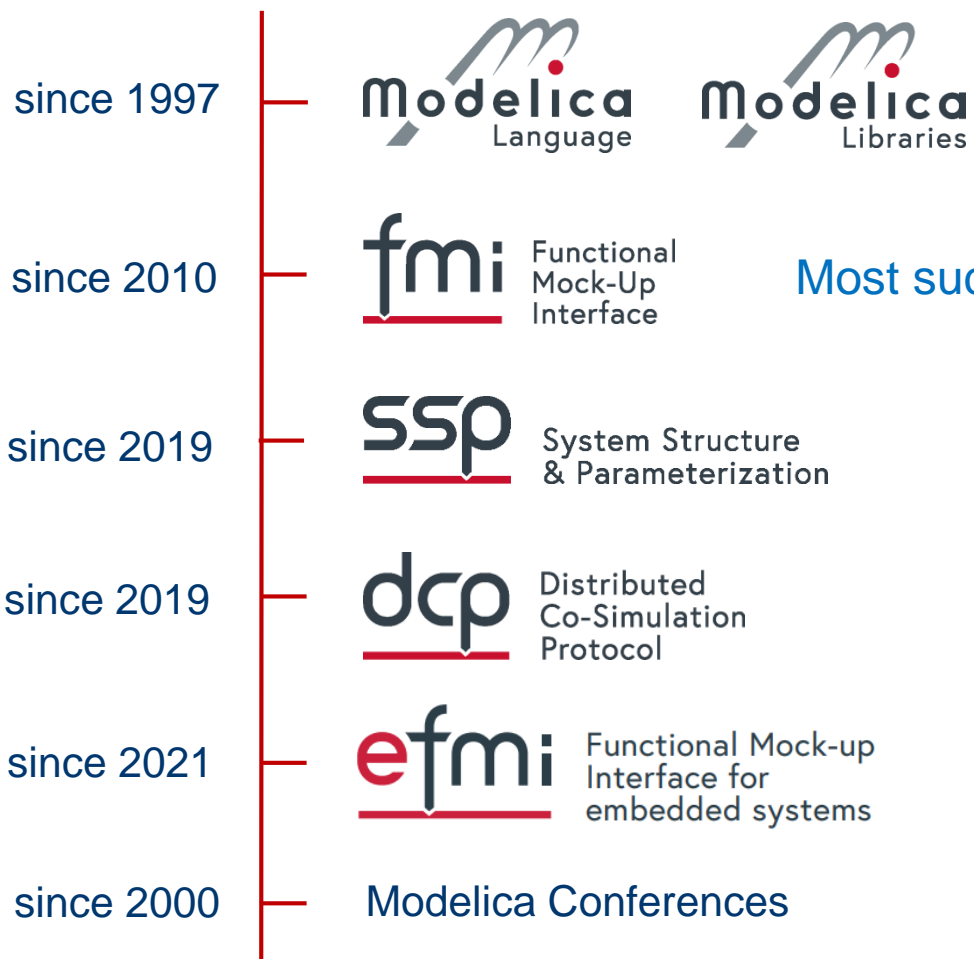# Modelica Association News

International Modelica Conference 2023
October 10th, 2023

2000 – 2023

Open, coordinated standards and software for system simulation

since 1997 — Modelica Language · Modelica Libraries

since 2010 — fmi Functional Mock-Up Interface

Most successful MA standard: Supported by 180+ tools

since 2019 — SSP System Structure & Parameterization

since 2019 — dcp Distributed Co-Simulation Protocol

since 2021 — efmi Functional Mock-up Interface for embedded systems

since 2000 — Modelica Conferences

15th Modelica Conference

American Modelica Conference 2022

ASIAN MODELICA CONFERENCE 2022 — Nov. 24-25, 2022, Tokyo, Japan

Modelica Language - Progress and Compatibility

Modelica 3.6 released March 2023

- 3 MCPs
  - Undefined Modification
  - Selective Model Extension
  - Multilingual Support
- 277 Pull Requests
- Talk on Wednesday by Hans Olsson

Future - Modelica 3.7:

- Attempts to standardize
  - Encryption
  - Base Modelica
- Many minor improvements
  - Units, synchronous
- Q&A on Thursday

Hans Olsson
(project leader)

Modelica Standard Library

Currently no project leader (temporarily: Martin Otter)

Last release: **4.0.0 in 2020**

Since Jan. 2023 by Modelon Engineering, India (funded by Modelica Association):
organize/help fixing issues/pull requests.

