

Title: Variability Modelling for Data Management

Abstract

Variability of software systems is one of the challenges of nowadays software engineering increasing the complexity of software construction. Variability may have several causes – from heterogeneous hardware and specific non-functional requirements up to personalized functionality. Separation of concerns has been a basic principle in many software development approaches to manage complexity and has been broadly researched since decades. To reach separation of concerns in variable systems, such as Software Product Lines (a family of related software systems), our workgroup focuses on using Feature-oriented Software Development.

In Feature-oriented Software Development, commonalities and differences of the software products are expressed in terms of features that can be configured. Ideally, software variants are then adapted automatically based on a selection of features. Hence, the abstraction of a feature allows for separation of concerns between products of a product line.

In this lecture, variability in Software Product Lines is presented as a challenge and exemplified using the example of data management on modern hardware. Software product line engineering is introduced as a possible way to cope with software variability during the development process which includes the phases variability modeling, domain implementation, product configuration, and product generation. Furthermore, you will learn how to use the tool FeatureIDE to formally model variability with feature models and to establish a mapping between features and development artifacts that enables the automated generation of software variants.

Bio

Gunter Saake earned his diploma, PhD degree as well as his Habilitation at the Technical University of Braunschweig. In 1989, he worked at IBM as visiting scientist on language features and algorithms for sorting and duplicate elimination in nested relational database structures.

In 1994, he got a professorship at the University of Magdeburg, where he is the head of the Database and Software Engineering group. His expertise ranges from data integration, cloud data management, databases on modern hardware to software engineering topics about software variability and the development of highly-configurable software systems. He is member of ACM, of the Presidential Board of the GI and of the organization committee of GI AK „Foundations of Information Systems“. Besides his authorship on more than 300 research papers and journal articles, he has written and contributed to numerous books about Algorithms and Data Structures, Databases, Data-Warehousing Techniques, and Feature-Oriented Software Product Lines. His next book is about FeatureIDE and how to use this tool – developed in Magdeburg – to manage software variability.