

Abstract

Software Product Lines (SPL) are a development paradigm allowing the reduction of the software system development time while increasing their quality. To reach these goals, the artefacts being part of many or all software systems are developed only once and reused within the different software systems. The software systems developed by a software product line approach are called products.

Like a thread the reuse of artefacts is woven into the software product line development process. As some artefacts are only used for the development of some products, these artefacts constitute the variability of the SPL.

First of all, the modelling of variability has to be enabled in every artefact. Beside this, dependencies can arise between variable artefacts. The modelling of variability and dependencies also demands the redevelopment or adaption of specification techniques for these artefacts.

This thesis focuses on the variability management concerning requirements and test case specification for Software Product Lines. For this purpose, existing modelling languages and specification techniques are augmented with variability instead of redeveloping similar software development artefacts over and over again.

In order to augment the modelling languages by variability, a language construction process based on a meta model of the variability management is defined. In order to manage the dependencies between variable artefacts, a feature based variability management is introduced. Finally, the extension of specification techniques for requirements specifications based on use case descriptions and test specifications are described.

The contribution of this thesis is substantiated by a prototypical tool support and an industrial case study.