Modelling with XMF and the Xmodeler

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The design of flexible DSML demands for a language architecture that overcome the limitations of traditional approaches such as the OMG MOF, which define a clear separation of classification levels. At the same time, the economics of developing and using DSML demands for (meta) modelling tools that can be quickly created from meta models. Also, it can be very beneficial to use models at run time, e.g. to provide a rich conceptual interface for navigating and changing a system. Unfortunately, the implementation of respective tools faces serious obstacles: Since prevalent programming languages are restricted to the class-instance dichotomy, they do not allow for representing multi-level language architectures. Instead, models are usually represented as objects on M0 even though they are conceptually located on M1+. As a consequence, model-driven software development is mainly focussed on generating code from models – resulting in the notorious challenge of synchronizing code and models.

This tutorial gives an introduction to XMF and the Xmodeler. XMF (eXecutable Metamodelling Facility) is a meta programming language that is based on a “golden braid” metamodel. It enables the construction of an arbitrary number of classification levels, thereby allowing for a common representation of code and executable models. XMF is supplemented by an integrated development environment and the Xmodeler, a meta modelling tool that allows for generating model editors from metamodels and additional specifications of the concrete syntax.

The tutorial is aimed at researchers who are interested in overcoming current limitations of developing and DSML and respective tools.

Overview

- XMF: Background and Metamodel
- XModeler: Architecture
- Walkthrough: Creating a DSML with Xmodeler
- Language Engineering: Syntax; Semantics; Constraints; Transformation; Analysis; Tools
- Multi-Level Modelling with XMF: An Example
- Discussion of Selected Concepts

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Ulrich Frank holds the chair of Information Systems and Enterprise Modelling at the Institute of Computer Science and Business Information Systems at the University of Duisburg-Essen. His main

research topic is enterprise modelling, i.e. the development and evaluation of modelling languages, methods and corresponding tools. Further areas of research include method engineering, models at run time and methods for IT management. Ulrich Frank is Editor in Chief of the Journal Enterprise Modelling and Information Systems Architectures and associate Editor of the Journals Business & Information Systems Engineering, Software and Systems Modeling and Information Systems and E-Business Management.