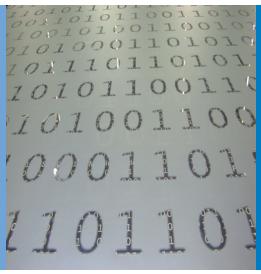

Test Automation for Software Intensive Products

Sustainable Quality Assurance in Software Intensive Mechatronic Products even with the Toughest Real-Time Requirements

The continuously increasing software part of modern mechatronic components leads to higher requirements for quality assurance in the development process. The system function test is an essential part of this. To execute it efficiently in terms of time and costs, tailored automation is indispensable.

The Problem

Permanent enhancements and repair of errors means repeating the system function tests. Those regression tests are aimed at validating existing functions and eliminating negative effects caused by code changes. In this way, sustainable quality assurance is ensured. Manual regression tests, however, lead to high personnel cost as well as delays in the development process. Efficient execution of those tests, repeated time and again, requires tailored automation.

The Method

Test cases are structured based on an analysis of the functions of the test object. The fundamental categories are test cases for validating single functions, sequences of events, and failure handling. Then representative test cases which contain all important requirements regarding time, performance, and interfaces. This allows identification of those system interfaces which are relevant for the test as well as the definition of the physical test procedure. After that, based on a generic test system architecture, and according to the requirements, the specification and implementation of the software solution can be started. The validation of the test system is done on the basis of the representative test cases.

The Solution

Using the method described, the test system is built. For executing the test, you need PC, real-time, and FPGA elements depending on your time requirements.

As tools, you may, for instance, use hardware and software components made by National Instruments. These feature the standardized graphic programming environment LabView for the different hardware components mentioned above. The components used and the easy programming allow powerful and cost-efficient test automation.

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