Janis Osis (Riga Technical University, Latvia) and Erika Asnina (Riga Technical University, Latvia)

Software developers use different techniques for identification and specification of a domain’s characteristics and requirements for a planned application. The importance of this step cannot be understated as it is impossible to be highly efficient with a weak beginning, even with a strong end of the software development life cycle.

Model-Driven Domain Analysis and Software Development: Architectures and Functions displays how to effectively map and respond to the real-world challenges and purposes which software must solve. The implications can be far-reaching and apply to domains such as mechatronic, embedded and high risk systems, where failure could cost human lives. It is also important for complex business systems, wherein failures could lead to huge financial losses. This book forms an essential reference for developers and researchers by providing both cases and theories to ensure a strong and suitable domain analysis to support all other efforts when creating and applying software solutions.

Topics Covered:
• Concurrent Model Driven Automation Engineering
• Improving Software Development Productivity
• Domain-Driven Approach for Enterprise Development
• Software Product Lines
• Architecture-Centric Development
• Requirements-driven Reuse of Software Design Models
• Architecture-Centric Development of Java
• Model-driven Testing and Domain Analysis
• Model-Driven Performance Evaluation
• Distributed Real-time and Embedded Systems
Section 1: Theory-Driven Holistic Domain Modeling and Analysis in the Context of MDA

Chapter 1
Is Modeling a Treatment for the Weakness of Software Engineering?
Osis Janis (Riga Technical University, Latvia)
Asnina Erika (Riga Technical University, Latvia)

Chapter 2
Topological Modeling for Model-Driven Domain Analysis and Software Development:
Osis Janis (Riga Technical University, Latvia)
Asnina Erika (Riga Technical University, Latvia)

Chapter 3
Topological Functioning Model as a CIM-Business Model
Asnina Erika (Riga Technical University, Latvia)
Osis Janis (Riga Technical University, Latvia)

Chapter 5
A Multidimensional Approach for Concurrent Model-Driven Automation Engineering
Rose Sebastian (Technische Universität Darmstadt, Germany)
Lauder Martin (Technische Universität Darmstadt, Germany)
Schleerbach Michael (Siemens AG, Germany)
Schürr Andy (Technische Universität Darmstadt, Germany)

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Model-Driven Configuration of Distributed Real-time and Embedded Systems
Dougherty Brian (Vanderbilt University, USA)
White Jules (Virginia Tech, USA)
Schmidt Douglas C. (Vanderbilt University, USA)

Chapter 7
Model-Driven Automated Error Recovery in Cloud Computing
Sun Yu (University of Alabama at Birmingham, USA)
Gray Jeff (University of Alabama, USA)
Gokhale Aniruddha (Vanderbilt University, USA)

Chapter 8
Productivity Analysis of the Distributed QoS Modeling Language
Hoffert Joe (Vanderbilt University, USA)
Schmidt Douglas C. (Vanderbilt University, USA)
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Domain-Driven Reuse of Software Design Models
Kalnins Audris (MECS University of Latvia, Latvia)
Šmialauskas Michal (Warsaw University of Technology, Poland)
Kalina Elina (IMCS University of Latvia, Latvia)
Celin Edgars (IMCS University of Latvia, Latvia)
Nowakowski Wiktor (Warsaw University of Technology, Poland)
Straszak Tomasz (Warsaw University of Technology, Poland)

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Dubielewicz Iwona (Wrocław University of Technology, Poland)
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Huzar Zbigniew (Wrocław University of Technology, Poland)
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Chapter 11
Exploring Business Value Models for E-Service Design
Zdravkovic Jelena (Stockholm University & Royal Institute of Technology, Sweden)
Bäckman-Tharaka (Stockholm University & Royal Institute of Technology, Sweden)

Chapter 12
An MDA Approach for Developing Executable UML Components
Motogna Simona (Babeș-Bolyai University, Romania)
Pârv Bazil (Babeș-Bolyai University, Romania)

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Chapter 13
Model-Driven Impact Analysis of Software Product Lines
Cho Hyun (University of Alabama, USA)
Gray Jeff (University of Alabama, USA)
Cai Yuanfang (Drexel University, USA)
Wong Sonny (Drexel University, USA)
Xie Tao (North Carolina State University, USA)

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Azevedo Sofia (Universidade do Minho, Portugal)
Bragança Alexandre (Instituto Superior de Engenharia do Porto, Portugal)
Ribeiro Hugo (Primavera Business Software Solutions, Portugal)

Chapter 15
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White Jules (Virginia Tech, USA)
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Toledano Liliana (University Politehnica of Bucharest, Romania)
Ovaska Eila (VTT Technical Research Centre of Finland, Finland)

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Model-Driven Requirements Specification for Software Product Lines
Moreira Ana (Universidade Nova de Lisboa, Portugal)
Amaral Vasco (Universidade Nova de Lisboa, Portugal)
Araújo João (Universidade Nova de Lisboa, Portugal)

Section 4: Surveys

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Kirikova Marita (Riga Technical University, Latvia)

Chapter 19
Model-Driven Performance Evaluation of Web Application Portals
Roy Nilabha (Vanderbilt University, USA)
Schmidt Douglas C. (Vanderbilt University, USA)
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