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Tom Mens, University of Mons-Hainaut, Belgium;
Serge Demeyer, University of Antwerp, Belgium (Eds.)

Software Evolution

Software has become omnipresent and vital in our information-based society, so all software producers should assume responsibility for its reliability. While 'reliable' originally assumed implementations that were effective and mainly error-free, additional issues like adaptability and maintainability have gained equal importance recently. For example, the 2004 ACM/IEEE Software Engineering Curriculum Guidelines list software evolution as one of ten key areas of software engineering education.

Mens and Demeyer, both international authorities in the field of software evolution, together with the invited contributors, focus on novel trends in software evolution research and its relations with other emerging disciplines such as model-driven software engineering, service-oriented software development, and aspect-oriented software development. They do not restrict themselves to the evolution of source code but also address the evolution of other, equally important software artifacts such as databases and database schemas, design models, software architectures, and process management. The contributing authors provide broad overviews of related work, and they also contribute to a comprehensive glossary, a list of acronyms, and a list of books, journals, websites, standards and conferences that together represent the community's body of knowledge.

Combining all these features, this book is the indispensable source for researchers and professionals looking for an introduction and comprehensive overview of the state of the art. In addition, it is an ideal basis for an advanced course on software evolution.

"Serge and Tom have put together a volume on software evolution research that, well, speaks volumes! I read it cover to cover, jotting down dozens of notes and ideas and insights that I took from nearly every chapter. The bibliography alone is worth the price of the book. Software evolution research itself evolves rapidly – and this book captures not only the state-of-the research but also the trajectory the field is following." - David Notkin, University of Washington, Seattle, WA, USA

Contents: 1) Introduction and Roadmap: History and Challenges of Software Evolution (Tom Mens) Part I: Understanding and Analysing Software Evolution 2) Identifying and Removing Software Clones (Rainer Koschke) - 3) Analyzing Software Repositories to understand Software Evolution (Marco D'Ambros et al.) - 4) Predicting Bugs from History (Thomas Zimmermann et al.) Part II: Reengineering of Legacy Systems 5) Object-Oriented Reengineering (Serge Demeyer) - 6) Migration of Legacy Information Systems (Jean-Luc Hainaut et al.) - 7) Architectural Transformations: From Legacy to Three-Tier and Services (Reiko Heckel et al.) Part III: Novel Trends in Software Evolution 8) On the Interplay between Software Testing and Evolution and its Effect on Program Comprehension (Leon Moonen et al.) - 9) Evolution Issues in Aspect-Oriented Programming (Kim Mens, Tom Tourwé) - 10) Software Architecture Evolution (Olivier Barais et al.) - 11) Empirical Studies of Open Source Evolution (Juan Fernandez Ramil et al.) Ressources - Glossary of Terms - List of Acronyms - References

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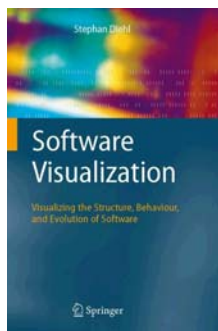
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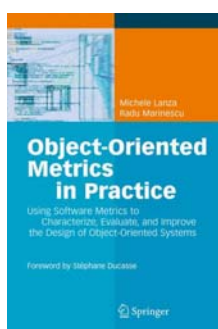


Stephan Diehl, Universität Trier, Germany

Software Visualization

Software visualization encompasses the development and evaluation of methods for graphically representing different aspects of software, including its structure, its execution, and its evolution. It combines techniques from areas like software engineering, programming languages, data mining, computer graphics, information visualization and human-computer interaction. This first textbook on software visualization targets both students and teachers in computer science. Topics covered include static program visualization, algorithm animation, visual debugging, as well as the visualization of the evolution of software. The author's presentation emphasizes common principles and provides different examples mostly taken from seminal work. In addition, each chapter is followed by a list of exercises including both pen and paper exercises, as well as programming tasks. The many pointers to tools available today make the book also a valuable read for professionals.

