

Implementation and evaluation of FMI interface for FSI simulations.

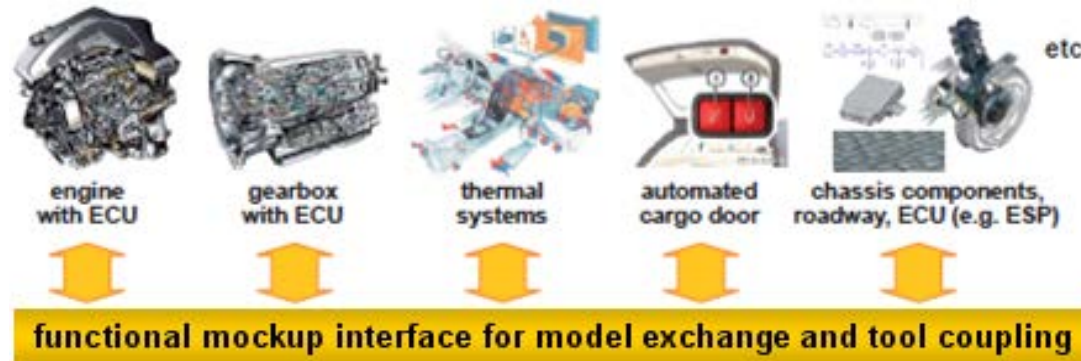


Illustration of FMI usage (Source: <https://www.fmi-standard.org>)

Project Characteristics

Modeling: ★★★★★
Mathematics: ★☆☆☆☆
Programming: ★★★★★

Tools with FMI standard

Adams®, AMESim®, ASim - AUTOSAR Simulation®, CATIA®, IBM® Rational® Rhapsody®, MapleSim®, MATLAB®, Modelica®, SIMPACK® and growing

- Co-Simulation or coupled simulation : dependency of simulations of different components of a physical system.
- Data transfer in co-simulations is complex and can easily become implementation and application specific.
- Data can be of any type. (vectors and/or scalars)
- FSI simulations are one of the complex co-simulation examples.

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Goal and Tasks

- **Goals**
 - To provide a standard to exchange vector field data over interfaces between simulation tools.
- **Tasks**
 - Implement FMI standard communication for python clients (source will be provided).
 - Extend the implementation to include clients from different programming languages (C/ C++ and MATLAB®).
 - Implement FMI interface for existing python based fluid solver (source will be provided) and test it using a FSI benchmark simulation.
- **Programming Language:**
 - C++
 - Python 3