and timing. Each one is dedicated to a different design aspect. This variety of diagrams, which overlap with respect to the information depicted in each, can leave the overall system design specification in an inconsistent state. This dissertation presents Super State Analysis (SSA) for analyzing UML multiple state and

sequence diagrams to detect the inconsistencies. SSA model uses a transition set that captures relationship information that is not specifiable in UML diagrams. The SSA model uses the transition set to link transitions of multiple state diagrams together. The analysis generates three different sets automatically. These generated sets are compared to the provided sets to detect the inconsistencies. Because Super State Analysis considers multiple UML state diagrams, it discovers inconsistencies that cannot be discovered when considering only a single UML state diagram. Super State Analysis identifies five types of inconsistencies: valid super states, invalid super states, valid single step transitions, invalid single step transitions, and invalid sequences.

This book constitutes the thoroughly refereed proceedings of eight international workshops held in Gda?sk, Poland, in conjunction with the 24th International Conference on Advanced Information Systems Engineering, CAiSE 2012, in June 2012. The 35 full and 17 short revised papers were carefully selected from 104 submissions. The eight workshops were Agility of Enterprise Systems (AgilES), Business/IT Alignment and Interoperability (BUSITAL), Enterprise and Organizational Modeling and Simulation (EOMAS), Governance, Risk and Compliance (GRCIS), Human-Centric Process-Aware Information Systems (HC-PAIS), System and

Software Architectures (IWSSA), Ontology, Models, Conceptualization and Epistemology in Social, Artificial and Natural Systems (ONTOSE), and Information Systems Security Engineering (WISSE). This book constitutes the refereed proceedings of the 9th International Conference on Model Driven Engineering Languages and Systems (formerly UML conferences), MoDELS 2006. The book presents 51 revised full papers and 2 invited papers. Discussion is organized in topical sections on evaluating UML, MDA in software development, concrete syntax, applying UML to interaction and coordination, aspects, model integration, formal semantics of UML, security, model transformation tools and implementation, and more.
Conceptual modeling is fundamental to any domain where one must cope with complex real-world situations and systems because it fosters communication - tween technology experts and those who would bene?t from the application of those technologies. Conceptual modeling is the key mechanism for und- standing and representing the domains of information system and database - gineering but also increasingly for other domains including the new "virtual" e-environmentsandtheinformationsystemsthatsuppor tthem.Theimportance of conceptual modeling in software engineering is evidenced by recent interest in "model-drivena rchitecture"and"extremenon-programming".Conceptualm- eling also plays a prominent rolein various technical disciplines and in the social sciences. The Annual International Conference on Conceptual Modeling (referred to as the ER Conference) provides a central forum for presenting and discussing current research and applications in which conceptual modeling is the major emphasis. In keeping with this tradition, ER 2005, the 24th ER Conference,

spanned the spectrum of conceptual modeling including research and practice in areas such as theories of concepts and ontologies underlying conceptual m- eling, methods and tools for developing and communicating conceptual models, and techniques for transforming conceptual models into e?ective (information) system implementations. Moreover, new areas of conceptual modeling incl- ing Semantic Web services and the interdependencies of conceptual modeling with knowledge-based, logical and linguistic theories and approaches were also addressed.

The book covers the recent new advances in software engineering and knowledge engineering. It is intended as a supplement to the two-volume handbook of software engineering and knowledge engineering. The editor and authors are well-known international experts in their respective fields of expertise. Each chapter in the book is entirely self-contained and gives in-depth information on a specific topic of current interest. This book will be a useful desktop companion for both practitioners and students of software engineering and knowledge engineering.

This book constitutes the refereed proceedings of the 7th European Conference on Modelling Foundations and Applications, held in Birmingham, UK, in June 2011. The 19 revised full foundations track papers and 5 revised full applications track papers presented were carefully reviewed and selected from 61 submissions; also included are 5 workshop summaries and abstracts of 4 tutorials. The papers are organized in topical sections on model execution, model analysis, methodology, model management, model transformation, variability analysis and ADLs, and domain-specific modeling.

Model-driven software development drastically alters the software development process, which is characterized by a high degree of innovation and productivity. Emerging

Technologies for the Evolution and Maintenance of Software Models contains original academic work about current research and research projects related to all aspects affecting the maintenance, evolution, and reengineering (MER), as well as long-term management, of software models. The mission of this book is to present a comprehensive and central overview of new and emerging trends in software model research and to provide concrete results from ongoing developments in the field.

Model-based development methods, and supporting technologies, can provide the techniques and tools needed to address the dilemma between reducing system development costs and time, and developing increasingly complex systems. This book provides the information needed to understand and apply model-drive engineering (MDE) and model-drive architecture (MDA) approaches to the development of embedded systems. Chapters, written by experts from academia and industry, cover topics relating to MDE practices and methods, as well as emerging MDE technologies. Much of the writing is based on the presentations given at the Summer School "MDE for Embedded Systems" held at Brest, France, in September 2004.

This book constitutes the refereed proceedings of the 6th International Conference on the Unified Modelling Language, UML 2003, held in San Francisco, CA, USA in October 2003. The 25 revised full papers, 4 tool papers, and 1 experience paper presented together with the abstracts of 3 invited talks and summaries on the UML 2003 workshop and tutorials were carefully reviewed and selected from initially 168 submissions. The papers are organized in topical sections on practical model management, time and quality of service, tools, composition and architecture, transformation, Web related issues, testing and validation, improving UML/OCL,

consistency, and methodology.

