

automotive
testing
technology international

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Bob Lutz

GM's former chairman reveals how successful testing sometimes involves bending the rules

911

The new-generation Carrera is one of the most significant projects in Porsche's history



2011 Awards

Meet the winners of the Automotive Testing Technology International Awards 2011

India expo preview

What and who to see at Automotive Testing Expo India 2012 in Chennai

Chrysler

Join us at Chrysler's famous Chelsea Proving Grounds in Michigan

Proving grounds

Increases in R&D investment are being reflected in the enhancements taking place at proving grounds around the world

Test SLATE innovations for automotive customers

Motorsport companies and major OEMs have adopted Jacobs' Test SLATE software as their automation testing software due to its ability to enhance data quality by using state-of-the-art techniques

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Test SLATE by Jacobs Technology is an off-the-shelf software solution that can be easily tailored for the unique demands of each test facility, while incorporating the latest test innovations and reducing overall testing time by up to 30%.

Advanced testing capabilities

NASCAR customers can now receive comprehensive aerodynamic and mechanical (tire grip) side force as a part of their standard data set in Test SLATE due to developments by Windshear. Its patented wheel force transducers are a groundbreaking technology for side force measurement and recent improvements include wireless communications, rechargeable long-life batteries, and repackaged electronics for brake system clearance and improved geometric fidelity to the on-track wheel configuration. Integration is made possible by connecting the wheel force transducer data processor to the wind tunnel supervisory control through an OPC connection into the Test SLATE system. A simple setup interface within Test SLATE enables the wind tunnel engineer to select the position of each wheel on the car, thereby linking the wheel calibration data to the appropriate data stream. The raw data is then processed within Test SLATE in real

time to provide a seamless test experience for the customer. Because the Windshear wheel force transducers are designed around the Windshear Universal Restraint System, no other test process or vehicle modifications that could alter the aerodynamic flow field are necessary.

Testing automation and efficiency

The amount of air-on wind tunnel testing time is limited for motorsport teams, due to either competitive regulations (as in F1, where the objective was to limit development costs) or limited access to commercially available facilities. Therefore, solutions are required to maximize the efficiency of testing time. An F1 customer recently reduced its testing time by 30% after implementing Test SLATE's test sequencing features, increasing the amount of testing it could perform in the allotted test time.

The gain was a direct result of Test SLATE's sequence builder function that enables a user to quickly and easily configure test sequences without writing any scripts or knowing programming languages. Test SLATE automatically initiates all model motions, initiates data collection as soon as key (user-selected) parameters are within a user-specified tolerance, and moves to the next point immediately after the data is collected. This capability minimizes any



operator error and eliminates the inadvertent collection of unnecessary/bad data between test points during testing. While motorsport customers are pushing for these efficiencies due to testing regulations, any organization that conducts high-volume (production) testing is expected to benefit from increased test productivity.



LEFT: Patented wheel force transducers are groundbreaking technology for side force measurement. The white ring on the wheel contains electronics and wireless transmitters. There are embedded strain gauges on the wheel hub. Wireless receivers mounted in the wind tunnel transmit data back to Test SLATE

Off-the-shelf, yet customizable software

All automotive testing facilities struggle to support their legacy instruments, front-end data acquisition systems, and control systems that are expensive to be upgraded or replaced. Test SLATE is based upon an open Windows® architecture and requires no proprietary

"An F1 customer recently reduced its testing time by 30% after implementing Test SLATE's test sequencing features"

hardware to operate. It has one of the largest and most comprehensive collections of data acquisition and instrumentation drivers on the market. Drivers in the library include such manufacturers as National Instruments, Neff Instruments, HP, Agilent, VXI Technology, Pressure Systems, Scanivalve, and Pacific Instruments, to name a few.

Test SLATE enables users to customize their environments with drag-and-drop custom graphics and

tables. Test SLATE also has the built-in customization capability to send data into user-defined formulas that can be used to compute a value which, in turn, can be sent back into the testing process for decisions, logged, displayed to operators, trigger an alarm, and/or included in the automated test sequence. Finally, the configuration environment enables engineers and operators to copy and paste entire test configurations and modify them for specific tests.

This efficiency saves hours of manual labor that would otherwise be required to re-establish parameter tags, operational sequences,

computed parameters, and graphical screens.

As test facility personnel contemplate new software to enhance the efficiency of and better manage their testing activity, they often contemplate a 'make or buy' decision on whether to develop custom code in-house, or integrate commercial off-the-shelf (COTS) software. More and more, organizations are opting for COTS solutions. Test SLATE provides this 'best of both worlds' architecture, where the fundamental testing functions can be supported through industry-proven off-the-shelf software, while allowing easy integration of facility or test-specific software needs through customization that can be managed by their own engineering and operation staffs. With Test SLATE, users find the product is ready to integrate with their existing instruments and data acquisition systems. The software includes advanced features proven to enhance test productivity by up to 30%, and the environment permits user customization for diverse and evolving test objectives. These technical features, coupled with the chance to take advantage of existing, proven software (avoiding in-house software development and testing) and a fully supported solution with regular updates, are causing more organizations to take advantage of the proven Test SLATE solution. ◀