TDLab ? TDL/INtime Integration basierend auf Matlab/Simulink

(temporary title)

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Overview

The purpose of the thesis is to extend the Visual-TDL-Editor-Suite to be able to develop real-time applications for a certain type of platform.

The visual TDL editor is a graphical development environment for designing real-time applications conforming to the TDL semantics embedded in Matlab/Simulink. TDL (Timing Definition Language) is a high-level software description language which allows to describe the time behaviour of real-time applications. Functionality, which is separated from timing aspects, is modelled using standard Simulink blocks.

The extension of the editor suite comprises following fields of activities:

Code generation

The functionality code generation is done by using the powerful Matlab and Simulink extension Real-Time Workshop Embedded Coder. However, the standard code generation mechanism is bypassed and a separate code generation is done to make sure the resulting code can be integrated into the whole application.

Additionally some wrapper code is generated to correct certain incompatibilities.

Actuator/sensor control

A plug-in architecture has to be implemented which is used to open the TDL editor for extensions. This plug-in system is required to integrate software components which offer specific functionality for handling sensor and actuator control of the real-time application.

Each plug-in representing one particular platform has to come up with information and input options specific to the platforms abilities to ensure a simple actuator and sensor handling. According to this input another code generation process responsible for sensor-/actuator drive is started.

Within the scope of the thesis plug-ins for two platforms, namely INtime and OSEK/VDX, are implemented.

The thesis is expected to be finished by the end of June 2005.