2007 XII, 187 p. ISBN 978-3-540-46504-1 ► € 49.95 | £ 38.50 ► Congress price: € 39.96 | £ 30.80



Michele Lanza, University of Lugano, Switzerland;
Radu Marinescu, University of Timisoara, Romania

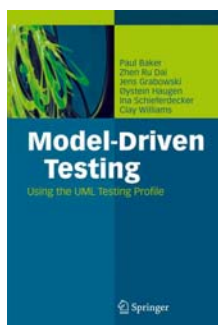
Object-Oriented Metrics in Practice

Lanza and Marinescu demystify the design metrics used to assess the size, quality and complexity of object-oriented software systems. Based on statistical information from many industrial projects and generally accepted semantics they deduce many single and combined threshold values. They show in detail how to identify collaboration and classification disharmony patterns in code, how to visualize their results using the freely available CodeCrawler visualization tool, and how to devise possible remedies.

"This well-written book is an important piece of work that takes the seemingly forgotten art of object-oriented metrics to the next level in terms of relevance and usefulness."

Richard C. Gronback, Chief Scientist, Borland Software Corporation.

2006 XIV, 205 p. 80 illus. Hardcover ISBN 978-3-540-24429-5 ► € 49.95 | £ 38.50 ► Congress price: € 39.96 | £ 30.80



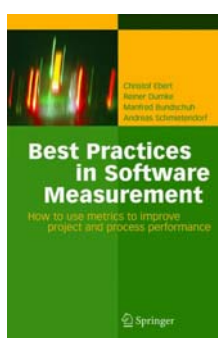
Paul Baker, Motorola Labs, Basingstoke, UK et al.

Model-Driven Testing

The development of high-quality systems not only requires systematic development processes but also systematic test processes. This book is about systematic, model-driven test processes in the context of UML. As UML provides only limited means for the design and development of test artifacts, the UML Testing Profile (UTP), was created as an official OMG standard in 2005. Written by the original members of the standardization group, this book shows you how to use UML to test complex software systems. The authors introduce UTP step-by-step, using a case study that illustrates how UTP can be used for test modeling and test specification. You'll learn how UTP concepts can be used for functional and non-functional testing, with example applications and best practices for user-interfaces and service oriented architectures. In addition, the authors demonstrate how to apply UTP using frameworks like TTCN-3 and the JUnit test framework for Java. This book is the definitive reference for the only UML-based test specification language, written by the creators of that language.

"Little has been written on how testing should be handled in model-driven software development. This book provides an excellent overview of how UML can be used for test specification and testing. It provides practical examples of applying the UML testing profile for different applications of testing throughout the development process." Thomas Weigert, Motorola, Schaumburg, IL, USA

2007. XIV, 184 p. 94 illus. Hardcover ISBN 978-3-540-72562-6 ► € 39.95 | £ 30.50 ► Congress price: € 31.96 | £ 24.40



Christof Ebert, Alcatel, Paris, France; et al.

Best Practices in Software Measurement

Ebert and his co-authors offer practical guidance built upon insight and experience. They detail knowledge and experiences about software measurement in an easily understood, hands-on presentation and explain such current standards as: ISO 15939 (the general measurement standard), ISO 19761 (the COSMIC Full Function Points standard), and CMMI (the Capability Maturity Model). Coverage also includes several case studies, from Global 100 companies such as Alcatel, Deutsche Telekom, and Siemens. This combination of methodologies and applications makes the book ideally suited for professionals in the software industry.

"Looking on the book contents, size, additional expert authors, etc. I think it will become 'the' excellent source for software metrics in the next years; my congrats!" Marek Leszak, Alcatel-Lucent, Nuremberg, Germany

2005 XII, 296 p. Hardcover ISBN 3-540-20867-4 ► € 54.95 | £ 42.50 ► Congress price: € 43.96 | £ 34.00