Since Sept 2023 by LTX (partially funded via UPSIM project):
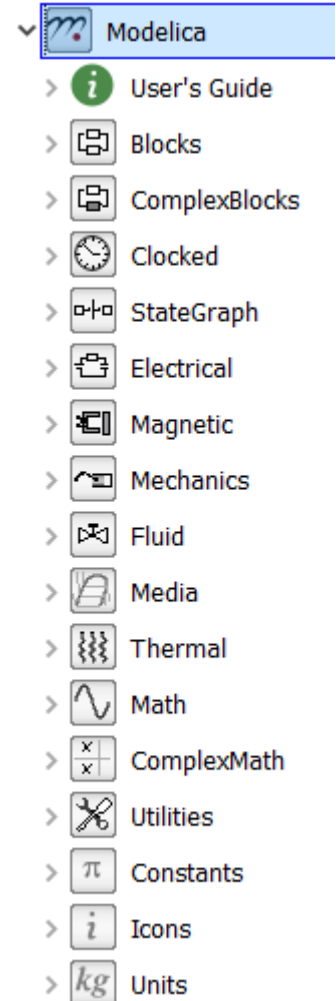Nightly regression tests for MSL
Goal is to automate the manual release tests

New main release planned: **4.1.0 in March 2024** (feature freeze: Jan. 2024)
Backward compatible release with bug-fixes and new features
(https://github.com/modelica/ModelicaStandardLibrary/wiki/MSL-v4.1.0-release)
Status: 91% complete (28 open, 308 closed)

- **FMI 3.0** released in 05/2022, **FMI 3.0.1** in 07/2023, fast adoption by **25+ tools**

- **FMI 3.0 implementers' guide** published in 03/2023
  modelica.github.io/fmi-guides/main/fmi-guide/

- **FMI validation tools available on** fmi-standard.org/validation/

- **FMI compatibility information**
  - Replaces FMI Cross Check and is provided tools vendors
  - Participating tools are marked with ⭐ Examples & Compatibility
    and listed top on fmi-standard.org/tools/

- **Reference FMUs** on github.com/modelica/Reference-FMUs

Christian Bertsch
(FMI project leader)

Torsten Sommer
(Deputy FMI project leader)

Validate your FMUs

Whether you're exporting FMUs or troubleshooting a third party FMU - the following free tools help you to validate, test and debug your FMUs.

Altair Activate
by Altair
1.0 2.0 3.0 →CS →ME ←CS ←ME ⚠ 🖵 $
⭐ Examples & Compatibility
Software environment for modeling, simulation and analysis of multi-disciplinary systems
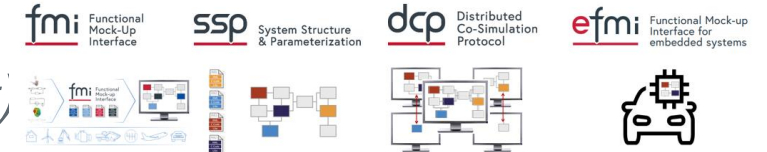
MapleSim
by Maplesoft
1.0 2.0 →CS →ME ←CS ←ME ⚠ 🖵 $
⭐ Examples & Compatibility
Modelica-based modeling and simulation tool from Maplesoft

FMI 3.0 is ready for usage now!

Agenda of "FMI User Meeting" on Tue, Oct 10
(Focus on the MA standards for model exchange and deployment)

- 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, Pierre Mai)

  - Linking Design Requirements to FMUs to create LOTAR compliant mBSE models
    (15min, Clément Coïc, Marcus K. Richardson et. al)

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

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

Current development focus by the FMI Project

- **Layered standards** on top of FMI are currently in focus of development (→ talk on Wed, Oct 11)

  In preparation by the FMI project:

  - [FMI-LS-XCP](): **XCP** support in FMUs

  - [FMI-LS-BUS](): **network communication** with FMI

  - [FMI-LS-STRUCT](): **multi-dimensional lookup tables** + parameter grouping

- **Work for FMI 3.1**

  - Focus on efficiency, especially when handling large binary or array data

FMI Design Meeting on Thu, Oct 12 (day after the conference) open for guest – **get involved!**

