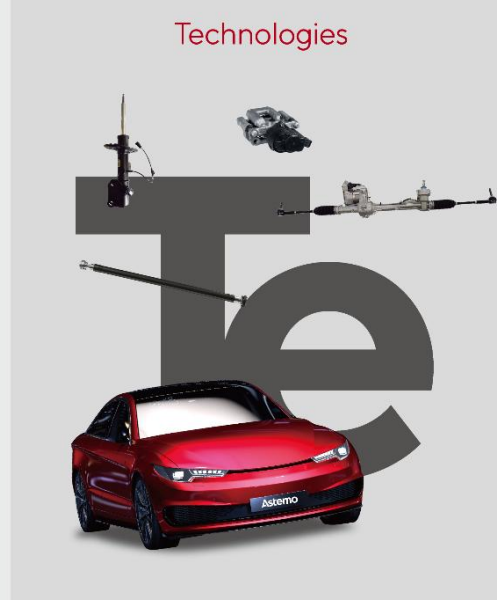




Astemo
Mobility Beyond

Virtual Damper Development

Unlocking simulation capabilities with Hardware-in-Loop and AI Modeling

Omar Elsewify, Murilo Junqueira, Claudio Fernandes

Vehicle Dynamics / Chassis Development

Astemo Americas Inc.

