Changing gear

Regional technology manager Mike Lucas explains how Compuware helped to implement regression testing of a constantly-changing product

The business environment of the automotive industry is a dynamic one, with changes like the ending of the European "block exemption" looking set to transform already complex relationships between manufacturers, dealers and customers. Anyone providing software to this industry needs to update their product frequently; it is vital they can do so without disrupting existing functionality.

Compuware customer Kerridge Automotive Systems has been able to keep up and move ahead of competitors by applying the latest automated testing techniques to its dealership product, Autoline.

Taking quality seriously

Kerridge has been in business for a quarter of a century and uses Autoline, a comprehensive dealership management system, to take care of all business processes. It is developed using Kerridge's bespoke programming language, KCML. The Autoline product is continually being updated in a six-monthly development cycle by the central in-house quality assurance (QA) team. Testing is a constant process, with programmers taking responsibility for thoroughly unit-testing their own work, before passing 'frozen' code on to the dedicated test team for independent integration testing prior to release.

Kerridge's manual testing (following any change) focuses on the modules that have been modified and on the surrounding functional area - the area most likely to be affected by the change. However, software developers know only too well that there is a small but significant chance that a change will affect an apparently unrelated area of the application. Such knock-on effects can only be discovered by regression testing which involves re-testing the entire product prior to releasing it for general use. Carried out manually, this would have been an extremely expensive and time-consuming task.

As Autoline's customer base had grown internationally, the question of regression testing became more pressing. Now that they were selling into many more countries, the cost of correcting problems after release would be much greater than when they had only three or four markets, so they needed to do everything possible to identify and correct any problems before distributing the software. Consultants in each country re-test the software after carrying out localisation and translation and before implementation at clients' sites, but Kerridge wanted to be certain these local consultants had a robust core to work on. This also applied to the importer management systems and fleet management software that Kerridge provides to the automotive industry, as both these systems also use Autoline as their development base.

Creating Test Conditions

At the time when regression testing was becoming an issue, the Kerridge QA team recognised that automated testing tools could make an end-to-end test feasible, both technically and commercially. They selected a suite of tools including Compuware's QARun for functional testing and QADirector for advanced test management.

Good object level recognition of an applications components (edit controls, tree views etc) is fundamental to achieving robust regression test packs. Kerridge used the tools to analyse and generate objects and test scripts that are both efficient and easily understandable. Recording a test script is a simple two-step activity. The first step is to navigate the required test path creating and naming objects as required. The second is to record the test script.

The Kerridge testing experts already had a clear idea of what they wanted to do. Rather than undertake a small-scale pilot, they put the tools to work in earnest. Careful thought was given to the processes that every dealership in every country would do every day, and a list of 140 basic processes, such as taking cash from a customer or selling a part at 10% discount, was produced. The plan was to put together a suite of tests that would allow Kerridge to carry out end-to-end testing of all these processes whenever anything in the system changed. Having documented their test conditions, the team began to use the tools to create the scripts that would execute the tests. After an initial training session to make sure everyone understood what was achievable, they were able to get to work.

End-to-end testing

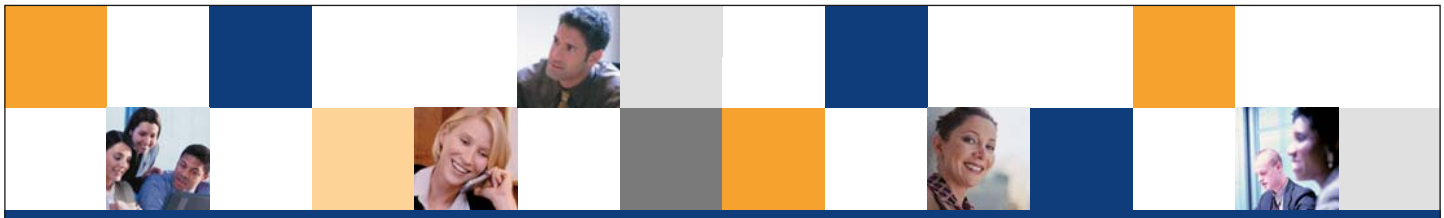
The team has now built up a 'test catalogue' consisting of the 140 basic scripts. It has also created a standalone replica of a typical customer system in the field as the basis for running the tests – a test-bed which can be restored after each test run. Now, whenever there is a new version of the software, whether for a bug fix or a major release, the tests can be run quickly and the results automatically checked. The only significant human effort required is to check the results for highlighted exceptions, where the actual results do not match the expectations, and to follow up on these cases. There is virtually no overhead involved in increasing the volume of test data. Because the test is almost entirely automated, the only extra resource needed to build up the volume is disk space.

It is planned to expand the test catalogue gradually to cover more functions, Kerridge are determined to retain a modular test design based on simple modules. Rather than have huge scripts that test extensive processes, they will keep them short and simply assemble a big test sweep from multiple scripts. This philosophy helps to keep the overhead of script maintenance under control. Kerridge always recognised that there would be work involved in maintaining automated tests, but believed the benefit would justify the effort, and have now been proved right. A process is now in place for keeping the scripts up to date. In most cases all that will be necessary is to re-record a single script because there's an extra field on a screen or the order of fields has changed.

International testing

The test catalogue is distributed to all of Kerridge's operations and distributors worldwide as a basis for their own testing. Larger operations may decide whether to automate their tests; some are already in touch. Each operation could use automated testing tools to record its own scripts using the localized versions of the screens and then test the various levels of customisation: country specific, franchise specific, and bespoke. These different levels of customisation make local testing complex, so automation could be very valuable.

Autoline is a versatile product, but one that must be constantly revisited it to make sure it meets current market needs. Kerridge is now able to take a proactive approach to testing all these changes and avoid "being caught on the back foot". PT



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