- Release of Version 1.0.1 07/22

  - Minor clarifications in specification

- Introduction of SSP-Traceability as Standardized Layer

- F2F Planning Meeting 02/2023

  - Support for FMI 3.0

  - SSP for Architecture and Design of Virtual Systems

  - Additional Data

  - Simulation Control

- Next Steps

  - Deep Dive Sessions to finish open issues for new release 2.0 until end of 2022

  - Finalization of Release 2.0 planned for Q1 / 2024

News since last conference 2021

- **Website** in new MA design launched: https://www.efmi-standard.org/
  - Comprehensive introduction, and many newcomer resources
- MAP eFMI **Tool Releases**:
  - eFMI Container Manager (https://github.com/modelica/efmi-containermanager)
  - eFMI Compliance Checker (https://github.com/modelica/efmi-compliancechecker)
- **New Project Members**:
  - Altair Engineering Inc.
  - Institute of Vehicle Engineering CO LTD
  - Mercedes-Benz AG
  - Mitsubishi Electric Research Laboratories
- **eFMI® Tutorial at this conference** on Monday, Oct. 9
- **eFMI® forum at this conference**, open for guests, on Thursday, Oct. 12

Christoff Bürger
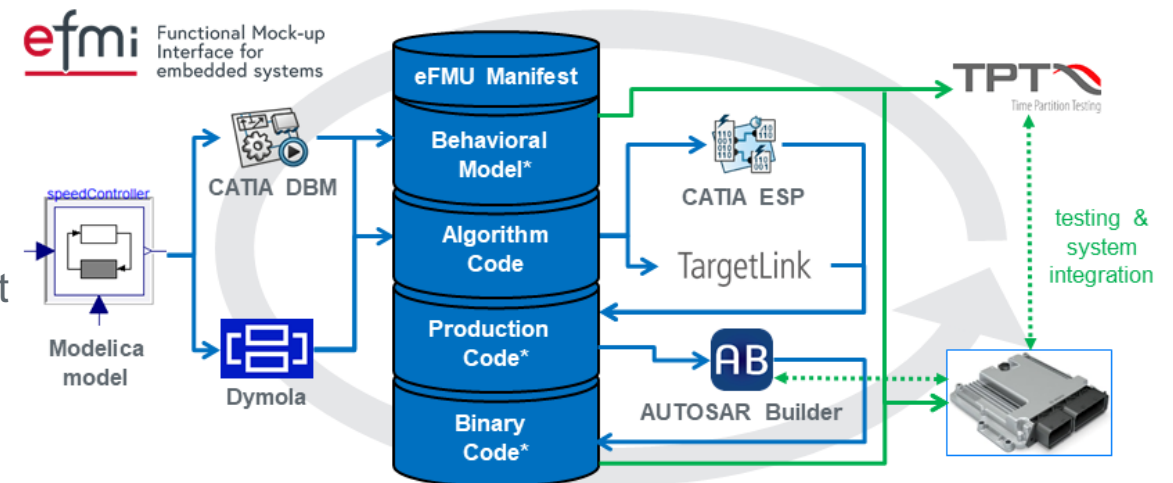(project leader)

First commercial tool releases!

AUTOSAR Builder: IDE for modeling, testing and validation of in-vehicle embedded systems for the *AUTOSAR Classic & Adaptive Platforms*. Enables eFMI Production Code in AUTOSAR.
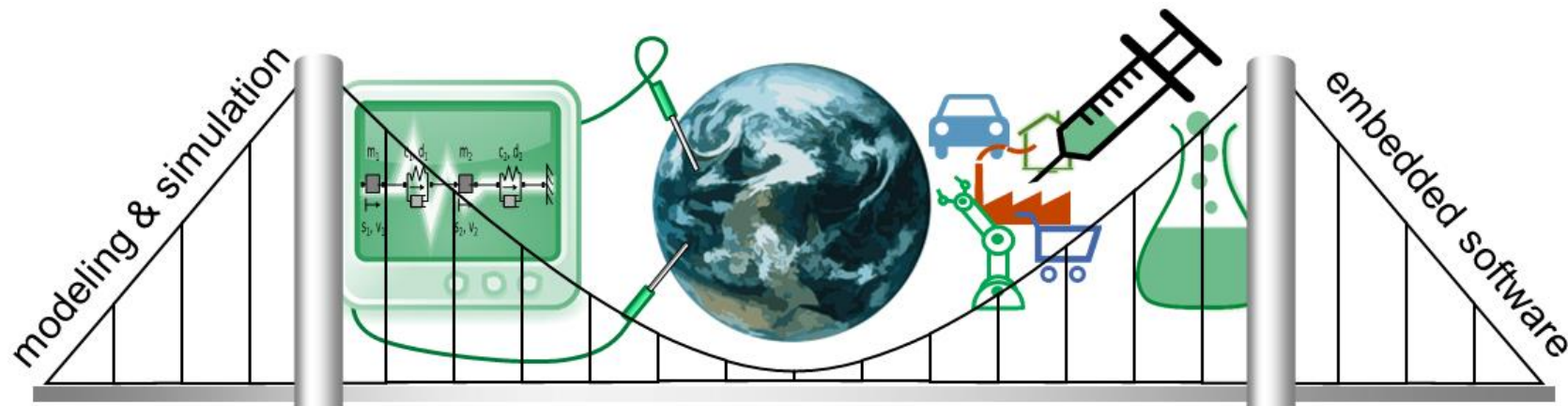
CATIA ESP: Embedded source code producer (ESP) on the 3DEXPERIENCE® platform. Enables generation of *safety-critical, realtime capable, MISRA C:2012 conforming* C code.

