Testing automotive system prototypes far before driving on the proving ground

Eric Sax
MB-technology GmbH
Kolumbusstr. 2, 71063 Simdelfingen, GERMANY
eric.sax@mbtech-group.com

Stefan Abendroth
MB-technology GmbH
Kolumbusstr. 2, 71063 Simdelfingen, GERMANY
Stefan.abendroth@mbtech-group.com

Abstract

The success of automotive test campaigns is determined by the quality of the established test management, the used test systems and the actual testing activities. With the growing complexity of present E/E vehicle architectures, these tasks have become a real challenge, and therefore, appropriate methods and tools to handle this complexity are a key component in ensuring E/E quality. In this presentation, 3 main aspects along the life cycle of an electronic control unit (ECU) are focused: test management, test equipment and automation and test operations (s. Fig. 1).

Summary

Firstly, in a test campaign for an automotive electrical system the focus should be on the implementation and management of the test process and its phases. The essential role is to organise the coverage of all relevant requirements by appropriate tests as well as the tracking of identified issues.

Secondly, potential equipment for testing single ECUs as well as ECU networks is evaluated and eventually compared for each phase in the life cycle. Hardware-in-the-Loop test systems turn out to be the most powerful ones in the prototype phases and are therefore more and more prominent. However, different test requirements may also lead to different test systems, and therefore, often test system landscapes arise within companies. An easy way to cope with this diversity is to use a common tool chain for controlling all of these test systems.

Thirdly, test-operations realize the final step in a test campaign. Test colleagues derive test cases from the requirements, specify and code them and report the issues. In doing so, each phase undergoes typical difficulties.

In the end, testing makes at least half of the efforts of the complete development and success depends mainly on two things: Clear processes and an openness to talk about errors.

Figure 1: Testing along the ECU life cycle