Abstract

Nowadays, the paradigm of model-driven development is being applied in more and more places in developing various systems, even security-critical ones. The main advantages of these modeling languages are the high-level approach, the precise syntax, and often the rich semantics.

In designing security-critical systems, - besides design methods - a number of analysis methods are necessary/required to understand the pertinence of the designs and the final system. The advantage of the model-based approach is that the model can be the basis of analysis, so it is not necessary to reenter all the information (manually) again, reducing time for implementation and analysis and also the possibility of making mistakes.

One of the frequently used analytical approaches is the Fault Mode and Effect Analysis (FMEA), which examines the effect of elemental errors on the whole system.

The task of this thesis is to make an addition to an Eclipse-based, industrial modeling application that supports FMEA analysis based on design templates, which is able to help the analytical engineers to ensure that the analysis is always synchronized with the behavior of the system.