

Functional Mock-up Interface in Mechatronic Gearshift Simulation for Commercial Vehicles

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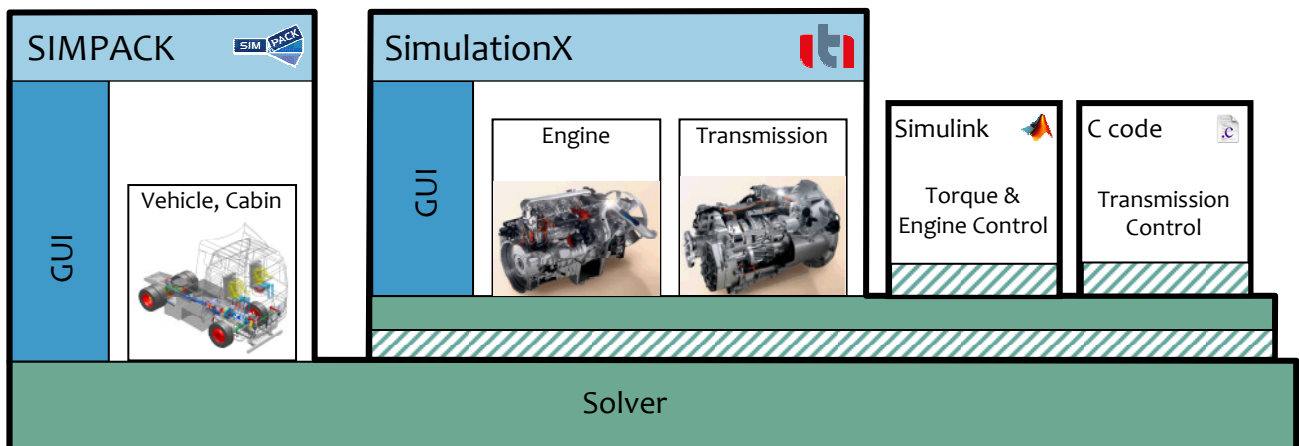
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Abstract

Mechatronic gearshift simulation of automated transmissions in commercial vehicles is used for optimization and development in today's truck engineering departments at Daimler.

Within the ITEA2 project Modelisar in cooperation with ITI GmbH and SIMPACK AG this application served as a usecase for proof of concept of the newly developed Functional Mock-Up interfaces (FMI). This paper presents the results of this usecase. Utilizing these standardized interfaces, models from different tools are coupled to build up the overall system for the mechatronic gearshift simulation.



Prototype Mechatronic Gearshift Simulation utilizing FMI for Model Exchange

The coupling via FMI for Model Exchange was achieved for control modules from MATLAB/Simulink into the SimulationX powertrain model and secondly for the 1D-multiphysics powertrain from SimulationX into the multibody vehicle in SIMPACK.

Furthermore FMI for Co-Simulation was investigated in a pure SimulationX framework for the powertrain model.

Very promising results have been achieved for modeling as well as for simulation processes and the FMI technology has clearly shown its capability to be applied in the productive simulation process.

Keywords: FMI, Modelisar, multibody system, automated gear shifting, mechatronics, co-simulation, model exchange