June 12th, 2025

Hitachi Automotive Systems

KEIHIN

SHOWA

NISSIN

have integrated to become

Astemo

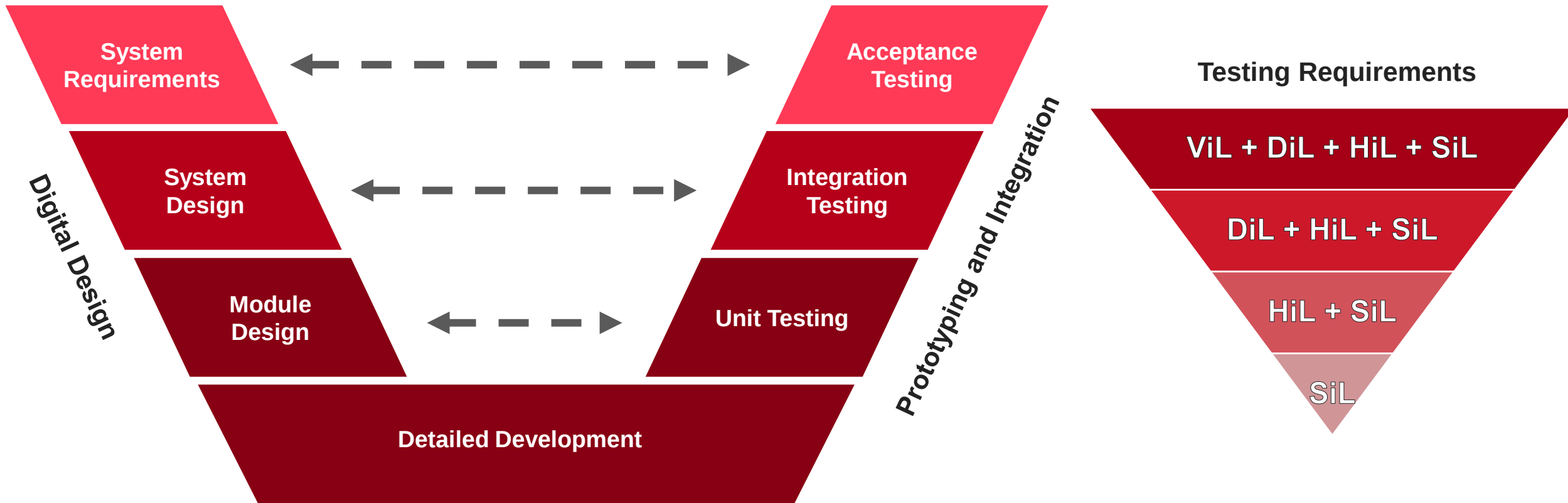
Powertrain Systems

Chassis Systems

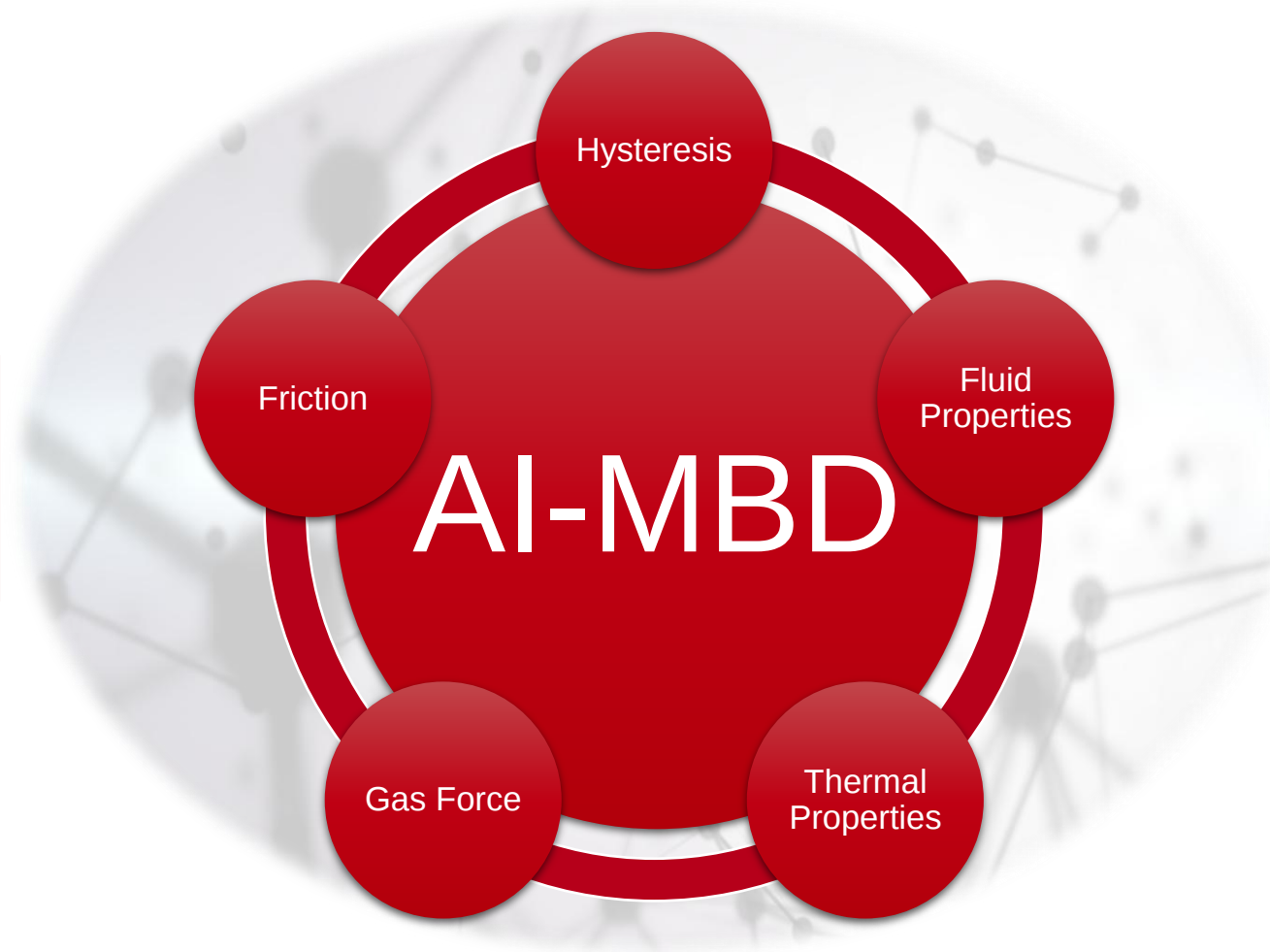
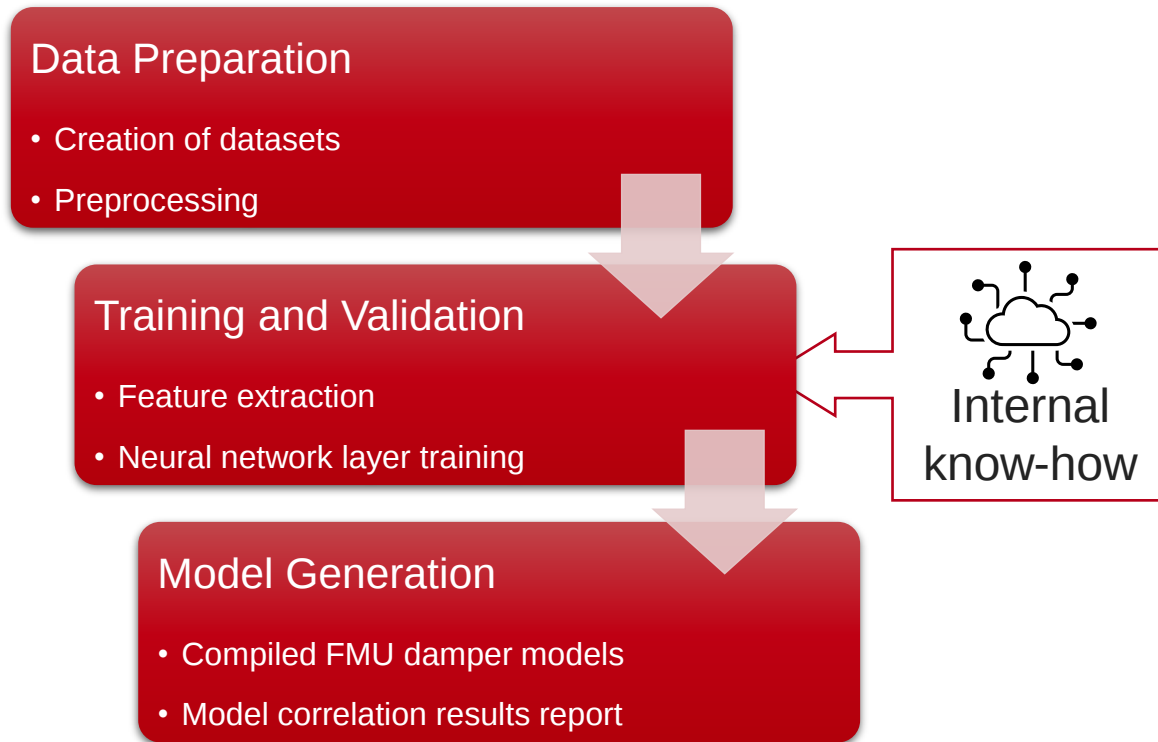
Motorcycle Systems

