Knowledge Expertise Technology

nFocus Government Gateway Case Study

Background

The Government Gateway, launched in 2001, allows citizens, businesses and other public sector organisations to interact securely with wider government through identity management, secure transaction, messaging and payment services.

Around 14 million individuals and businesses are registered users of the Government Gateway, spread across 153 online live services, making it one of the largest and most integrated IT Common Asset services in Central Government – spanning 79 public sector service organisations from HMRC to the West Midlands Fire Service. Additionally, it is a critical part of the government's strategy of delivering 'joined up' government, enabling people to communicate and make transactions with government from a single point of entry.

Key services on offer through the Government Gateway include access to a range of tax office functions, pension and allowance services and employment transactions.

Requirements

The Government Gateway is an authentication and routing system used to support literally hundreds of government services. Microsoft has been involved for seven years, since inception, and is the sole developer, while Atos Origin is the managed service provider and Microsoft works through them to provide development services.

nFocus had already been working on a number of projects with Microsoft, and was called in when an experienced and specialist test lead was required to complete version 1.5 of the Government Gateway. The work and outcomes delivered were of a high standard, so when version 1.6 was to be delivered, Microsoft selected nFocus to deliver the testing service.

The key requirements for the testing service:

- Provide continuous and robust testing to ensure that there is no interruption to live services that are delivered to the Government Gateway's customers.
- Be able to perform regression testing to ensure that any changes are fully backwards compatible and allow services to continue to operate once changes are made.
- Ensure that government departments' own applications were not compromised by any software changes.

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The Solution

As the Government Gateway expanded and took on more responsibility for government transactions, down-time was simply not acceptable. Any system which works 24/7, 52 weeks of the year, only functions because it has been tested at the highest level and is proven to function correctly.

Additionally, Microsoft had decided to produce the latest phase of the Government Gateway in a series of iterations, rather than a 'big bang' approach. This meant that testing would have to be handled differently. nFocus realised that the only practical method of testing the sheer volume of changes that were being made was to use automated testing, but on an unusually grand scale.

Here, automated testing provided a method of testing continuously and ensuring that the constant improvements and changes to the system were monitored as they were being made, and not at the end of development as is usually the case.

Typically, in a project where there is frequent change, automation can be of limited value since the automation scripts and automation logic need to be revised, re-written or re-built repeatedly, thus increasing rather than decreasing the manual effort. However, through nFocus' automation approach, the delivery team for the Government Gateway was able to fully test each release while still benefiting from the advantages automation brings. The approach, which is more resilient to change than traditional automation, involved the abstraction of the test definitions away from the underlying automation toolset, close collaboration with the Electronic Delivery Team and the developers, and a testing strategy which was pro-active rather than reactive to change. Indeed, the automation approach enabled the test team to embrace change and work through how to deal with it effectively.

nFocus quickly implemented a robust automated testing framework enabling them to standardise test procedures and reduce the inefficiencies inherent in manual testing. In addition, nFocus developer-testers created a range of 'smart adapters' which enabled the automated testing framework to work with all kinds of legacy applications and bespoke protocols, which extended its applicability, and reduced time spent rebuilding/carrying out tests on legacy interfaces.
Richard Yorke, Head of Technical Services, Electronic Delivery Team Transformational Government (CIT) Department of Work and Pensions said: "One of the key things about this project was the large number of test requirements. The Government Gateway has rich and complex functionality that requires full regression testing. Some companies or organisations may take a risk-based approach to regression testing as they don't have multiple stakeholders. That wasn't an option for the Government Gateway as its stakeholders include government departments who rely on this central service and hence the project needed full coverage to ensure backwards compatibility."

"We found that the nFocus team has unrivalled experience, knowledge and a passion for delivering on-time. They understand automation and are good at demonstrating that automated regression testing can add value by reducing our growing testing costs. Without their automation approach our testing costs would have grown exponentially."

Regression testing 'runs' were performed every night, and this proved to be at the heart of the project's success. Due to test automation, it was clear to the development team that existing functionality was being maintained, and the speed of the results meant that the development team could continue with confidence. This began to reinforce a culture of 'don't break the build', which motivated the developers, and allowed management to make informed decisions.

As part of the overall monitoring and testing process, nFocus provides the Government Gateway with a pro-active daily 'confidence' report that outlines any potential causes for concern before they become critical issues. An nFocus team is currently based on site to ensure testing is carried out constantly and effectively.

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Alan Long, Microsoft Services Programme Manager said: “nFocus provides highly skilled people that really understand test automation and also understand requirements, analyse the problem, write the test, then build the test into an automated test framework and execute it. The automation aspect here is key - we perform a huge amount of regression testing and continuously test overnight. This regular regression testing ensures that we catch bugs early. This is something that nFocus is very good at. All we need to do is run the automated test suite and it gives us the confidence that we have not introduced bugs when new features or functionality is added.”

Conclusion

With no major regressions and a reported 99.9% uptime, nFocus’ automation framework has made development easier by providing ongoing test results for backwards compatibility, reduced testing costs and ensured reliability.

Any failure in the Government Gateway would have been very public and potentially highly embarrassing to the government, so confidence in its reliability was crucial during the delivery of each release. By reducing the risks associated with development and change, nFocus’ work provided the Electronic Delivery Team’s Government Gateway with that confidence and along with Atos Origin and Microsoft they have subsequently engaged nFocus on further testing projects.

In addition to a considerable direct business benefit from the testing regime, there is also an element of cultural change. Richard Yorke thinks that the process has improved the general perception of the Government Gateway: “Customers have greater confidence in the Government Gateway, and know that new iterations will not adversely affect their own applications. Finally, we’ve also been explaining our approach to test automation, and this has helped manage customers’ expectations and their own testing procedures, which ultimately improves the quality of services provided.”

The nFocus testing team’s agile strategy, close working relationships with the rest of the project team and its innovative approach to automated testing meant that they were able to deal with the high level of change in an efficient and controlled manner. Assuring change could have become a huge insurmountable problem but now it is seen as a ‘business as usual’ activity and there can be no greater accolade than that.

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