



Application: Software Testing

Industry: Automotive

Customer Challenge

For Audi (NIRA Dynamics) in automotive, software testing is mission-critical. Because failsafe quality is key, they needed an exhaustive testing solution. A high-level approach to verification of hardware/ software systems, with complete observability, controllability, and repeatability was needed.

The specific application was a system that tests tire pressure using ABS data, with software running on various processors to perform real-time analysis.

Imperas Solution

Reliability was absolutely critical, so the Imperas virtual platform solution was chosen: high-level simulation with M*SDK and OVP Fast Processor Models. The Imperas environment offered multi-processor support, important to validate multiple ABS systems.

Imperas also delivered an intelligent, complete environment, critical for comprehensive testing: a more comprehensive test environment than testing on hardware, along with the essential high performance.

Benefits

With Imperas, software test and analysis was comprehensive. Engineers successfully ran months of road test data they had collected for use as stimuli, to debug software, memory operation, and multiple ABS processor designs. Thousands of tests using this data ran nightly in regression suites.

Advanced memory analysis ensured correct stack and heap behavior, with non-intrusive memory analysis to ensure that simulation results were valid. Overall, both bugs in the code, and also in some compilers used, were identified and fixed.

Business Challenges

- Comprehensive testing, because failsafe quality is key in automotive
- Absolute reliability

Design Challenges

- Comprehensive testing with high performance
- Multiple processor support (multiple ABS systems)
- Valid simulation results (with non-intrusive memory analysis)
- Software test and analysis with months of road test data as stimuli and large regression test suites
- Memory analysis for stack and heap behavior

Results

- Identified bugs in the code
- Even identified bugs in compilers
- Imperas is deemed essential to all software shipped

“Imperas M*SDK helps us not only to find bugs in our code, but also in the compilers we use. We will not ship software without testing with Imperas tools.”

Peter Lindskog, Head of Development, NIRA Dynamics AB