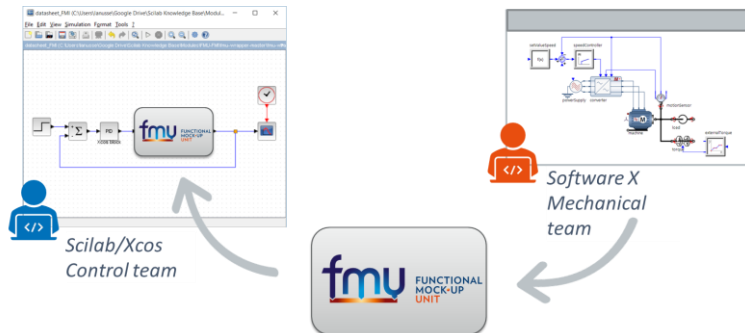


# Scilab / Xcos FMI Toolbox

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



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## 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).

### KEY BENEFITS:

Free the model unit (FMU) from license restrictions

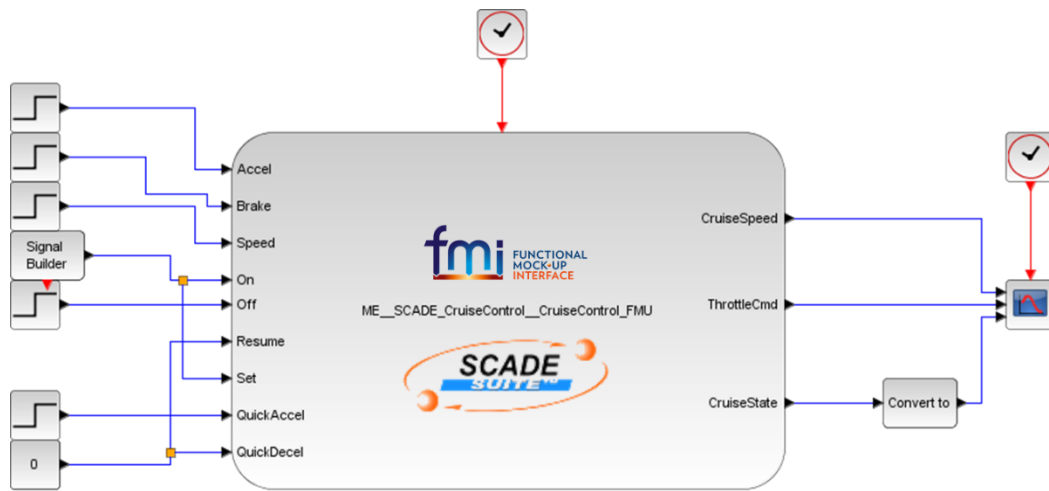
Separate the model authoring tool from model execution tools

Deploy from few simulation specialists to designers, domain specialists, control engineers

## Application examples

### Cruise Control

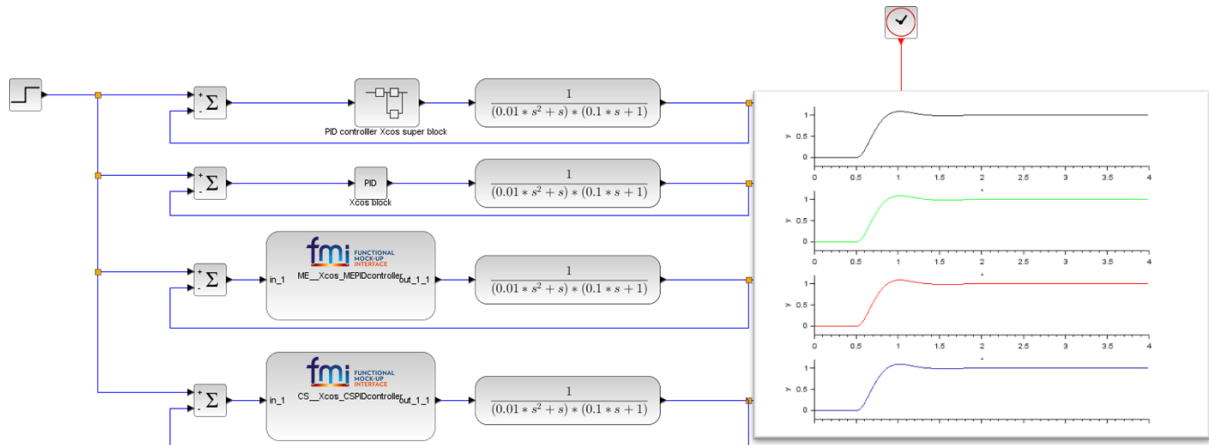
This example simulates in Xcos the model of a cruise control system exported from Esterel SCADE®.



Using of the cruise control at the speed of 80 km/h and quick acceleration to 120 km/h

### 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](mailto:team@scilab.io)