

# Master thesis

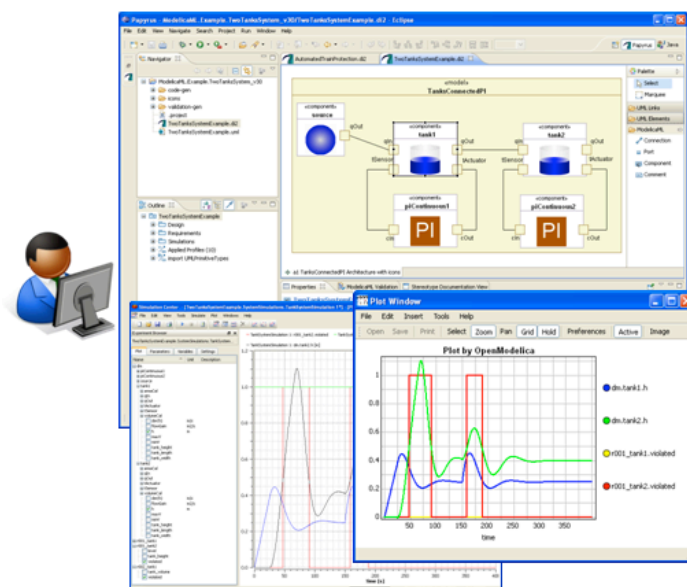
## Design and Implementation of the ModelicaML Code Generator Using Acceleo 3.X

### 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 [1]) 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.

### ① System Modeling with ModelicaML



### ② Modelica Code Generation

```
1 within TestModel;
2
3 Function TestValue
4
5   input Real p[1];
6   input Real p[2];
7   output Real p[3];
8   input Real p;
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13 // Note generated from the activity "alignWith (diagmap)"
14 // Activity name: "alignWith (diagmap)"
15 if p = p[1] then
16   p[3] := p[2]; // Operation name: "p[3] := p[2]"
17 else
18   p[3] := p;
19 end if;
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### ③ System Simulation with Modelica Tools

### What

Presently, the ModelicaML code generator is implemented using the old Acceleo framework [3]. Based on this prototype, the task of this project is to re-factor and

implement the ModelicaML code generator by using the latest Acceleo version 3.x [4].

## **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] ModelicaML - A UML Profile for Modelica [www.openmodelica.org/modelicaml](http://www.openmodelica.org/modelicaml)

[2] Papyrus, <http://www.eclipse.org/papyrus>

[3] Acceleo 2.x, <http://acceleo.org/>

[4] Acceleo 3.x, <http://www.eclipse.org/acceleo/>