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Press Release

ETAS virtualization solutions

Stuttgart, February 28, 2018 – ETAS offers COSYM and ISOLAR-EVE virtualization solutions which allow users to conduct scalable software and system testing for the validation of complex vehicle functions.

- ETAS ISOLAR-EVE allows users to generate virtual ECUs for the integration of software components and the testing of ECU software without ECU hardware.
- ETAS COSYM is a new co-simulation platform that allows users to integrate virtual ECUs into Software-in-the-Loop (SiL), Hardware-in-the-Loop (HiL), or mixed XiL test environments and test them efficiently.

Visitors to embedded world will be able to witness the power of our innovative new virtualization solutions for themselves, demonstrated at our booth by our experts using selected reference implementations.

Testing automated vehicle functions in virtual environments

Automated vehicles must carefully monitor driving and environmental conditions at all times using a network of powerful sensors, rapid image processing, and object recognition. This calls for software-controlled systems that are considerably more powerful, extensive, and complex than those found in vehicles at the moment. At the same time, vehicles will soon be exchanging large quantities of data with traffic management systems, various services, and, above all, with

each other. Current road testing falls far short of what is required to ensure the safety of these complex vehicle automation functions. According to current estimates, ensuring the safety of highly automated vehicle functions would require several billion kilometers of road testing using test vehicles.

A solution to the quality dilemma

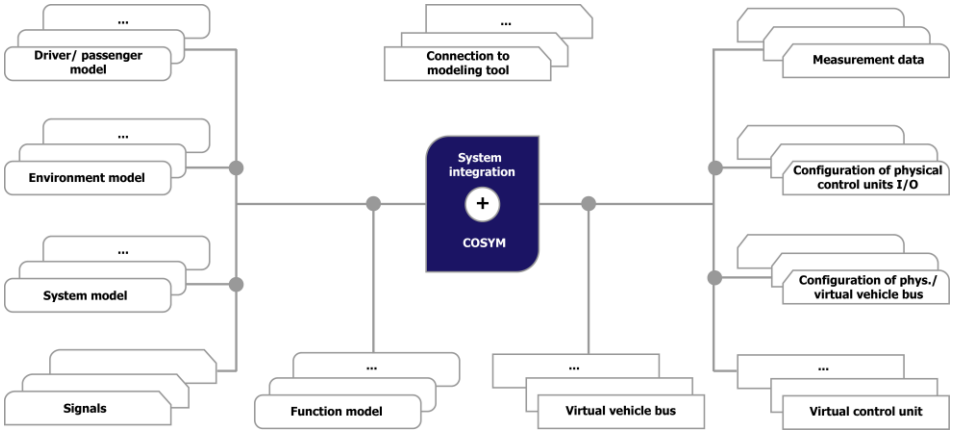
The solution to the dilemma of how exactly to validate automated vehicle functions is to completely shift vehicle and system testing away from the road and onto the computer. The requirements placed on virtualizations and simulations based entirely on computer testing are significantly greater than those applied to standard HiL testing. The validity of purely computer-based testing depends on how reliably you can virtualize physical components, power units, actuators, sensors, electronic controls, and networks of vehicle systems, and turn that into a driving simulation that tests those components in the virtual environment. Thanks to virtual ECUs, electronic systems software can already be integrated and tested within the vehicle before there are any physical prototype ECUs or other hardware components available. With its ISOLAR-EVE solution, ETAS provides an ECU virtualization environment that has already been applied with great success in challenging projects. Thanks to its open interfaces, ISOLAR-EVE can be integrated into the software development process so that, when new software versions are released, the corresponding virtual ECUs are generated along with them.

ETAS is also developing an open co-simulation platform called COSYM for the integration of individual ECUs and networks of virtual ECUs featuring simulation models of sensors, actuators, power units, mechanical vehicle components, the vehicle's environment and simulations of the vehicle's external communication with its surroundings. The platform is based on new software technology that provides a high degree of flexibility with regard to the varying IT infrastructures used by different companies. The solution encompasses a range of tools, and provides users with the capacity to simulate signal transmission in detail using vehicle buses.

Effective solutions with real practical benefits

Thanks to ISOLAR-EVE and COSYM virtualization solutions, users can constantly integrate and test highly interconnected automated driving functions across the development process, and with the necessary breadth and depth. Since the test results are instantly available, there are considerable efficiency gains to be made in system and software validation.

These sophisticated tools can be used to implement comprehensive, all-virtual test environments that can replace HiL test benches in many instances. In contrast to HiL test systems, virtual systems can be duplicated at the click of a mouse button and shared worldwide with the minimum of effort. As a result, many specific tests can be conducted in parallel, improving test throughput times by several orders of magnitude. At the same time, tests conducted in the all-virtual environment are significantly faster as they are not subject to any of the real-time restrictions.



The various components of system simulation with ETAS COSYM.

ETAS GmbH

ETAS provides innovative solutions for the development of embedded systems for the automotive industry and other sectors of the embedded industry. As a systems provider, ETAS supplies a multifaceted portfolio that covers the range from integrated tools and tool solutions to engineering services, consulting, training, and support. Holistic IoT security solutions are offered via ETAS subsidiary ESCRYPT. Established in 1994, ETAS GmbH is a 100-percent subsidiary of the Bosch Group, with international subsidiaries and sales offices in Europe, North and South America, and Asia.

Further information online at www.etas.com