USE CASE: HOW A CUSTOMER REDESIGNED THEIR CURRENT SOFTWARE ARCHITECTURE TO SUPPORT NEW INFRASTRUCTURE

CASE STUDY

CHALLENGES

LHP engaged with this customer previously to identify non- adherences to industry standards (OBD, emissions, ISO 26262, etc.) with respect to software development. Based on the findings of the gap analysis activity, LHP proposed a diagnostics strategy to address the issues. During our interactions LHP realized that the Customer had limited familiarity of their own platform code as it was being supported by their parent company. The customer was also considering entering new markets, and the existing architecture was not built for adaptability. Hence, a redesign of the architecture to support feature expansion was required.

SOLUTIONS

LHP started the project by first updating the architecture to align with MathWorks Automotive Advisory Board best practices. LHP also redesigned the architecture to support extensibility and reusability. LHP introduced the Customer to Model-in-the-Loop (MIL) test methods to support the redesigned architecture. LHP also supported the customer with feature implementation and bug fixes which were previously undetected.

MAIN FEATURES

During the implementation phase, LHP redesigned the customer's MATLAB Simulink models while capturing the design requirements and description document. LHP added another layer of testing by including MIL testing and code coverage for more robust testing procedures which allows the Customer to detect bugs in earlier stages. LHP updated the fault infrastructure and added the ability to retain data across power cycles. The Customer further requested LHP to resolve some of its long-running issues with device drivers and frame overrun issues.

RESULTS

With the new redesigned architecture, the Customer is now well equipped to enter new markets by expanding on the existing framework. The Customer can easily expand their development team to support future projects.

ABOUT THE PROJECT

Industry

- Transportation, Hydrogen Generation

Company Name

- Fortune 500 Automotive Company

Tools/ Technologies/ Skills

- MATLAB Simulink
- MATLAB Simulink Test
- Keil
- ARM Cortex-M0, Cortex-M4
- CANalyzer
- Visual Studio C# for CAN interfaces using Kvaser
- Python Scripts
- SVN
- Low-level embedded

Goals of the Project

- Follow through on the recommendations on the gap analysis to ISO 26262
- Redesign architectures using industry-standard practices
- Update architecture to easily allow for adding subsequent feature support such as OBD and other fault standards

Application Area

- Architecture redesign

Project Duration

- 7 Months