Functional Mock-up Interface

FMI User meeting
Modelica Conference 2023

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Christian Bertsch
(FMI project leader)

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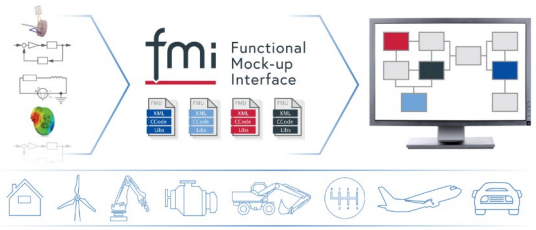
Modelica Association

FMI - DCP - SSP - eFMI : a Coordinated Set of Standards

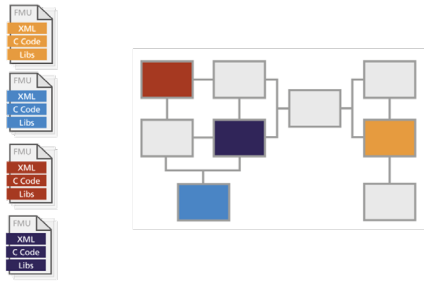
Modelica Association

fmi Functional Mock-Up Interface



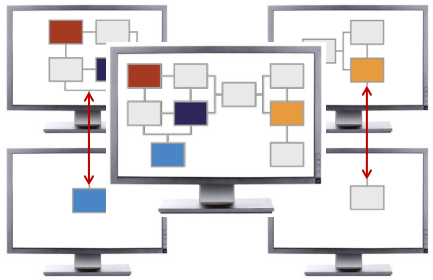
Semantics, API and XML format for exchange of simulation models and co-simulation

ssp System Structure & Parameterization



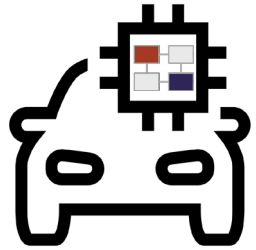
File format and XML schemas for description of architectures and sets of parameters

dcp Distributed Co-Simulation Protocol



Semantics, protocol and XML schema for network based co-simulation

efmi Functional Mock-up Interface for embedded systems



Container architecture for the step-wise refinement of a high-level algorithmic solution to an embedded implementation

Agenda

Welcome (5 Min., Christian Bertsch)

Status and outlook FMI Standard (10 Min, Christian Bertsch)

Status and outlook SSP Standard (5 Min, Pierre Mai)

Industrial user talks:

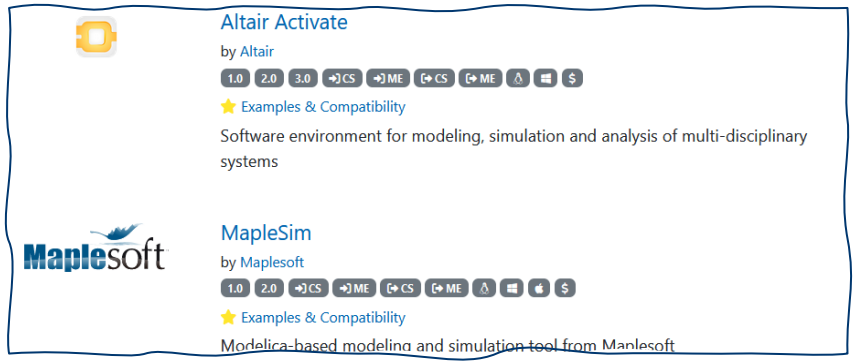
- Building Blocks for Simulation based Cooperation between Partners (15min, Hans-Martin Heinkel)
- Linking Design Requirements to FMUs to create LOTAR compliant mBSE models (15min, Clément Coïc et. al)

Status and Outlook eFMI Standard (10 Min., Christoff Bürger)

General Q&A, Feedback and Ideas (15 Min.)

Compatibility Information

- FMI **compatibility information** on FMI tools page
- Tools providing it are listed on top and are marked with ⭐ Examples & Compatibility
- Replaces FMI Cross Check
- Important quality measure during the current fast adoption of FMI 3.0



Compatibility information on https://fmi-standard.org/tools/

Validation of FMUs

- The FMI Project provides and endorses several tools to validate FMUs on https://fmi-standard.org/validation/

- FMU Check (online)

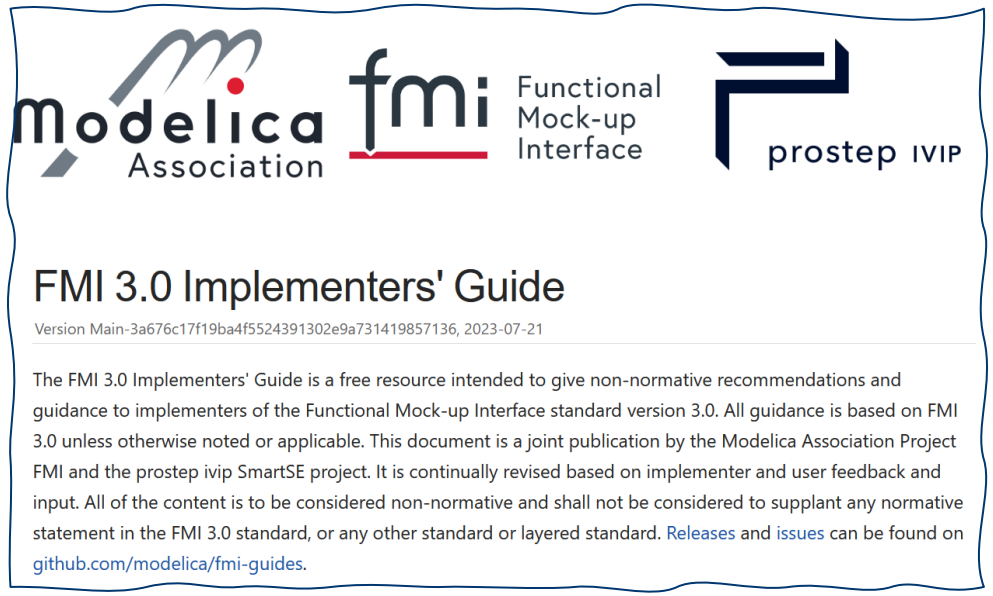
- FMPy (GUI and command line)

- fmusim executable from the Reference FMUs

- FMI-VDM-Model checker

Implementers' Guide

- Provide non-normative recommendations and guidance to implementers of FMI (3.0)
- Rolling release
- Joint publication between MÀP FMI and ProSTEP IVIP
- First Released in 03/2023



Layered Standards

Layered Standards in development by the FMI Project:

- FMI Layered Standard for XCP (FMI-LS-XCP)
- FMI Layered Standard for Network Communication (FMI-LS-BUS)
- FMI Layered Standard for Structuring of Variables, Maps and Curves (FMI-LS-STRUCT)

FMI Releases and Outlook

- **FMI 3.0** released in 05/2022,
- **FMI 3.0.1** in 07/2023
  - fast adoption by tool vendors (already 25↗)

- Currently **work on FMI 3.1 starts**
  Idee: **Focus on efficiency**, especially when handling large binary or array data
  - Avoid copying of data
  - *Will be the focus of FMI Design Meeting in Nov at Sindelfingen*

- **FMI Development is driven by the community:**
  You can contribute!

Questions?

Comments?

Ideas?

Feedback?