



Model-Based Generation of End-User Programming Environments

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Motivation

The module “Domain-specific Languages for Automation Control” of the Christian Doppler Laboratory for Automated Software Engineering targets on developing concepts, modeling and programming notations, and tools that empower domain experts as well as end users to build and adapt control programs in an intuitive and concise way. One of the subprojects is the development of a model-based approach for the configuration of end-user programming systems. The work relies on a layered approach as follows:

- The basis is formed by Monaco, which is used to represent the hierarchical structure and the event-based behavior of automation systems.
- Variability modeling techniques are used to define different variants of components, routines, and parameter settings.
- The decision modeling approach and the *DecisionKing* tool developed in Module 1 of our laboratory are employed for modeling dependencies and constraints between program variants as well as for representing higher-level configuration decisions together with their impacts.
- Finally, a model specifies how higher-level decisions, program variants, and elements of control programs will be presented to different types of users in interactive interfaces.

From this information, highly customized end-user programming environments are generated.

Task of this diploma thesis is the realization of a prototypic framework to show this approach. Realization technology is Eclipse, the Eclipse Modeling Framework (EMF), and the Graphical Editor Framework (GEF).

Work packages

- Studying Eclipse EMF und GEF technology
- Studying generative software development approaches
- Design of a meta-model for user interface specification in EMF
- Realization of a generation process for user interfaces
- Examples
- Documentation

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