

Advanced Test Automation Architectures: Beyond Regression Testing

Douglas Hoffman
BACS, MSEE, MBA, ASQ Fellow, ASQ-CSQE, ASQ-CQMgr,
Hewlett-Packard
Phone 408-285-2408
douglas.hoffman@HP.com

Abstract

When most of us think of Test Automation today we picture computer systems quickly running through a battery of regression tests. This picture may have more or less sophistication, but it nearly always starts with taking existing manual tests and converting them into automated scripts. These scripts are rerun as a regression test qualification for the software. This is an expensive undertaking and more frequently than not it is unsuccessful for a variety of reasons. It is especially true for management's dream test set – where large numbers of regression tests are created to fully and automatically qualify a product.

Regression tests of this sort are the weakest form of tests for finding new defects. They are also the simplest form of test automation, most break very easily, are expensive to maintain, and do not take advantage of the full potential of automated tests. The regression tests merely automate what manual testers do, losing many of the advantages manual testing has for finding defects.

The presentation focuses on how automated tests can make use of the advantages and capabilities of computer automated tests. Some of the advantages include:

- Discovery of defects manual testing cannot expose
- Monitoring of information not visible to a person
- Stimulation of the software under test (SUT) through APIs
- Massive numbers of actions not possible manually
- Pseudo random event and value generation to generate variation in the activities of the SUT
- Automated verification of very large numbers of outcomes and potential error conditions not directly associated with the functions being exercised

The Tutorial covers:

- The relative strengths and weaknesses of manual and automated testing
- The trouble with automated regression tests
- Architectures for automated oracles to establish pass/fail verdicts
- 9 frameworks for non-regression automated tests
- 6 types of errors discoverable only with automated tests