1. Record Nr.   UNINA9910739470203321

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Titolo   Feature-Oriented Software Product Lines : Concepts and
                        Implementation / / by Sven Apel, Don Batory, Christian Kästner, Gunter
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Pubbl/distr/stampa   Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer,
                        , 2013

ISBN   3-642-37521-9

Edizione   [1st ed. 2013.]

Descrizione fisica   1 online resource (320 p.)

Disciplina   005.1

Soggetti   Software engineering
                        Management information systems
                        Computer science
                        Software Engineering
                        Management of Computing and Information Systems

Lingua di pubblicazione Inglese

Formato   Materiale a stampa

Livello bibliografico   Monografia

Note generali   Description based upon print version of record.

Nota di contenuto   Part I Software Product Lines -- Software Product Lines -- A
                        Development Process for Feature-Oriented Product Lines -- Part II
                        Variability Implementation -- Basic Concepts, Classification, and
                        Quality Criteria -- Classic, Language-Based Variability Mechanisms --
                        Classic, Tool-Driven Variability Mechanisms -- Advanced, Language-
                        Based Variability Mechanisms -- Advanced, Tool-Driven Variability
                        Mechanisms -- Part III Advanced Topics -- Refactoring of Software
                        Product Lines -- Feature Interactions -- Analysis of Software Product
                        Lines -- Tool Support.

Sommario/riassunto   While standardization has empowered the software industry to
                        substantially scale software development and to provide affordable
                        software to a broad market, it often does not address smaller market
                        segments, nor the needs and wishes of individual customers. Software
                        product lines reconcile mass production and standardization with mass
                        customization in software engineering. Ideally, based on a set of
                        reusable parts, a software manufacturer can generate a software
                        product based on the requirements of its customer. The concept of

features is central to achieving this level of automation, because features bridge the gap between the requirements the customer has and the functionality a product provides. Thus features are a central concept in all phases of product-line development.   The authors take a developer's viewpoint, focus on the development, maintenance, and implementation of product-line variability, and especially concentrate on automated product derivation based on a user's feature selection. The book consists of three parts. Part I provides a general introduction to feature-oriented software product lines, describing the product-line approach and introducing the product-line development process with its two elements of domain and application engineering. The pivotal part II covers a wide variety of implementation techniques including design patterns, frameworks, components, feature-oriented programming, and aspect-oriented programming, as well as tool-based approaches including preprocessors, build systems, version-control systems, and virtual separation of concerns. Finally, part III is devoted to advanced topics related to feature-oriented product lines like refactoring, feature interaction, and analysis tools specific to product lines. In addition, an appendix lists various helpful tools for software product-line development, along with a description of how they relate to the topics covered in this book.   To tie the book together, the authors use two running examples that are well documented in the product-line literature: data management for embedded systems, and variations of graph data structures. They start every chapter by explicitly stating the respective learning goals and finish it with a set of exercises; additional teaching material is also available online. All these features make the book ideally suited for teaching – both for academic classes and for professionals interested in self-study.