Scilab / Xcos FMI Toolbox

The **functional mock-up interface** (or FMI) defines an open tool-independant standard to be used in computer simulations to develop complex cyberphysical systems.

**Module description**

*Import FMU:*

- Allow the user to add FMU blocks inside Xcos. This module provides an easy way to use Functional Mock-up Interface for Model Exchange.
- In Xcos, the user is able to simulate the Functional Mock-up Units (dynamic system models) with the "Functional Mock-up Interfaces" palette.
- Possibility to use several instances of a model and to connect any models hierarchically.
- In the Scilab workspace, Import allows to run tests on the Functional Mock-up Unit (FMU)

*Export FMU (beta):*

- Xcos model can be exported as an FMU for Model Exchange or for Co-Simulation.
- Currently, only generation of FMUs version 1.0 of FMI is supported in Xcos.
- Code generation works by translating any Xcos super-block in FMU. Generated model can be imported in Xcos or in another simulation tool.

**Main features**

- Support of FMI Version 1.0 for Model Exchange (import/export) and Co-Simulation.
- Simulation for compiled FMUs: a FMU must have minimum one binary corresponding to the working platform.
- Simulation in Xcos with using any type of explicit solvers.
- Simulation in Scilab with fixed step integration (Method of Euler).
Application examples

Cruise Control
This example simulates in Xcos the model of a cruise control system exported from Esterel SCADE®.

Xcos PID Controller
In this example, a simple PID controller is modelled in 4 different ways in Xcos. The simulation displays the answer of the system (transfer function) for a step perturbation and sends the results to the Scilab Workspace. The blocks ME and CS showcase the capabilities in Model-Exchange and Co-Simulation.

For questions, email us at team@scilab.io

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