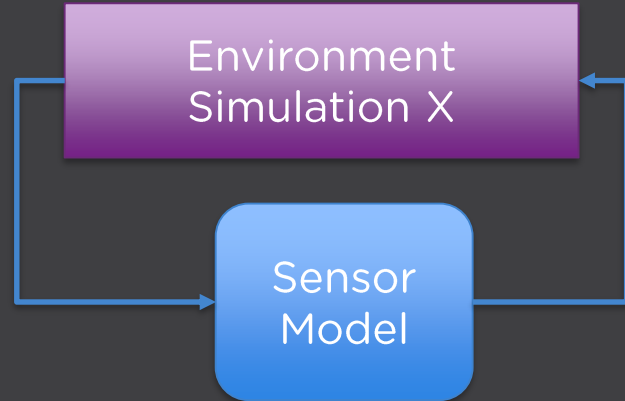PMSF
IT Consulting

OSI Sensor Model Validation with FMI Bench

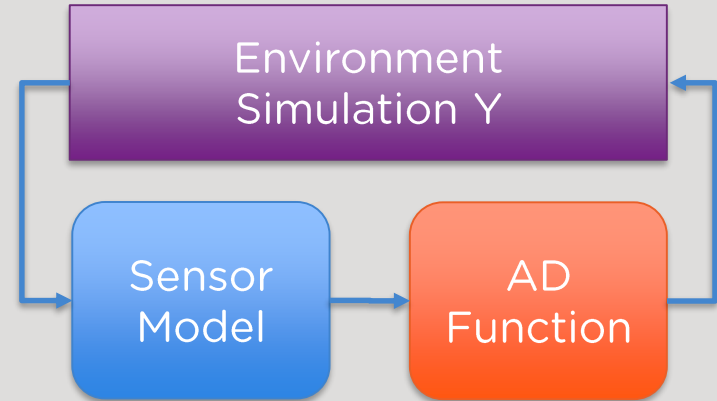FMI Bench, osi3test, and OSI Viewer