Dymola: Modelica IDE for the acausal, equation-based modeling and simulation of complex multi-domain physics. Enables generation of eFMI Algorithm Code from acausal controller and virtual sensor models in Modelica.

TargetLink: High-performance production code generator straight from *MathWorks® Simulink®/Stateflow®; ISO 26262, 25119 & IEC 61508 certified; AUTOSAR Classic & Adaptive Platforms* support. Enables generation of *safety critical, realtime capable, MISRA C:2012 conforming* C code.

TPT: Embedded software testing IDE (*MiL, SiL, PiL & HiL*); supports safety standards (e.g., *ISO 26262*), test assessment & requirements traceability. Enables eFMU *testing in most well-established automotive embedded ecosystems*.

Christoff Bürger
(project leader)

Project leader:
Christoff Bürger

Deputy project leader:
Hubertus Tummescheit

https://efmi-standard.org/

American Modelica Conference 2024

October 14-16, 2024

Storrs, Connecticut

Organized by:

NAMUG

UCONN (local Organizer)

Modelica Association

UCONN Innovation Partnership Building

Other Modelica conferences

- **Asian Modelica Conference 2024**
  Recent proposal from iVH
  Nov. 21-22, 2024 in Seoul, Korea
  (not yet decided)

- **16th International Modelica Conference 2025**
  No application yet.
  If you would like to organize it (in Europe),
  please contact board@modelica.org

Large Research Projects

2018 – 2021
ITEA project: **MOSIM**
Modular Simulation of Natural Human Motions
Budget: **10 Mill. Euro**
Leader: Thomas Bär (Daimler Buses)

2018 – 2021
French project: **ModeliScale**
Modelica for large scale Cyber Physical Systems
Budget: **5.5 Mill. Euro**
Leader: Patrick Chombart (Dassault Systèmes)

2020 – 2023
ITEA project: **UPSIM**
Unleash Potentials in Simulation
Budget: **16 Mill. Euro**
Leader: Martin Benedict (Virtual Vehicle)

2021 – 2024
German project: **PHyMoS**
Proper Hybrid Models for Smarter Vehicles
Budget: **4.5 Mill. Euro**
Leader: Oliver Lenord (Bosch)

Nov. 2023 – Oct. 2026 (formal approving soon expected)

