USE CASE: COMMERCIALIZATION OF INDUSTRIAL FUEL CELLS INTO AUTOMOTIVE POWERTRAINS

CASE STUDY

Lhp

CHALLENGES

The Customer asked LHP to identify instances of non-adherence to industry standards (OBD, emissions, ISO 26262, etc.) with respect to software development. The company also needed to manage its source code or re-use on multiple product lines. Finally, customer wanted to implement DTC (Diagnostic Trouble Codes) strategy according to industry standards for fuel cell application.

SOLUTIONS

LHP suggested that the customer implement a modular software architecture, requirements management, unit testing, and change management per ISO 26262. For DTC strategy, LHP recommended fault handler design, fault reporting, fault accommodation, and design of the individual diagnostic monitors. LHP also outlined a list of unmet needs, then proposed solutions to those unmet needs, including timeline, skills, resource needs, scope, etc.

MAIN FEATURES

LHP started by suggesting a software architecture redesign to help develop and modify architecture for applications per ISO 26262 functional safety standards and for the customers DTC strategy. Then, after identifying deficiencies in testing methods, the LHP team suggested implementation of MIL (Model-in-the-Loop) and code coverage for more robust testing procedures. Next, an analysis of the regulatory environment for product market regions was recommended. LHP also suggested management of requirements using tools and generating MDL. Finally, LHP identified critical gaps in change and configuration management, then recommended training on tools and the generation of artifacts per ISO 26262 guidelines.

RESULTS

LHP provided current state analysis, identified gaps in both software development and diagnostic strategy, and laid out recommendations and future steps to overcome those gaps and be production ready. The final Gap Analysis and diagnostics strategy report were delivered on time and on budget. Included were eight work packages for future work, two of which are currently in discussion. The Customer is in the process of implementing a new organization structure for production readiness.
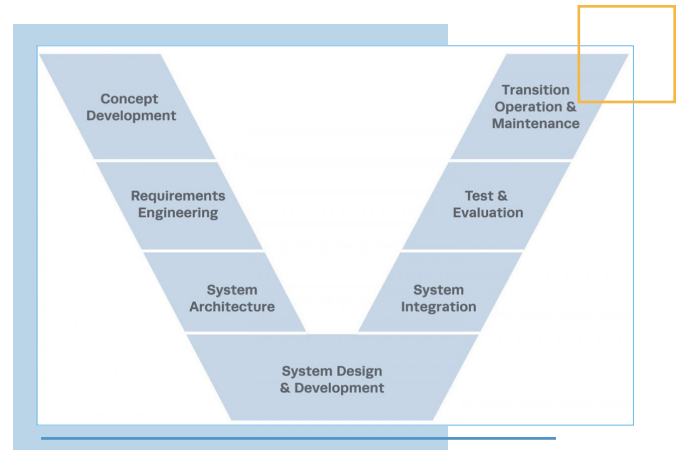
ABOUT THE PROJECT

Industy
- Transportation, Hydrogen Generation

Company Name
- Fortune 500 Automotive Company

Tools/ Technologies/ Skills
- ISO 26262 Functional Safety standards
- DTC and CAN (J1939)
- Consulting mindset

Goals of the Project
- Perform a software gap analysis with reference to ISO 26262
- Recommend a diagnostics strategy
- Outline of future steps and recommendations
- Work packages and training proposals

Application Area
- ISO 26262 Gap Analysis and Recommended Action Plan

Project Duration
- 6 weeks

Customer rated LHP 5.0 out of 5.0 on overall services.