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Traceability; 2.9.5. Product line evolution; 2.9.6. Tool support; 2.10. Summary; Chapter 3. Model-Driven Engineering; 3.1. Introduction; 3.2. Models and metamodels; 3.2.1. The 4-level metamodeling framework; 3.2.2. The nature of models; 3.3. UML class diagrams and OCL; 3.4. Model transformations; 3.4.1. Scheduling of transformation rules; 3.4.2. Model transformation patterns; 3.4.3. Classification of model transformations; 3.4.4. Vertical model transformations; 3.4.5. Horizontal model transformations; 3.4.6. Model composition or model weaving; 3.5. Modeling framework; 3.5.1. The eclipse modeling framework; 3.5.2. The topcased toolkit; 3.6. Model transformation languages; 3.6.1. QVT; 3.6.2. ATL; 3.6.3. The open Architecture Ware framework; 3.6.4. The Xtend language; 3.7. Benefits and challenges for SPLE; 3.8. Summary

Chapter 4. Model-Driven and Software Product Line Engineering; 4.1. Introduction; 4.2. Problem space issues; 4.2.1. Separating points of views; 4.2.2. Capturing variability and configuring products; 4.2.3. Relating several points of view; 4.2.4. Configuring products in a multi-staged process; 4.3. Solution space issues; 4.4. Developing core assets; 4.4.1. Developing decision models and deriving products; 4.5. Variability expression and product configuration; 4.5.1. Metamodels; 4.5.2. Feature models; 4.6. Core asset development and product derivation; 4.6.1. Transformation rules in the Smart-Home systems SPL; 4.6.2. Creating and using decision models; 4.7. Summary; Chapter 5. The FieSta Framework: Fine-Grained Derivation and Configuration; 5.1. Introduction; 5.1.1. Coarse-grained and fine-grained variations; 5.2. Binding models and constraint models; 5.2.1. Binding models; 5.2.2. Constraint models; 5.2.3. The cardinality property; 5.2.4. The structural dependency property; 5.2.5. The constraint metamodel and the binding metamodel; 5.2.6. Validating binding models against constraint models; 5.3. Deriving products based on constraint models and binding models

Sommario/riassunto

Many approaches to creating Software Product Lines have emerged that are based on Model-Driven Engineering. This book introduces both Software Product Lines and Model-Driven Engineering, which have separate success stories in industry, and focuses on the practical combination of them. It describes the challenges and benefits of merging these two software development trends and provides the reader with a novel approach and practical mechanisms to improve software development productivity. The book is aimed at engineers and students who wish to understand and apply software product lines