ASAM OSI Crash Course
Webinar 2020-07-29

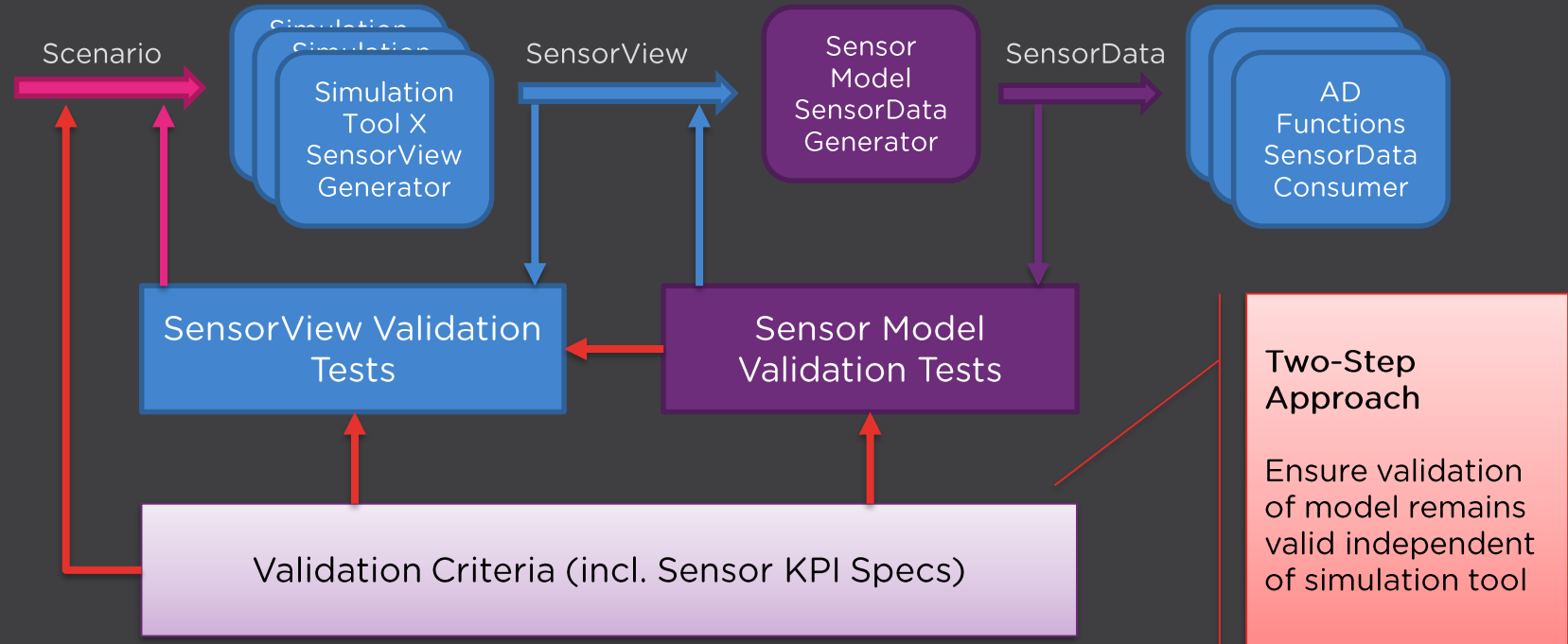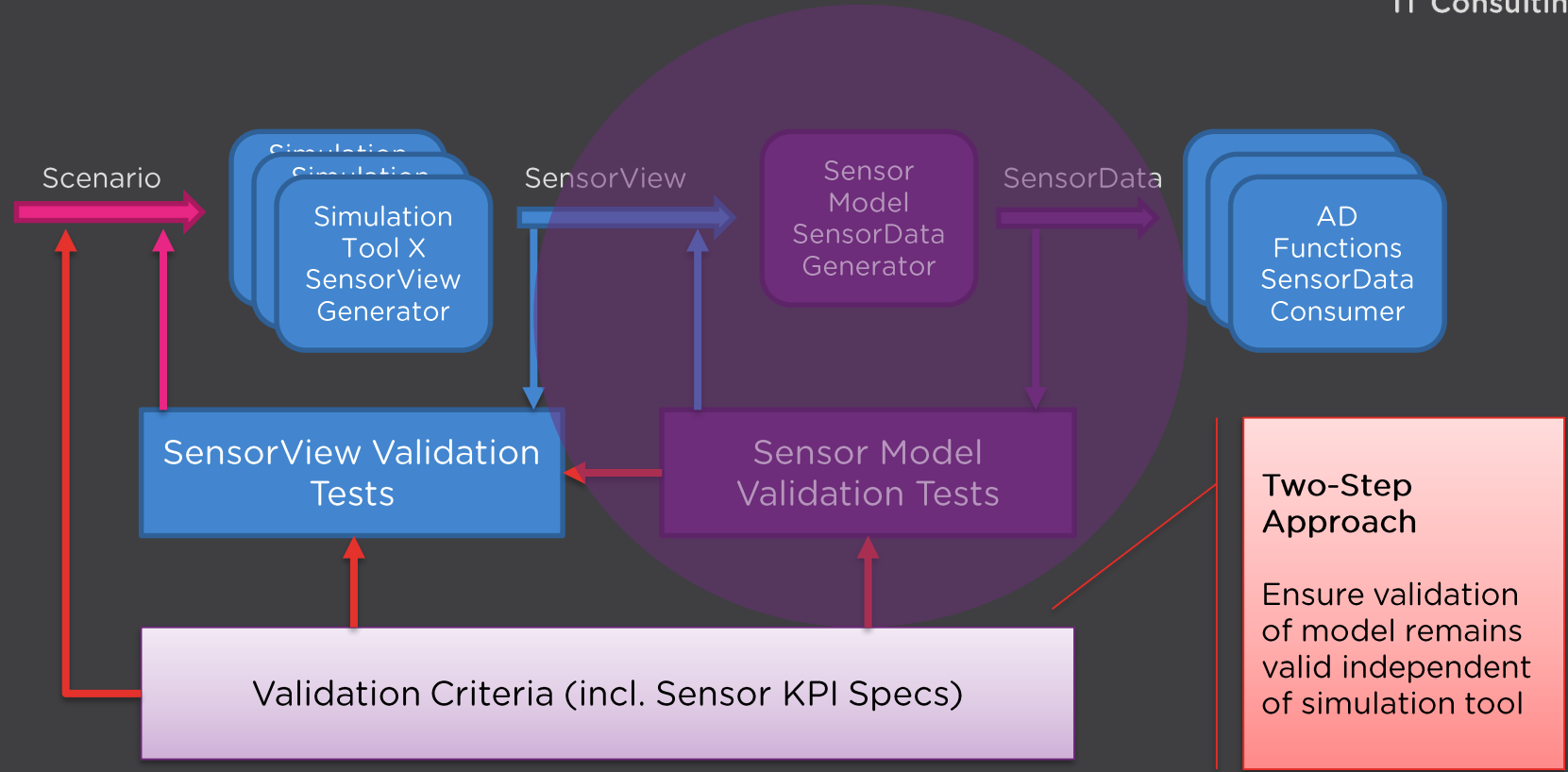# Original Motivation – One of

