

FMI Support Plans

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MathWorks View of FMI and S-functions

- S-functions

- Integral part of Simulink and supported for many years, many releases in the past
- Maintaining support for the many tools that use it today (~100 modeling tools)
- Will be enhanced on ongoing basis

The screenshot displays the MathWorks website's search results for 'FMI and S-functions'. The page is titled 'Third-Party Products & Services' and shows a list of various software tools compatible with FMI and S-functions. The results are organized into columns, each representing a different tool or company. The tools listed include:

- FIPER (Federated Intelligent Product Environment)**: A tool to streamline the design of highly engineered products.
- Flowmaster**: Fluid system modeling, simulation, and control.
- FMI Blockset for Simulink**: Enables FMI compliant models to be imported and run in Simulink.
- FMI Target for Simulink Coder**: Add-on for exporting models from MATLAB and Simulink via FMI.
- FTire and FTire/link**: Physical tire modeling.
- g.BSanalyze**: Multimodal offline biosignal processing and analysis with MATLAB.
- GL Studio**: Transition high-end graphical displays from prototyping, to testing, to simulation.
- gPROMS Block Object for Simulink**: Process modeling, simulation, and optimization.
- GT-SUITE**: Engine, powertrain, and vehicle engineering simulation software.
- HLA Blockset**: Simulink interface to HLA for distributed simulation.
- HYDSIM**: Simulate transient behavior of hydraulic system, especially for fuel systems.
- iSIGHT**: Software for process integration and design optimization.
- JMAG**: Simulation software for electromechanical equipment design and analysis.
- MADYMO**: Software for analyzing and optimizing occupant safety designs.
- MagNet**: Low-frequency electromagnetics simulation software.
- MUXLab Architect**: CAN and LIN architecture simulation and emulation in MATLAB and Simulink.
- No-Hooks/OnTarget Rapid Prototyping**: A tool for bypass rapid prototyping.
- NuVinci Core**: Simulates continuously variable planetary (CVP) transmission functions.
- NX Motion Control Simulation**: Mechanism simulation allowing closed-loop control using Simulink.
- optiSLang**: Software for CAE-based sensitivity analysis, multidisciplinary optimization, and robust design optimization.
- ORION**: Calibration automation tool for engine management optimization.
- ParaMagic, Melody, ParaSolver, Solvea**: SysML parametric solvers that support model-based systems engineering execution across multiple tools including MATLAB and Simulink.
- PreScan**: Simulation of ADAS and active safety.
- Realtime BrakeHydraulics**: Real-time simulation of hydraulic brake systems.
- RecurDyn**: Cosimulate a high fidelity mechanical system model with a Simulink model.
- Saber**: Design and analysis of mixed-technology and mixed-signal systems.
- SIDLAB**: Simulation of sound generation and propagation inside ducts.
- SIMPACT**: Complete multibody simulation in combination with MATLAB and Simulink.
- SimulationX**: High-end modeling tool for simulating nonlinear, dynamic effects.
- SimWise 4D**: Simulation and validation of functional performance for mechanical systems.
- Structural Dynamics Toolbox**: Finite element modeling and modal analysis with MATLAB and Simulink.
- SystemVision**: Mechatronics system modeling and analysis software.
- ThermoIb**: Toolbox for thermodynamic calculations and thermodynamic simulation.
- Thermosys**: An air conditioning and heat exchange blockset for Simulink.
- TILMedia Suite**: Software package for the calculation of thermophysical properties of pure substances and mixtures.
- Transient Performance Advisor**: The master modeling and simulation software.
- UniPhi**: Data dictionary and model management tool.
- VAPS XT**: Custom Human-Machine Interface (HMI) prototyping, simulation, and development using commercial tools.
- veDYNA**: A professional software tool for the efficient simulation of vehicle dynamics in real time.
- Vehicle Dynamics for use with MATLAB/Simulink**: Time-based dynamic simulations of steering, ride, and handling.
- Virtual_Lab Motion**: Multibody dynamics modeling interface and solver.
- WAVE**: Engine and powertrain simulation software.
- Wind River Simics**: Full-system simulator and virtual platform for software and systems development.
- Working Model 2D**: Software for motion simulation and analysis of mechanical systems on desktop computers.

The search results are filtered by 'Modeling and Simulation Tools' and 'System Modeling'. The page also shows navigation options like 'Overview', 'Become a Partner', 'Search Products', and 'Search Services'. The MathWorks logo and tagline 'Accelerating the pace of engineering and science' are visible at the top.

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- S-functions

- Integral part of Simulink and supported for many years, many releases in the past
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➤ For MathWorks it does not mean FMI vs. S-functions
➤ It's FMI and S-Functions!

