



Application: Software Development and Test

Industry: Automotive

Customer Challenge: Solectrix for Safe Automotive Imaging

[Solectrix](#) knows that modern cars are incorporating more electronics every day, with Advanced Driver Assistance Systems ([ADAS](#)) offering increasingly sophisticated applications for imaging systems. From digital rear-view mirrors to ADAS features like pedestrian detection, modern car design increasingly relies on electronics for safety. Solectrix products feature reliability, with a disciplined approach to verification and qualification.

Imperas Solution and Use Model

Solectrix, with their program for camera-based side-view mirrors for trucks, needed to support [ASIL](#) (Automotive Safety Integrity Level) Level A safety standards. The application was bare metal software running on the Altera Nios II processor.

Testing the binaries was critical for high reliability, so Solectrix used Imperas simulation and Open Virtual Platforms (OVP) Fast Processor Models. Testing actual binaries using Imperas tools allowed the team to find more bugs than with x86 cross compilation. GDB was used for software debug.

Also, Solectrix uses an advanced Agile / Continuous Integration (CI) development methodology to develop embedded software, citing the Imperas virtual platform solutions as easy to add to their CI methodology. The Imperas environment and OVP Fast Processor Models delivered the high-level, high-performance simulations vital to their CI flow.

Benefits

Imperas virtual platform solutions helped Solectrix reach their safety goals, including ASIL-A, accelerated debug, and extended their Agile CI process. The program benefited through Imperas' extensive OVP model library, high performance simulation and ease of use.

Business Challenges

- Reliability
- Support for safety standards including ASIL
- Comprehensive software testing

Design Challenges

- Camera-based side-view mirrors for trucks
- Bare metal software running on Altera Nios II processor
- Embedded system software development, debug and test
- Application software development and test
- Continuous integration (CI) and Agile methodology

Results

- Reached quality metrics via high-performance Imperas software simulation, OVP Fast Processor Models. and ease of use
- Delivered value in Agile / CI flow
- Testing actual binaries found more bugs

“We were able to easily merge the Imperas simulator into our automated workflow on our build server for both unit and integration testing. Running our tests with the production binaries on the simulator enabled us to find bugs that were not found when the software was cross compiled to the x86 Windows environment.”

Manuel Andreu, Team Lead for Software Development, Solectrix GmbH