

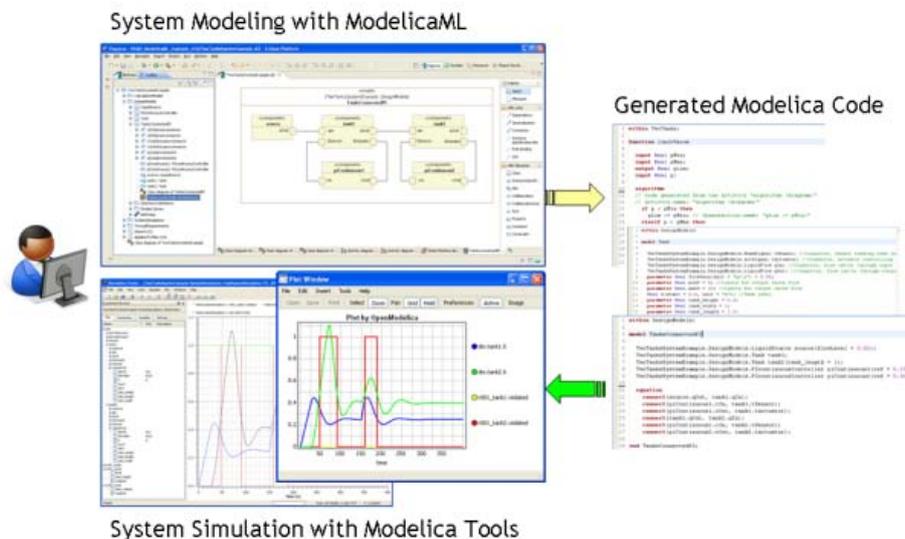
Master thesis

Roundtrip Engineering for ModelicaML Models

Background - Why

One of the key enablers for model-based systems engineering is a consistent set of languages, graphical notations and their semantics, modelling methods and model transformations. ModelicaML is an attempt to answer to these needs by providing the engineers with an integrated system modelling environment that is based on standardized languages such as UML and Modelica.

Modelica Modeling Language (ModelicaML [5]) is a graphical modeling language for the description of time-continuous and time-discrete/event-based system dynamics. ModelicaML is defined as an extended subset of the [OMG Unified Modeling Language \(UML\)](#). This subset enables the generation of executable [Modelica](#) code. ModelicaML is an alternative way for authoring Modelica models. It extends the graphical modeling capabilities of Modelica by providing more diagrams (UML diagrams for presenting the composition, connection, inheritance or behavior of classes) for graphical model definition or documentation. Moreover, ModelicaML incorporates concepts for formalizing and evaluating system requirements during system simulations.



What

Presently, it is possible to generate Modelica code (based on the Modelica concrete textual syntax) from graphical ModelicaML models. The main task of this thesis is to develop a round-trip capability between textual Modelica and graphical ModelicaML models. The focus should be on the import of textual Modelica models into ModelicaML models and the resolution of conflicts in case if elements already exist.

Therefore, make a literature review to find the “state of the art” in parsing and queering textual Modelica models, in roundtrip approaches and model transformations (e.g. OMG QVT [1] or TGG[2]). Focus should be on finding an the most promising

approach for an initial import of Modelica code and for reverse engineering (updating) of ModelicaML models based on the updated Modelica code.

The approach should be implemented as an Eclipse plug-in for Papyrus[4] or [6] and evaluated on test problems provided by EADS IW.

How

The Master thesis is done at Linköping University, Dept. for Computer Science and Information Science, in cooperation with EADS Innovation Works in Hamburg (Germany).

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The Master thesis work is for one student.

When: Now.

References

[1] MOF™ Query / Views / Transformations

http://www.omg.org/technology/documents/modeling_spec_catalog.htm#MOF_QVT

[2] MOFLON, <http://www.moflon.org/>

[3]. Fritzson Peter, Principles of Object-Oriented Modeling and Simulation - with Modelica 2.1, 2004.

[4] Papyrus UML, <http://www.papyrusuml.org/>

[5] ModelicaML - A UML Profile for Modelica

<http://www.ida.liu.se/~pelab/modelica/OpenModelica/MDT/ModelicaML/>

[6] Papyrus UML, <http://www.eclipse.org/modeling/mdt/?project=papyrus>