This book constitutes the refereed proceedings of the 16th International Conference on Model Driven Engineering Languages and Systems, MODELS 2013, held in Miami, FL, USA, in September/October 2013. The 47 full papers presented in this volume were carefully reviewed and selected from a total of 180 submissions. They are organized in topical sections named: tool support; dependability; comprehensibility; testing; evolution; verification; product lines; semantics; domain-specific modeling languages; models@RT; design and architecture; model transformation; model analysis; and system synthesis.

The ?fth edition of the European Conference on Model-Driven Architecture Foundations and Applications (ECMDA-FA 2009) was dedicated to furthering the state of knowledge and fostering the industrialization of Model-Driven - chitecture (MDA) and Model-Driven Engineering (MDE). MDA is an initiative proposed by the Object Management Group for platform-generic systems - velopment; MDA is one of a class of approaches under the umbrella of MDE. MDE and MDA promote the use of models in the speci?cation, design, analysis, synthesis, deployment, and evolution of complex software systems. It is a pleasure to be able to introduce the proceedings of ECMDA-FA 2009. ECMDA-FA 2009 addressed various MDA areas including model transfor- tions, modelling language issues, modelling of behavior and time, traceability and scalability, model-basedembedded systems engineering,and the application of model-driven development to IT and networking systems. ECMDA-FA 2009 focused on engaging key European and international - searchers and practitioners in a dialogue

which will result in a stronger, more e?cientindustry,prod
ucingmorereliablesoftwareonthebasisofstate-of-the-art
research results. ECMDA-FA is a forum for exchanging
information, discussing the latest results and arguing
about future developments of MDA and MDE.
Particularly, it is one of the few venues that engages
both leading academic researchers and industry
practitioners, with the intent of creating synergies.
Includes articles in topic areas such as autonomic
computing, operating system architectures, and open
source software technologies and applications.
The UML 2004 conference was held in Lisbon (Portugal)
from October 11 through October 15, 2004. It was the
seventh conference in a series of annual events that
started in 1998. UML has rapidly become one of the
leading venues to present and discuss the development
of object-oriented modeling. In order to re?ect the
changes in the ?eld, the UML conference series will be
continued from 2005 onwards under the name MODELS
(Model Driven En- neering, Languages and Systems). In
ane?orttomakethisyear'sconferencemoreusefulande?ect
iveforawider community, including academics and
practitioners working in areas related to UML and
modeling in general, a set of satellite events was
organized, including workshopsdedicatedtospeci?cresea
rchtopics,anindustrytrack,aposter/demo session, and a
tools exhibit. This volume is a compilation of the
contributions presented at these satellite events.
Workshops at UML 2004 took place during the ?rst three
days of the conference(fromOctober10to12).
Followingthetraditionofprevious UML conferences, UML

2004workshopsprovidedacollaborativeforumforgroups of (typically 15 to 30) participants to exchange recent or preliminary results, to conduct intensive discussions on a particular topic, or to coordinate e?orts between representatives of a technical community. Ten workshops were held, covering a variety of hot topics, which have been covered in the workshop - ports contained in this volume. Each workshop lasted for a full day. A novelty with respect to previous UML conferences was the inclusion of a Doctoral Symposium, which was well received, to provide an explicit space for young - searchers developing their thesis on some aspect related to UML.

Professionals in the interdisciplinary field of computer science focus on the design, operation, and maintenance of computational systems and software. Methodologies and tools of engineering are utilized alongside computer applications to develop efficient and precise information databases. Computer Systems and Software Engineering: Concepts, Methodologies, Tools, and Applications is a comprehensive reference source for the latest scholarly material on trends, techniques, and uses of various technology applications and examines the benefits and challenges of these computational developments. Highlighting a range of pertinent topics such as utility computing, computer security, and information systems applications, this multi-volume book is ideally designed for academicians, researchers, students, web designers, software developers, and practitioners interested in computer systems and software engineering.

This book constitutes the refereed proceedings of the 7th International Conference on the Unified Modeling Language, UML 2004, held in Lisbon, Portugal, in October 2004. The 30 revised full papers presented together with summaries on the workshops and tutorials were carefully reviewed and selected from 135 technical paper submissions. The papers are organized in topical sections on metamodeling, aspects, profiles and extensions, OCL, model transformation, verification and model consistency, security, and methodology. This volume pays tribute to the scientific achievements of Hartmut Ehrig, who passed away in March 2016. The contributions represent a selection from a symposium, held in October 2016 at TU Berlin, commemorating Hartmut's life and work as well as other invited papers in the areas he was active in. These areas include Graph Transformation, Model Transformation, Concurrency Theory, in particular Petri Nets, Algebraic Specification, and Category Theory in Computer Science. This book constitutes the refereed proceedings of the 15th International Conference on Model Driven Engineering Languages and Systems, MODELS 2012, held in Innsbruck, Austria, in September/October 2012. The 50 papers presented in this volume were carefully reviewed and selected from a total of 181 submissions. They are organized in topical sections named: metamodels and domain specific modeling; models at runtime; model management; modeling methods and tools, consistency analysis, software product lines; foundations of modeling; static analysis techniques; model testing and simulation; model transformation;

model matching, tracing and synchronization; modeling practices and experience; and model analysis.
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