

# MASTER THESES IN DEVELOPMENT OF SIMULATION, OPTIMIZATION AND COMPILER TOOLS

## Contents

Introduction.....	1
OPTIMICA Compiler Toolkit .....	1

## Introduction

Simulation and optimization of dynamic systems is becoming a standard tool in several industrial branches. This trend is largely driven by the need to decrease product time-to-market. In order to increase productivity in the product design phase, model-based approaches are increasingly used. To meet the demand for model-based design methods and tools, domain specific languages have been developed. One such language is Modelica, which is a language targeted at modelling of complex heterogeneous physical systems. Modelica is currently used in a wide range of applications, including automotive systems, power plants, thermo-fluid systems, and robotics.

## OPTIMICA Compiler Toolkit

Most of the theses proposals in this document are related to the OPTIMICA Compiler Toolkit (OCT) (<https://www.modelon.com/products-services/modelon-creator-suite/optimica-compiler-toolkit/>), which is an Modelica-based simulation and optimization environment, which also supports the Modelica language extension Optimica. A main part of the toolkit is the Modelica and Optimica compilers which are developed using the JastAdd framework. OPTIMICA Compiler Toolkit is maintained and developed by Modelon AB (<http://www.modelon.com>).

Contact: [Christian Winther, Modelon AB](#)