ASAM

Association for Standardisation of
Automation and Measuring Systems

ASAM AE XIL-MA

Generic Simulator Interface (for Simulation
Model Access)

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Associated Standard

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Foreword

The Generic Simulator Interface for Simulation Model Access (XIL-MA) defines simulator control API commands. It is a subset of the Generic Simulator Interface (XIL), which also supports measuring, calibration, and diagnosis of electronic control units (ECU), as well as network access to e.g. CAN buses. Both, XIL and XIL-MA share the model access port and a couple of general concepts. An simulation tool, which implements the XIL-MA API will be fully compliant to the XIL API, too.

ASAM developed XIL API as a standard for the communication between test automation software and hardware-in-the-loop (HIL) testbenches. XIL API enables users to choose products freely according to their requirements, independent of the vendor. It will support testbenches at all stages of the function software development process – MIL[1], SIL[2], HIL[3], etc. After all, XIL API allows engineers to reuse their existing tests and enables a better know-how transfer from one test bench to the other, resulting in reduced training costs for employees as well.

While ASAM started to specify the XIL API standard, a group of vendors for offline simulation tools developed the Functional Mock-up Interface standard (FMI). FMI has been driven by an EU funded project, called MODELISAR. FMI is a tool independent standard to support both model exchange and co-simulation of dynamic models. In order to accomplish coupling of simulation tools with e.g. test tools, such an API has been also on the agenda with the internal name FMI for Applications. ASAM and MODELISAR decided to join this part of activities in order to develop a single standard, resulting in ASAM XIL-MA.

In order to support offline simulation tool vendors, the XIL-MA standard has been generated, which is freely available, as the FMI standards are. The generic simulator interface for Simulation Model Access offers the possibility that tests written in early simulation environments can be directly reused in HIL environments at a later stage, and vice versa. For the user of this specification exist two packages:

- Standard and
- Implementation Support

In the free public available package standard this specification and an associated UML model are included. The UML model describes all classes and methods with their parameters in detail. Main content of the standard is the description of the MA-port, which shall be used for the remote access to the simulation tools. The port contains data capturing and signal description. The specification document is an excerpt of the full XIL API Programmer's Guide. Due to this fact, it may include some textual references to XIL.

ASAM e.V. additionally offers an implementation support package, which simplifies the implementation inside tools and applications. This package includes technology references of the interfaces for the implementation in python and C#. Also included are templates as schema files for the defining of stimulus descriptions. Factories are distributed for the generic instantiation of one or more testbenches from different vendors.

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[1] Model-in-the-Loop
[2] Software-in-the-Loop
[3] Hardware-in-the-Loop