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Aliaro Solution Brief

Vehicle Dynamics Hardware-in-the-Loop Test

The race to creating smarter, safer, and cleaner cars for the mass market are tighter than ever, and with that comes the pressure to speed up the R&D cycle while still providing comprehensive, bulletproof testing that roots out potential problem areas. With chassis electronics evolving so quickly nowadays, sometimes the test technologies to evaluate them may not even exist.

Application Requirements

- Adapt to inevitable changes in signal lists and I/O requirements.
- Conduct fault insertion and signal conditioning.
- Integrate models, third party devices and toolkits to accurately simulate the full system.
- Virtual driving includes a complete model environment comprising an intelligent driver model, a detailed vehicle model and highly flexible models for roads and traffic.

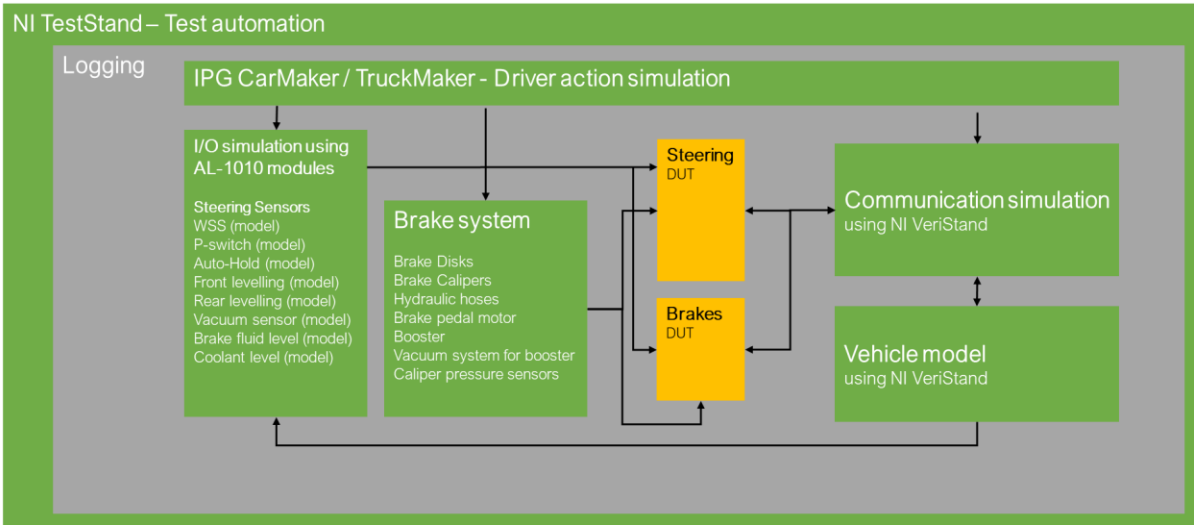
The Aliaro Advantage

- Open architecture allowing you to reconfigure software functionality when needed and plug in your own code into the system
- Reduce test development time and enjoy quick startup with a turnkey system built with Aliaro's integration and NI's modular platform
- Maximize system reuse with a flexible tester designed to be extended and customized to meet your changing requirements

Aliaro Solution

- If your ECU pinout changes you can quickly reconfigure your system setup using the Aliaro Configurator Software and the Aliaro AL-1010 SLSC module, which provides flexible I/O, signal conditioning and switching capabilities on each channel, and fault injection on all pins.
- User friendly model integration with NI VeriStand to enable sensor and actuation simulation, and I/O interfacing with NI Real-Time controllers incorporating the latest Xilinx FPGA technology for micro-second level real-time model-based simulation of power electronics, actuation, and sensors.

System Diagram



Agile and Cost-Effective Solution Delivery

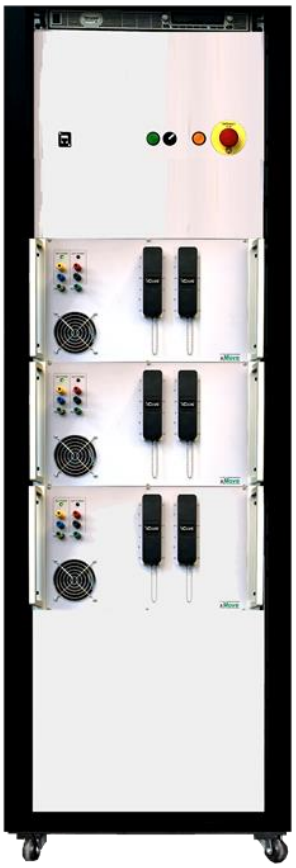
“The major advantages which made us pick NI and Aliaro were third party integration of smaller suppliers, time to delivery, price advantage, agile development, and VeriStand. We found VeriStand to be very intuitive and easy to work with.

The car-project for which the HIL is intended evolved as we created the specs for the HIL, which meant that we could not deliver a full spec order. NI and Aliaro were flexible and preferred communicative delivery.”

- Test Coordinator, Major OEM

Key Specifications

Max I/O per cabinet	360
Flexible I/O Functionality	Analog IN/OUT, Digital IN/OUT, PWM IN/OUT
Resistor emulation support	Yes (flexible configuration)
Electrical fault insertion	Yes, on all channels
Support for fault insertion of busses	Yes, CAN, LIN, Automotive Ethernet
ASAM Support	Yes
Supported Simulation models in VeriStand	http://www.ni.com/product-documentation/31488/en/
Current per DUT channel	10A (max 40A by parallel channels)
Virtual Test-Driving support	IPG CarMaker/TruckMaker, CarSim, Mathworks Virtual Driving Blockset
Test Automation Framework support	NI TestStand and most of the available 3rd party applications.



About Aliaro

Aliaro is an established test solution & HIL provider and NI Silver Alliance Partner in Sweden with offices in Sweden, UK, China and USA. Together with NI, they design modular, flexible and cost-efficient solutions for testing and HIL that enable customers to work with open and changeable devices where rapid changes are allowed.

Contact your Aliaro account manager to learn more about how NI & Aliaro can help you increase product quality and accelerate testing timelines.

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