Autonomous Driving/Advanced Driver Assistance Systems

- Tier-1 suppliers are being pushed by OEMs to follow their pace for **virtual path** and become Tier-0.5 level
- Astemo has been pro-active towards implementing this philosophy of **increased virtual activities** and is developing **new methods** and investing in **new tools**.



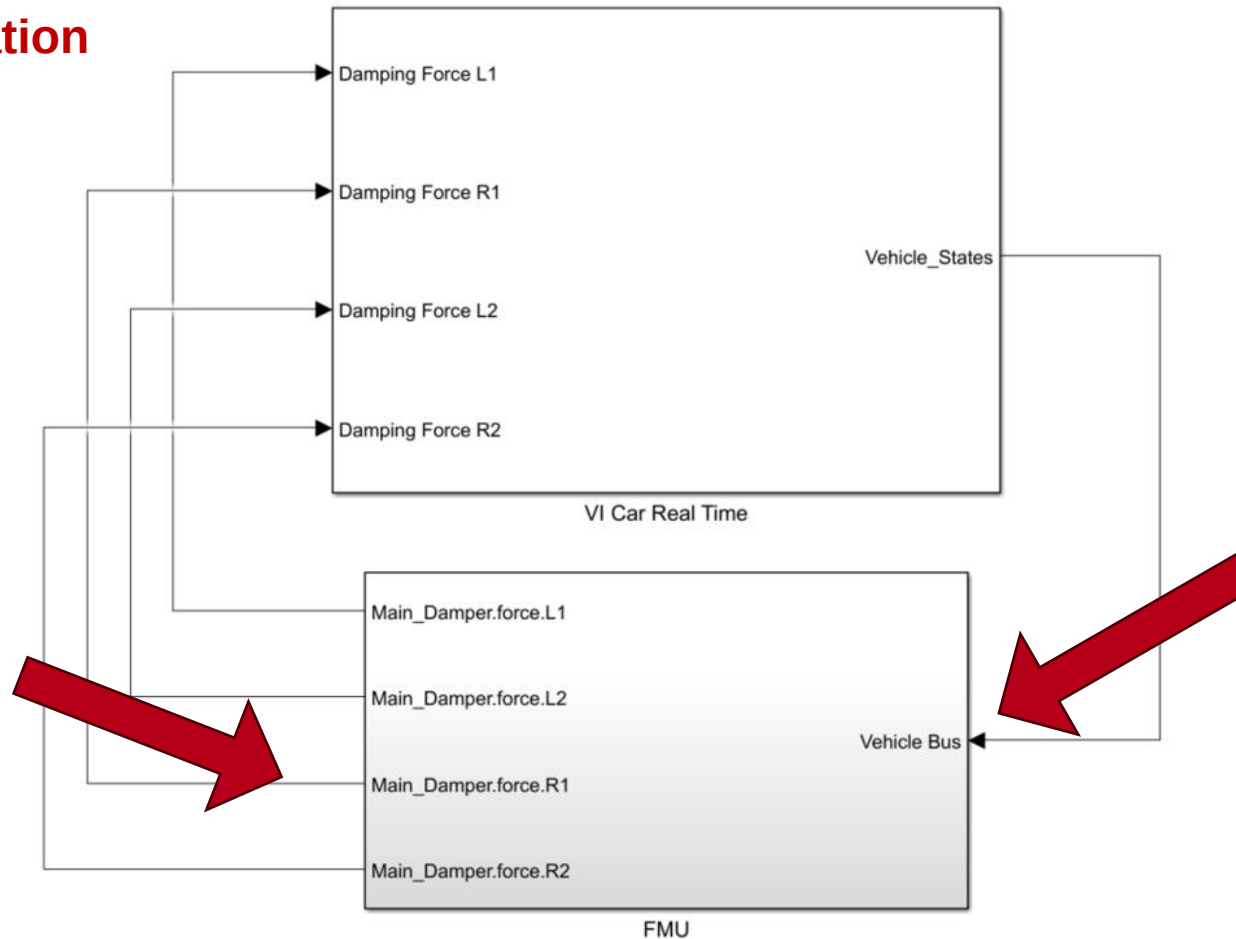
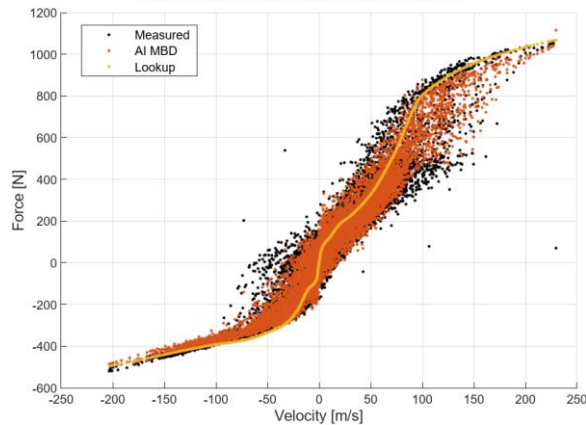
- Using our internal know-how and mass training datasets Astemo is able to offer a wide library of AI MBD damper models to meet our customers' simulation needs



