Profiting from Change
SCALEXIO: New HIL Technology for New Test Requirements

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Once a fringe technology, hardware-in-the-loop (HIL) simulation is now a firm fixture in the development and release processes of OEMs and suppliers alike. But not only the status of HIL simulation has altered: over the past few years, work processes have also undergone radical changes. Flexibility, safety and modularization are becoming more important. The solution is a flexible HIL system that is simple to operate and easy to adapt to different tasks.

Trends in HIL

There is a clear trend towards dividing up the HIL test team, in other words, towards specialization. This boosts the quality of individual activities and also cuts the time they require.

Shifting more and more tasks to suppliers has increased the amount of information and data passing between them and the OEMs. Ideally, both sides of the partnership use the same test systems, so that they can transfer items such as models, parameters and hardware configurations directly.

Another trend is the frontloading of process steps, because project planning and test system configuration are best performed as early as possible, even before the simulator hardware is available.

These changes are making new demands on HIL technology. dSPACE has responded with its new HIL system, SCALEXIO®, and the associated configuration software, ConfigurationDesk®.

SCALEXIO: The Answer to Change

dSPACE SCALEXIO consists of standardized components that allow a complete system to be built or rebuilt fast. Users can adapt it flexibly to different development projects, for example, for different ECU variants for engines and transmissions. SCALEXIO is configured completely graphically in ConfigurationDesk. I/O configuration and modeling are performed separately, so that code can also be generated separately to save time for every user. Task specialization within HIL teams is fully supported.

Purely software-based configuration allows early project planning without the current simulator hardware. The hardware for each project can be assembled and configured as a 'virtual system'. A real-time application can be executed for test runs even if parts of the necessary and configured I/O hardware are not yet physically available.

Since the introduction of ISO 26262, the development of safety-critical systems requires precise documentation on the test system used. Because configuration is performed completely graphically, the necessary data is available without additional effort, and documentation on the entire system, including connected devices and ECUs under test, can be generated automatically.

A SCALEXIO system not only addresses ECU variants for different vehicle platforms, but also covers the entire scope of testing, from component tests to network tests. If an error occurs in a single ECU during a network test, either the OEM or the supplier can isolate the relevant part of the HIL test. Following correction of the error, a component test can be run to verify that the ECU is now error-free – all with the same HIL system.

Captions:

A SCALEXIO system can be reconfigured quickly for different development projects.

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