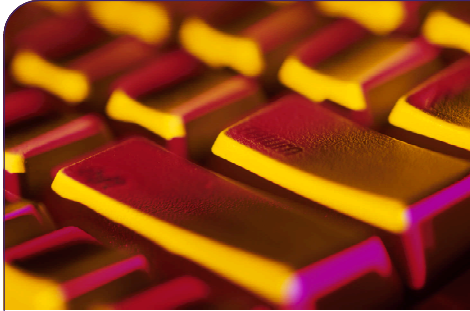


# Software Test Automation



## So Much Potential, Such Poor

**Results** Tools for automated software testing have been around for some time. Yet, despite many valiant attempts, organisations frequently get poor results. Employees of large organisations, organisations that have invested heavily in tools and training, can still be heard to say "We can't get automation to work".

### The Ad Hoc Route to Trouble

Many problems originate with ad hoc 'design' and implementation approaches. Often there is no serious attempt to design the solution. Instead, individual scripts are created to implement single tests. Scripts tend to have a linear implementation with little thought given to avoiding duplication or to ease of maintenance.

This ad hoc way of working creates many problems. There are too many to list all of them here, however some major issues are described below.

- Inappropriate design patterns. Generally test system developers do not use design patterns suited to the test automation problem domain<sup>1</sup>. Difficulties arise when test solutions have no structure or use a pattern that is not compatible with the testing problem domain<sup>2</sup>.
- Duplication, duplication and more duplication. Within test scripts a 'problem' is often solved many times, there is little attempt to code a solution once and use this wherever it is needed. It takes longer to create scripts, more bugs take longer to

fix whilst disrupting more test run and scripts are hard to maintain.

- Reliability problems. Ad hoc solutions tend to be unreliable. They are very dependent on the system under test behaving in a predictable way. Changing them causes malfunctions. Unreliability can abort tests, cause tests to run wild and create spurious error reports.
- Poor error detection. Automated tests must detect errors. Yet test systems miss many errors. Ad hoc solutions tend to check the things that it is easy to check with the given tool. Tests need a design that defines how to look for the important errors.
- Tests are difficult to follow. Both the scripts and the output they produce are obscure. What was tested? What did the test find? Script structure and output organisation do not follow a test automation problem domain pattern.

**Doing Better** Test automation demands new approaches. Some are overall process issues, like test package with clearly understood objectives<sup>3</sup>. Others are automation specific, these include:

- The use of test automation domain design patterns.
- Designing testware for a well defined purpose using appropriate checks.
- Design for unexpected behaviour.
- Avoiding inappropriate duplication in the implementation.
- Creation of reusable frameworks.

These new approaches address key problems for test automation. They provide improved test automation results.

[1] The use of appropriate patterns is recognised as 'best practice' in general software development.

[2] General software design patterns, for example the 'Object Oriented' design pattern, may not be compatible with the test automation problem domain.

[3] SQC has evolved the Smart Software Assurance approach, a key aspect of this is Precision Testing.

## SQC and Test Automation

**Experience** SQC focuses on software and IT system assurance. We have specialised in this field since 1990. Our test automation experience spans a wide range of systems and types of automation. It includes automated testing of complex behaviours, API based testing and GUI based system testing.

**Innovative Approaches** At SQC we have not been satisfied to apply standard 'text book' approaches and accept the results they achieve. We evolved innovative approaches that provide improved results. We have:

- Identified testware design patterns that offer an improved fit to the test automation problem domain.
- Established modular approaches to implementing testware.
- Developed reusable testware routines that can improve the efficiency of testware writers.

**Can We Help?** We can offer a variety of services to help organisations enter or improve results in the test automation arena. We can undertake tasks ranging from initial proof of concept for test automation, through provision of test frameworks to development of full test suites.

Acting as mentors we can help in-house personnel to establish effective automation practices. Working with you we can help you to shape your initial approach and longer term plans for test automation.

Our approach, our ability to generate good solutions to new problems, our flexibility and our total determination to do things right enable us to provide effective solutions to our clients. We can help to establish an innovative software test automation approach. Through the intelligent use of test automation tools better results can be obtained.

**Find Out More** To find out more about the services we can offer and how we could help you please email Neil Hudson. [nahudson@sqc.co.uk](mailto:nahudson@sqc.co.uk)

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