Tier 1 Supplier

OEM

Environment Simulation X

Environment Simulation Y

Sensor Model

Sensor Model

AD Function

Identical Model

Overview: Two-Step Approach To Validation

Scenario

Simulation
Simulation
Simulation
Tool X
SensorView
Generator

SensorView

Sensor
Model
SensorData
Generator

SensorData

AD
Functions
SensorData
Consumer

SensorView Validation Tests

Sensor Model Validation Tests

Validation Criteria (incl. Sensor KPI Specs)

Two-Step Approach

Ensure validation of model remains valid independent of simulation tool

Overview: Two-Step Approach To Validation

Scenario

Simulation Tool X SensorView Generator

SensorView

Sensor Model SensorData Generator

SensorData

AD Functions SensorData Consumer

SensorView Validation Tests

Sensor Model Validation Tests

Validation Criteria (incl. Sensor KPI Specs)

Two-Step Approach

Ensure validation of model remains valid independent of simulation tool

Sensor Model Validation: FMI Bench, osi3test, OSI Viewer
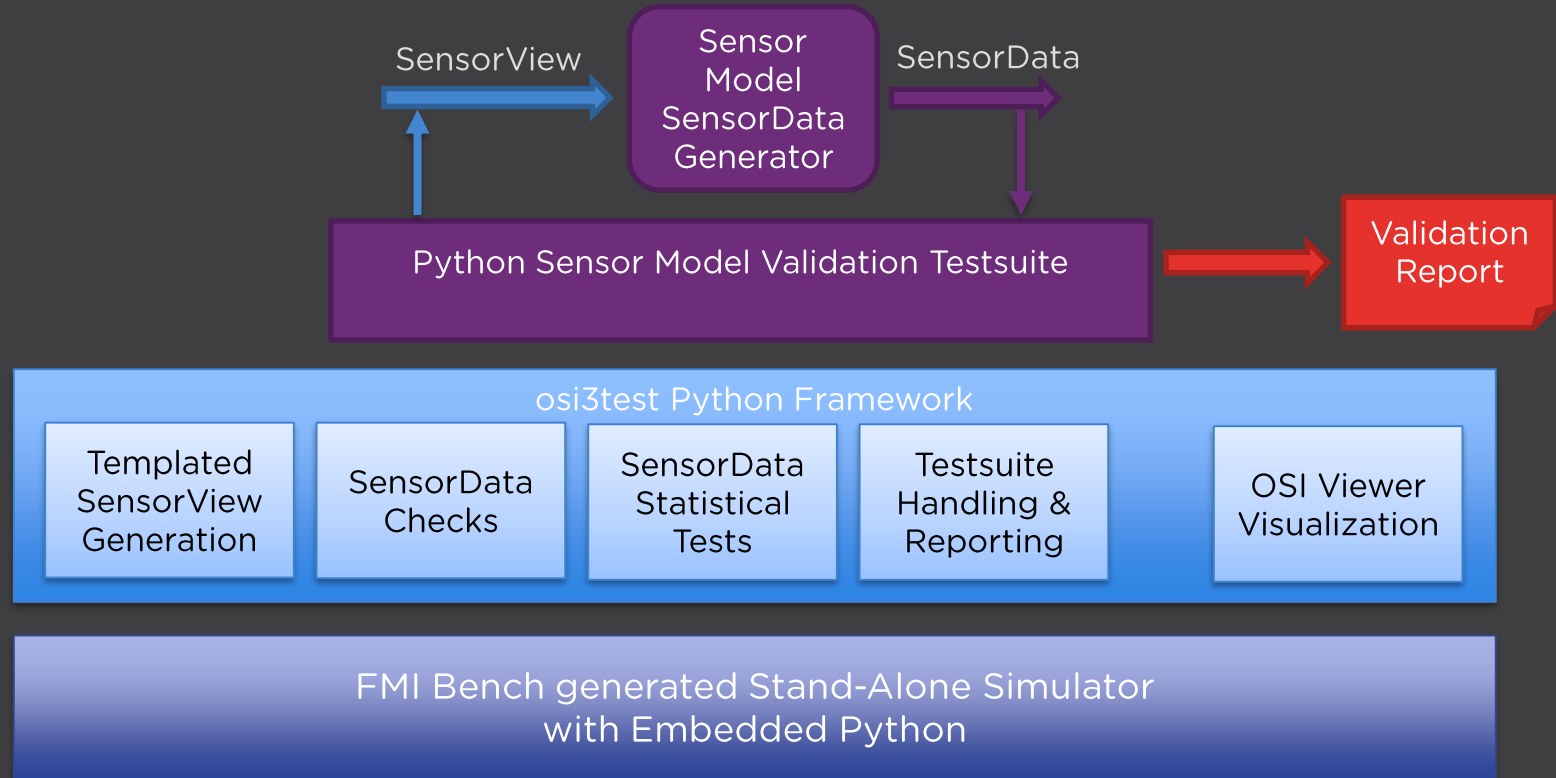
SensorView

