

# Automotive Test and Validation Day

7 December | University of Warwick, UK

09:00	<p><b>KEYNOTE: KEEPING PACE WITH AUTOMOTIVE TECHNOLOGY ADVANCEMENTS</b></p> <p>As vehicles move toward autonomy, the complexity of the technology being integrated in them is accelerating at an incredible pace. The test methods of the past cannot keep up with the current rate of technology change. An example is the simulator environment WMG build to create the first real-world simulator that can contain an entire vehicle. This allows us to simulate wireless situations like cyber-attacks, and dropped signals; driving conditions like sun flare; and even test driver response to gain a better understanding of how users interact and respond to events.</p> <p><i>Gunwant Dhadyalla, Principal Engineer, University of Warwick and Noah Reding, National Instruments</i></p>
09:45	<p><b>THE EVOLUTION OF ADAS - TESTING SYSTEMS THAT INCLUDE CAMERAS, RADAR, AND SENSOR FUSION</b></p> <p>On their own, test requirements for camera and radar technology are rapidly changing as they become more safety critical. And because these systems increasingly rely on sensor fusion techniques, the test requirements are growing even more complex at a fast rate. A test system built on a scalable and flexible architecture is the only way to make sure you can adapt as quickly as ADAS technologies and autonomous vehicle systems are. In this session, we will discuss test methodologies for addressing these requirements, such as scene generation, synchronization between camera and radar simulation, and video bit stream manipulation, to truly put cameras to the test.</p> <p><i>Joachim Glaess, Konrad Technologies and Nicholas Keel, National Instruments</i></p>
10:30	<p><b>BREAK</b></p>
11:00	<p><b>IMPROVING THE SAFETY OF AUTONOMOUS DRIVING SYSTEMS WITH THE SYNCHRONIZED RECORDING AND PLAYBACK OF ADVANCED SENSOR</b></p> <p>Autonomous driving systems have drastically increased the complexity of testing during engine control unit development. A wide range of new sensor information must now be simulated or recorded and played back for proper testing. At this session, learn how Valeo Vision Systems harnessed the flexibility and reliability of the NI platform to develop a scalable software and hardware framework for acquiring and replaying a wide range of automotive sensor inputs including video, laser, and automotive network traffic.</p> <p><i>Chris Forristal, Valeo Vision Systems</i></p>
11:30	<p><b>TESTING V2X AND THE CONNECTED CAR</b></p> <p>With technologies like autonomous vehicles and smart cities, V2X technology is becoming an increasingly important feature in modern automobiles. Moreover, the wireless technology that enables this connectivity is constantly evolving because of new standards, new design challenges, and new test methodologies. In this presentation, we will provide a brief introduction to some of the wireless standards commonly used for V2X, including DRSC and LTE V2X. In addition, we will explain how to configure typical systems for module, ECU, and vehicle test.</p> <p><i>Axel Meinen, S.E.A. GmbH</i></p>
12:00	<p><b>WHAT DOES A "VIRTUAL PROTOTYPE" MEAN WITH THE ADVENT OF ADVANCED MOBILITY?</b></p> <p>There's change in the air. Companies that have resisted changing their development cycle for decades are starting to set-up internal committees to change organizational structure and development methods. More than a 100 ECUs, 100s of Millions of lines of code, inter-dependent sub-systems, inter-connected infrastructure, as well as a limited number of prototypes for testing are causing a shift. IPG Automotive has built the models and the methodology for the use of Virtual Prototypes within Automotive development processes for over 30 years. This session focusses on the production, distribution, and uses of Virtual Prototypes for the development of the vehicle of tomorrow.</p> <p><i>Aniruddha Reddy, IPG Automotive</i></p>
12:30	<p><b>ADVANCED TECHNIQUES FOR MODEL-BASED DESIGN</b></p> <p>Model-Based Design plays a key role in the modern systems engineering life cycle by reducing both development time and costs. Explore the benefits of using VeriStand with industry-standard modeling tools (The MathWorks, Inc. Simulink®, SCADE, LabVIEW) to implement a safety-critical control system using Model-Based Design.</p> <p><i>Colin Freeman, Frazer-Nash Consultancy</i></p>



13:00	<p><b>LUNCH + TOUR OF FACILITY (30 MIN)</b></p> <p>Take advantage of the opportunity to visit the facilities' 3xD virtual driving simulator, an extraordinary HIL simulator to test key areas such as connectivity, intelligent vehicles and autonomous technologies.</p> <p>To preview the 3xD simulator visit: <a href="https://www.youtube.com/watch?v=dhUy-ikmM4s">https://www.youtube.com/watch?v=dhUy-ikmM4s</a></p>
14:00	<p><b>STANDARDIZING THE HIL SIGNAL PATH WITH SLSC</b></p> <p>For years, test engineers have taken advantage of the lower price, outsourced risk, and easy upgradability of commercial off-the-shelf (COTS) components for their data acquisition. Until now, however, they've lacked good solutions for the other half of their test challenge: switches, loads, and signal conditioning. SLSC is the first open architecture designed to deliver all these benefits while supporting the integration of custom circuitry and load plates by being fully open. Learn how SLSC is helping companies focus on their domain expertise, building and testing next-generation vehicles, rather than on building and maintaining data acquisition systems.</p> <p><i>Frank Heidemann, SET GmbH</i></p>
14:30	<p><b>SOLVING THE UNIQUE CHALLENGES OF HYBRID AND ELECTRIC VEHICLE TESTING</b></p> <p>Using a hardware-in-the-loop simulator to validate the embedded control systems in vehicles is a standard practice. Hybrid and fully electric powertrains add an extra layer of complexity to test because of the high-fidelity and high-speed models needed to properly simulate electrical systems and the strong ties with many components in the vehicle. We have developed a distributed setup where we combine multiple test systems together and where the environment for each component is then simulated. This session will present how we tackled these challenges in one of our projects and finish off with a look into the future of powertrain testing and the developments.</p> <p><i>Pieter Meseure, MPA&amp;E</i></p>
15:00	<p><b>BREAK</b></p>
15:30	<p><b>TESTING AND VALIDATING INFOTAINMENT SYSTEMS</b></p> <p>Learn about the journey the centralised Validation team has taken for Infotainment functional and non-functional testing using the NI platform. This will discuss the goals, challenges and next steps the team has taken.</p> <p><i>Mustasam Abbasi, Infotainment Validation Manager, Jaguar Land Rover</i></p>
16:10	<p><b>HOW DOES "BIG DATA" AFFECT THE AUTOMOTIVE INDUSTRY?</b></p> <p>No matter the size of your application, on average only 5 percent of the data being collected is analyzed. Deriving knowledge from acquired data is key to gaining a competitive edge. At this session, learn how you can increase your efficiency in analyzing and visualizing engineering data that scales from an individual user to the enterprise.</p> <p><i>Ashish Naik, National Instruments</i></p>
16:40 - 16:55	<p><b>DISCUSSION</b></p> <p><i>Nicholas Keel and Noah Reding, National Instruments</i></p>