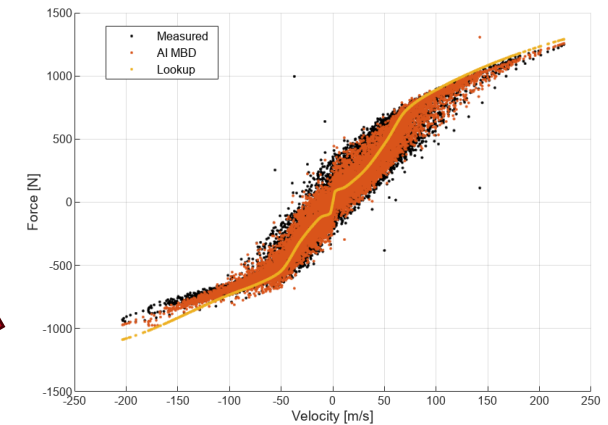
- Our AI-MBD models are effective at capturing the full spectrum of damping force characteristics and offer a viable solution for **real-time and high-fidelity simulations**

SiL Simulation (AI-MBD)

FRONTS

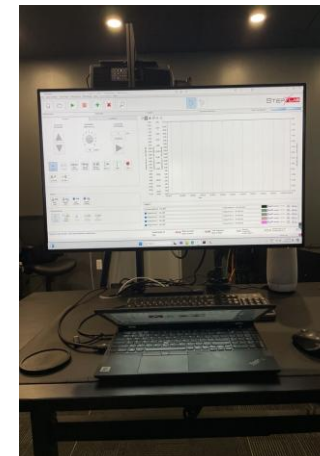


REARS



HiL Setup and Installation

- Astemo is **leading the way** for virtual simulation and development in the Tier 1 space.
- Our facility supports Driver-in-Loop testing through our acquisition of **VI-Grade's Compact FSS** simulator.
- Today we offer Damper-in-Loop (HiL) testing for our customers through our **StepLab HUD020** machines.



HiL Demonstration with FSS Compact



Hardware in the Loop (HiL) – Road Map

- We are moving towards integrating more HiL testing facilities (x-BU projects) – **Chassis / xEV / ADAS / Tires**



Dampers



Steering



AD/ADAS



Brakes



xEV

A big thanks to VI-Grade and STEP Lab for their support along this journey

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John Burford
Iain Dodds

Matteo Mastellaro
Riccardo Bertagna



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