- FMI

- Emerging specification with version 1.0 being published in 2010, version 2.0 in 2014
- MathWorks native support for import with Release 2015a
 - Can support other modeling tools that generate FMUs (though there aren't many that are well tested today....)
- MathWorks plans support based on the evolution of the specification and the level of customer use

Where Can I find MathWorks Native Support?

- With release R2015a and beyond, a Pilot Support Package (PSP) is available for supporting simulation and integration workflows using the Functional Mockup Interface (FMI).
- The PSP allows you to import Functional Mockup Units (FMU) version 1.0 or version 2.0 into a Simulink model and supports the following use cases:
 - Model-Exchange
 - Co-simulation
- Contact: fmi-info@mathworks.com to gain access to this.

FMI Support in Tools ...

Compatibility Table ...for Simulink

Generated on 2015-11-27 12:39 UTC

The following modeling and simulation environments support or plan to support FMI (alphabetical list):

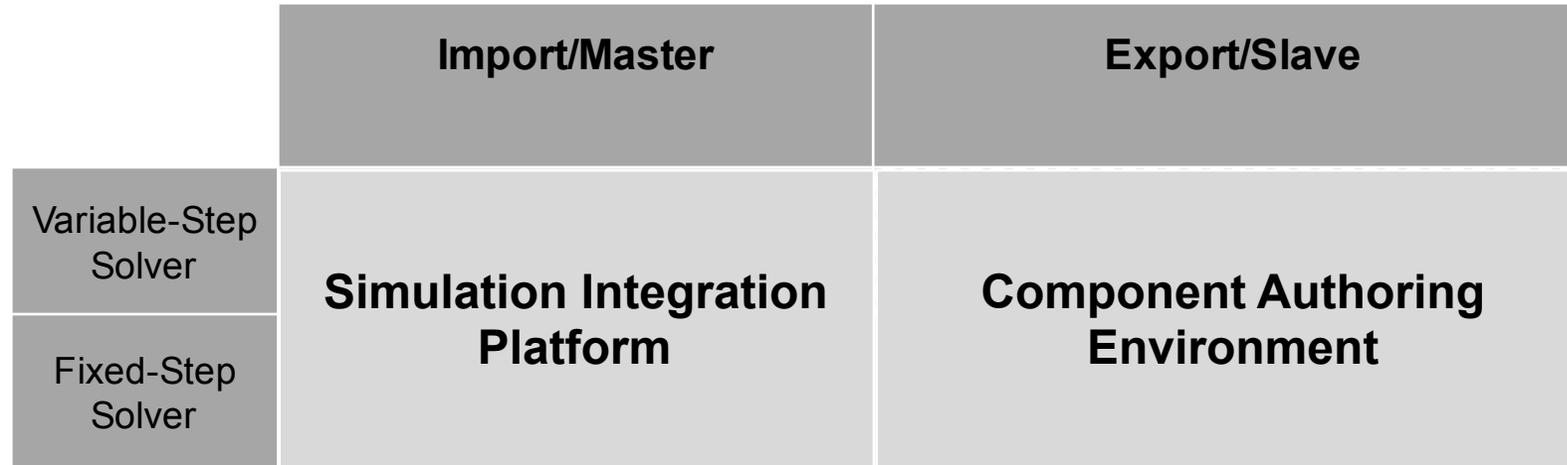
Legend

- Planned → Not available yet
- Available → No CrossCheck results submitted
- Available (12) → Passed CrossCheck, 12 FMUs exported or imported, click results

More information about the generation of the CrossCheck results can be found in the [Rules document](#) and the [Implementation notes](#).