Sensor Model SensorData Generator

SensorData

Python Sensor Model Validation Testsuite

Validation Report

osi3test Python Framework

Templated SensorView Generation

SensorData Checks

SensorData Statistical Tests

Testsuite Handling & Reporting

OSI Viewer Visualization

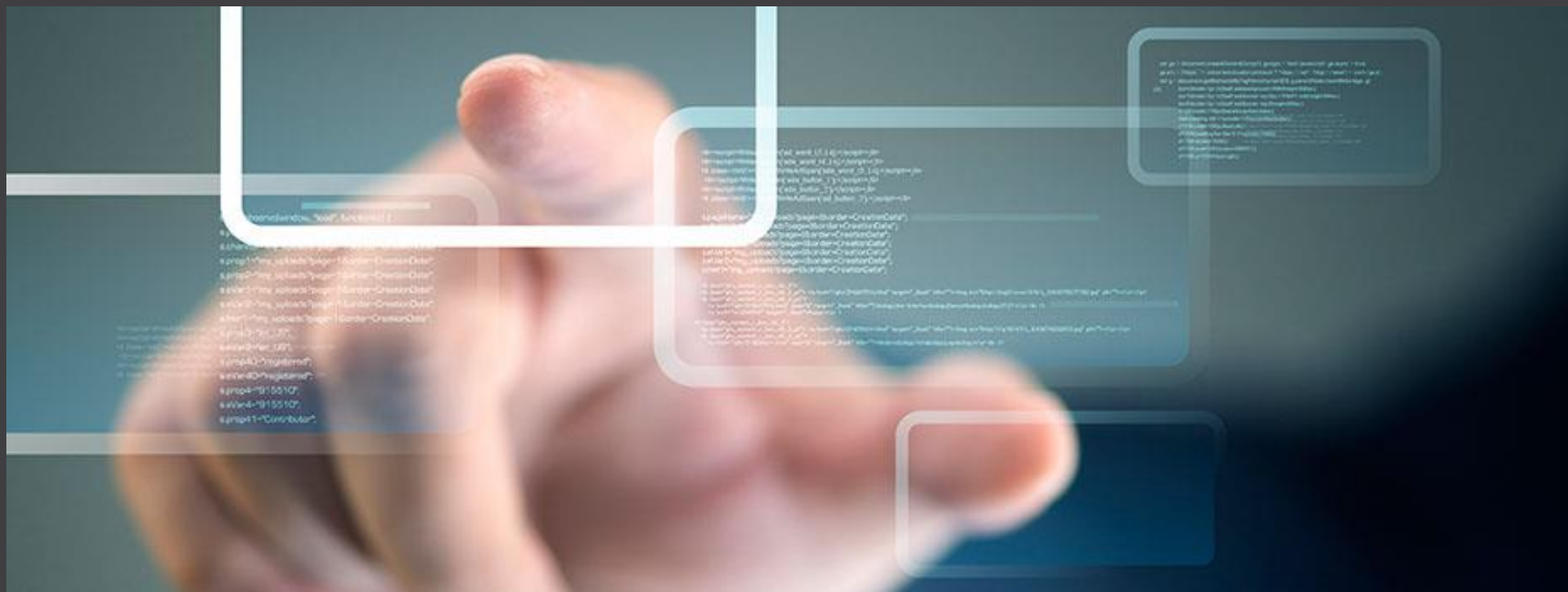## FMI Bench generated Stand-Alone Simulator with Embedded Python

Demonstration

Questions?

