Variability of Development Models

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Abstract

Introduction of process models (development models) is a common approach for organizations to aim for a better process quality and higher success rates in project conduction.

In the context of this thesis, the notion of 'process models' will be extended to a notion of 'development models'. This is due to the fact that in the common sense of process models, they are usually not only related to processes, but to other artifacts, as well.

Prior to introduction of development models into an organization, a comprehensive customization is usually inevitable.

Along with an intended customization, the following questions are relevant:

What concepts can be used to...

- ... support the customization in general?
- ... minimize the customization effort?
- ... assure conformity of the customized variant to the intentions of the original model?
- ... keep the customized variant in line with a developing original model?

There are different approaches implemented in actual development models like the V-Model XT and RUP to address these issues. Although they are effective in the details, they lack a holistic approach.

This thesis offers an analysis of variability mechanisms in development models, software product lines, and other software/model related domains. The findings are integrated into a framework for variable development models. In addition to offering variability, this framework allows the definition of domain-specific and model-specific constraints that are used to discard models that do not structurally conform to the intentions of the original model's creator.

When adequately realizing this framework, a variable development model is understood as a *development model line* (DML). A DML is offered to an organization's process engineer as a means to create variants of the original model. While doing this, he uses explicit variability mechanisms, namely configurability, extensibility, and modifiability.

The target audience of this thesis is the engineer of development models. This includes both the engineer of an original (standard) model and the customizing engineer of an adapting organization.