Total numbers		Filter	ModelExchange		CoSimulation		
Tools supporting FMI	FMI Version	Export	Import	Slave	Master	Notes	
@Source	FMI_1.0	Available				Simulink via @Source	
DS - FMU Export from Simulink	FMI_2.0	Available (22)		Available (22)		Simulink Coder Target developed by Dassault Systèmes for export of FMUs from Simulink.	
	FMI_1.0	Available (22)		Available (22)			
DS - FMU Import into Simulink	FMI_2.0		Available		Available	FMI Kit - FMU import into Simulink developed by Dassault Systèmes.	
	FMI_1.0		Available		Available		
dSPACE SYNECT	FMI_2.0				Available	dSPACE SYNECT is a data management tool from dSPACE that enables you to manage FMUs and Simulink models as well as their dependencies, versions and variants throughout the entire software development process. Please also refer to the dSPACE FMI sites for more information about the FMI support.	
	FMI_1.0				Planned		
ETAS - FMU Generator for Simulink®	FMI_1.0	Planned		Planned		FMU Generator for Simulink® from ETAS.	
FMI Blockset for Simulink	FMI_2.0		Available (70)		Available (75)	The FMI Blockset for Simulink enables the import of FMU's for use in Simulink - developed by Claytex.	
	FMI_1.0				Available (209)		
FMI Target for Simulink Coder	FMI_1.0			Available		Export of stand-alone FMUs for Co-Simulation from Simulink using Simulink Coder - provided by ITI	
FMI Toolbox for MATLAB/Simulink	FMI_2.0	Planned	Available (23)	Available (10)	Available (29)	The FMI Toolbox for MATLAB/Simulink from Modelon enables FMU import and export for MATLAB/Simulink for both model exchange and co-simulation.	
	FMI_1.0	Available (16)	Available (49)	Available (13)	Available (53)		
TLK FMI Suite	FMI_1.0		Available (23)		Available (25)	TLK FMI Suite provides LabVIEW and Simulink blocks for FMU simulation	

MathWorks Plans for FMI



Phase 1: Import

- 2015: FMI 1.0 & 2.0
- Supports **R2015a** and later
- Downloadable Support Packages

Phase 2: Export – fixed step solver

- 2016: Prototype for gathering feedback from selected customers
- Plan to support **R2015a** and later
- Licensing & business model under development

MathWorks Plans for FMI

- We have Connection Partners that support earlier releases

Third-Party Products & Services

Overview Become a Partner Search Products Search S

FMI Target for Simulink Coder
Add-on for exporting models from MATLAB and Simulink

Highlights

- Serves as a cross-platform solution
- Exports models from MATLAB and Simulink as functional mock-up units (FMUs)
- Exports FMUs that include the MATLAB and Simulink solvers
- Supports FMI 1.0

Description

The FMI Target for Simulink Coder™ enables you to export models from Simulink® as functional mock-up units (FMUs) for cosimulation and use across a variety of platforms. This allows a continuous workflow in a complete toolchain throughout the product lifecycle.

With this add-on, you can export models from MATLAB® and Simulink as FMUs that are fully FMI 1.0 compliant and include models' functionality. Models can also include a Simulink solver that enables any tool supporting FMUs for cosimulation to run in Simulink.



Supporting your vision

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Related Connections Views: Modeling and Simulation Tools, C Modeling and Simulation, Automotive

Third-Party Products & Services

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FMI Blockset for Simulink
Enables FMI compliant models to be imported and run in Simulink

Highlights

- Supports the FMI open standard for cosimulation
- Import models from over 30 tools into Simulink
- Configure the models in Simulink with an intuitive interface

Description

The FMI Blockset for Simulink provides support for the FMI open standard for cosimulation. Users can import models that follow the FMI open standard (Functional Mockup Units, or FMUs) into Simulink® for cosimulation.

The FMI Blockset for Simulink contains blocks that handle the communication between Simulink and the FMI compliant model. Each version of FMI is supported by a separate block. There is a graphical interface that allows the user to select and configure an FMU within the Simulink model. The interface supports the load and configuration of the model for cosimulation. It also provides access to the model parameters, and it includes support for converting units and linking parameters to the MATLAB® workspace.



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Third-Party Products & Services

Overview Become a Partner Search Products Search Services

FMI Toolbox
Command line interface and blockset for integrating FMI-compliant model units into MATLAB and Simulink

Highlights

- Model exchange with more than 35 different software tools
- Import/export and simulation of FMUs in Simulink
- Import and simulation of FMUs in MATLAB scripts
- Support for co-simulation and model-exchange FMUs
- FMI open standard version 1.0 fully supported
- FMI standard version 2.0 supported for Simulink FMU import

Description

FMI Toolbox enables integration and exchange of models developed in a variety of modeling tools into the MATLAB® and Simulink® environments using the open standard functional mock-up interface (FMI) format.

FMI Toolbox offers user functions to load and access FMUs from command line and scripts, as well as a blockset for using FMUs in Simulink, and the capability to export Simulink models as FMUs. FMI Toolbox enables the use of MATLAB and Simulink as integration platforms in heterogeneous engineering tool environments. The toolbox is used for batch simulation processing, design of experiments, control design, as well as validation and verification analysis. The FMI Toolbox offers an intuitive workflow to combine physical models on a system level in an efficient manner.

FMI was pioneered by OEMs in the automotive industry, and is now an established technology in all systems industries. The FMI technology is supported by a large number of open source and commercial software tools for systems engineering. See fmi-standard.org for more information.



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Enlarge
Simulink model containing an FMU and a simple control system developed using Simulink blocks