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Owner / Director, PMSF IT Consulting

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Email: pmai@pmsf.de

PMSF
IT Consulting

Technology-driven IT Consulting for Industry

Who is PMSF?

- **Business Focus**
  Technology-driven IT consulting and software tool development to industrial customers in the areas of simulation, embedded software, safety standards, programming methodology, languages, and compilers.

- **Experience**
  Principals all with more than 20 years experience in the field, active participation in leading research projects.

- **Customer Base**
  Automotive OEMs & Tier1 suppliers, aerospace, and industrial customers, engineering and consulting SME

- **Operations**
  Founded in 2001
  2 branch offices in Germany
  Headquartered in Marzling

Consulting & Software

PMSF
IT Consulting

Technical Depth
The depth of our expertise is the cornerstone of our business, from High-Level Architecture down to Low-Level Software and Hardware. We truly are the full-stack experts.

Business Focus
In order to best serve our customer base, we take a pro-active approach to developing cost-effective solutions based on our long-term experience of our customers' business environments.

Fresh Ideas
Technical progress and changing environments make new, cost-efficient approaches possible that were unthinkable only a couple of years ago. We always try to think out of the box to better leverage those changes for our customers.
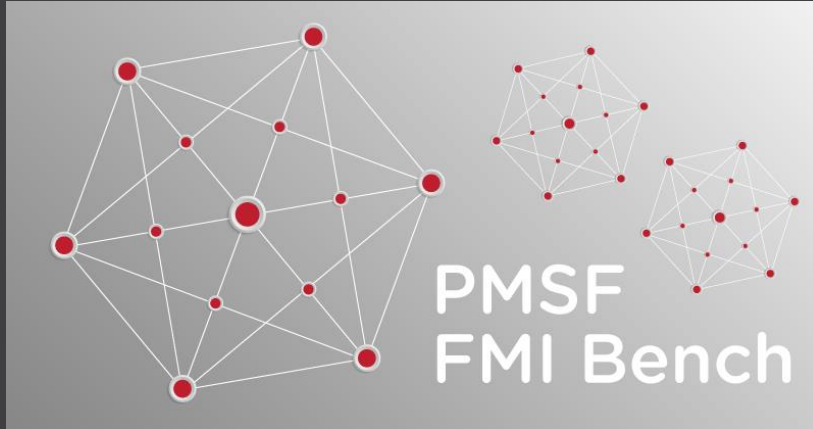
Software Products
Through the development of our in-house software products FMI Bench & RFMI Server we provide access to versatile technology for working with FMI & SSP, as well as in-depth technological expertise for use in consulting projects.

PMSF
FMI Bench

PMSF FMI Bench
The Missing Link in Your FMI Strategy

Given the increasing complexity of cross-domain integration solutions based on the emerging FMI standard, there is huge potential for incompatibilities and mismatches between all the FMI-based tools in your toolchain.

PMSF FMI Bench lets you effectively link your FMI-based simulation tools through FMU conversion, editing, debugging, pre-integration and customization.

It also offers support in automating and parallelizing your cross-domain simulations on a vendor-neutral platform.

FMU Inspector & Debugging
- Inspect & Edit FMU Properties
- Inspect & Edit Definitions of Variables, Types and Units
- Advanced FMU Validity Checks
- Wrap FMUs with Logging/Profiling

FMU Pre-Integration
- Automate Integration of FMUs using Action Rules
- Export integrated projects as new FMUs
- Multi-Thread FMUs inside Project FMUs
- Convert between FMI Versions and Implementations
- Create stand-alone Simulators for Batch Simulation
- Preliminary Support for SSP/SSD Standard

FMU Customization
- Parameter Editors
- Parameter Export & Import
- Filter/Hide Exposed Parameters
- Customized FMU Wrappers
- Adaptation of FMUs to other Interface Standards
- FMU Encryption and Licensing Integration Support