Evolution and Adaptability of Complex Applications

Abstract

In these days the applications become more complex that causes maintenance problems while evolving these applications. A change in one part of the application can significantly affect other parts of the application. The next aspect can be related systems which communicate with this application. They must be updated to satisfy their correct functionality. These problems can concern multiple domains, e.g., UML diagrams, XML schema diagrams, relational schemas, APIs, etc.

We focus on this problem from the perspective of the MDA, which uses the platform independent model (PIM) for a general view of the problem and the platform specific model (PSM) for particular domains. Moreover, these models can be interconnected and related to each other.

We propose novel PSM models from various widely used domains, operations over these models and algorithms for model transformations. Thanks to the MDA principle, it is possible to combine presented models and model a complex application. All models and related algorithms we present were experimentally implemented and tested in the DaemonX framework on real-world data for their verification.