Abstract

Software development projects are diverse in nature. For this reason, software companies are often forced to define their methods in-house. In order to define methods efficiently and effectively, software companies require systematic solutions that are built upon sound methodical foundations. Providing these solutions is the main goal of the Method Engineering discipline.

Method Engineering is the discipline to design, construct, and adapt methods, techniques, and tools for the development of information systems. Over the last two decades, a lot of research work has been performed in this area. However, despite its potential benefits, Method Engineering is not widely used in industrial settings. Some of the causes of this reality are the high theoretical complexity of Method Engineering and the lack of adequate software support.

In this thesis, we aim to mitigate some of the problems that affect Method Engineering by providing a novel methodological approach that is built upon Model-Driven Engineering (MDE) foundations. The use of MDE enables a rise in abstraction, automation, and reuse that allows us to alleviate the complexity of our Method Engineering approach. Furthermore, by leveraging MDE techniques (such as metamodeling, model transformations, and models at runtime), our approach supports three phases of the Method Engineering lifecycle: design, implementation, and execution. This is unlike traditional Method Engineering approaches, which, in general, only support one of these phases.

In order to provide software support for our proposal, we developed a Computer-Aided Method Engineering (CAME) environment that is called MOSKitt4ME. To ensure that MOSKitt4ME offered the necessary functionality, we identified a set of functional requirements prior to developing the tool. Then, after these requirements were identified, we defined the architecture of our CAME environment, and, finally, we implemented the architecture in the context of Eclipse.

The thesis work was evaluated by means of a study that involved the participation of end users. In this study, MOSKitt4ME was assessed by means of the Technology Acceptance Model (TAM) and the Think Aloud method. While the TAM allowed us to measure usefulness and ease of use in a subjective manner, the Think Aloud

method allowed us to analyze these measures objectively. Overall, the results were favorable. MOSKitt4ME was highly rated in perceived usefulness and ease of use; we also obtained positive results with respect to the users' actual performance and the difficulty experienced.