ITEA Project: **OpenSCALING**

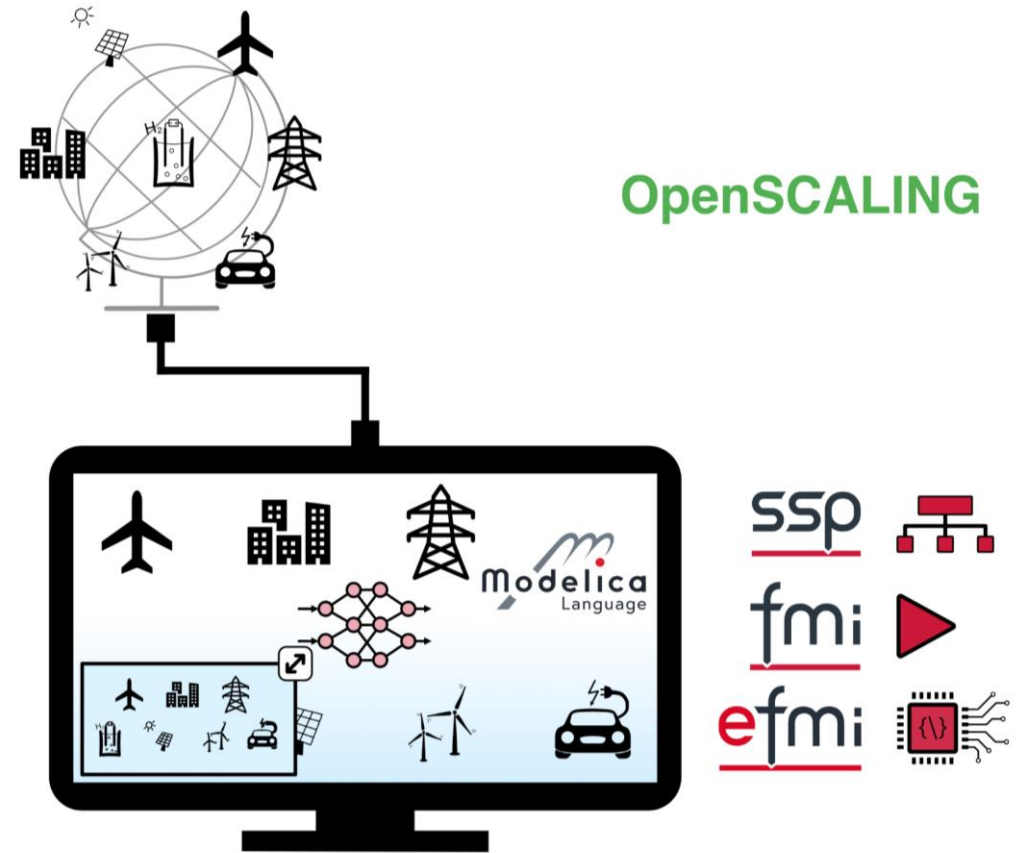*Open standards for SCALable virtual engineerING and operation*

Leader: Oliver Lenord (Bosch)

Goal:

Improve MA standards with respect to

- Large Scale System Models

- Uncertainty Quantification

- Physically enhanced Neural ODEs

- Large Scale System Workflows

Industrial demonstrators in
energy, building, aviation, automotive domains
to reduce net greenhouse gas emissions

Contact: Oliver Lenord (Bosch), Martin Otter (DLR)

Current Modelica Association Board

Chair	Martin Otter
Vice-Chair	Martin Sjölund
Secretary	Michael Tiller
Treasurer	Jonas Eborn
Marketing	Hubertus Tummescheit
Quality and Processes	Francesco Casella
Technology	Torsten Blochwitz
Modelica Language	Hans Olsson
Modelica Libraries	Martin Otter (temp./vacant)
FMI	Christian Bertsch/Torsten Sommer
SSP	Jochen Köhler/Pierre Mai
DCP	Klaus Schuch
eFMI	Christoff Bürger/Hubertus Tummescheit

Modelica Association Board and Modelica Association Backoffice meets once every month

Modelica Association Backoffice – operated by LTX

backoffice@modelica.org

Organized electronic votings on 5 standardization decisions and 3 new organizational members:

- BOEING
- ADC
- Shanghai Formal-Tech

Some of the activities at MA Backoffice:

- Websites redesign
- Invoicing organizational members
- Support conferences (Proceedings, Marketing)
- Prepare Annual Assembly Meeting
- Member administration (onboarding of new members)
- Filing of CLAs
- MA Merchandise: Spreadshirt-Shop online
- MAP Lib: MSL Testing

Sonja Gall
(contact person)

Leo Gall
(Board contact)

Ester Porcellato
(Websites, merchandise)
Matthias Schäfer
(MAP Lib testing)
Luis Mariano de Alejandro Villareal
(Conference Proceedings)

YouTube

LinkedIn

Merchandise at Spreadshirt

Modelica Association Spreadshirt Shop with T-Shirts, hoodies, coffee cups and stickers
https://ma-merch.myspreadshop.de/

Sponsors
Thanks very much for making
this conference possible

The logos are copyrighted by the respective organizations

Coordination of open standards and software does cost money. If you want to support the activities/projects with your company, please consider becoming a Modelica Association organizational member.