
Case Study

For

Test Automation of Web based Reporting & Analytics Product



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1. The Client

The client is a software product vendor in the information management space, headquartered in USA with over 2000 customers and 170,000 licensed users spread across 40 countries. It helps businesses generate 'actionable information' from silos of data, through its award winning easy to use reporting technology in an uncomplicated and user-friendly manner.

2. The Project

The project is a comprehensive web-based solution for enterprise-wide reporting, information delivery, analysis and decision-making. It can be integrated within a web-based application as a core reporting, information delivery back-end system and information analysis front-end system. The project connects to any data source (any RDBMS) and can be integrated into Java and .Net applications. It provides secured and scalable distribution of analytical reports via Internet, Intranet, Extranet and Corporate Portals. Its developed using J2EE, webservices and XML. Each screen of the application contains objects that are dynamically created and hence requires an in-depth study of application source code while testing the product.

3. The Challenges

The main challenges Gateway faced were:

- Knowledge transfer of the application as no such requirements doc was available.
- Communication and close track of all communication between the Client and their Development team.
- Selection of the Module(s) to be included for automation testing
- Tool selection
- Approach that needs to be followed after selection of the tool.
- Handling Dynamic Objects:-Certain web objects had unique IDs,as they were created dynamically during run time. The IDs assigned to such objects were random & no specific pattern was followed. Due to this, at Runtime, new elements were added to a tree structure, which caused dynamic addition/deletion of elements. Gateway used available data from source code

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to identify commonality among the objects and developed powerful user defined functions to overcome this limitation.

- Parameterizing the scripts: During the initial stages of automation, values for the test cases were hard coded. Automated scripts were required to read input values from some parameter file(s). As a result the testing team had to write more scripts to read values from the file. Gateway's team inserted XML files instead of text/inf file, and parameters were read using VbScript and XML DOM. This helped the Tester to add/remove any no. of test cases only by editing the XML file.
- Synchronizing Web pages: JSP pages were compiled to class files only when the page was accessed for the first time. This led to a greater time delay, compared to subsequent access to the pages. Gateway's scripting experts overcame this problem by writing a custom method using VbScript & DOM – to make sure that QTP waited until the page got loaded.
- Automating Flash Objects: Flash objects were used in the application, and QTP generate scripts, which were coordinate based. Gateway overcame this problem by using VbScript and DOM to load flash objects.

4. Gateway Approach & Solution

The success of any test automation project greatly lies in the expertise and quality of automation team. Gateway setup a 6-member team comprising of 1 project manager, 3 manual test engineers and 2 automation test engineers.

Tool Selection

The client was unwilling to invest heavily in acquiring tool licenses. Gateway's automation experts quickly studied the product and the functional specifications and narrowed down to three automation tools. These three tools were further compared using broad criteria such as the compatibility of the automation tool against the product under test, highly important test cases and critical flow paths of the product for automation. A summary of the research was presented to the client with a recommendation to use QTP(Quick Test Professional).

Approach followed for the test automation after tool selection

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A key word driven and framework based approach was adopted for automation. Gateway's framework provides a well-defined platform to design and develop the automation scripts and minimize the chances of occurrence of coding and logical errors. It provided a structure of all defined standards to be followed by each member of automation team.

Framework based approach also gave the preliminary idea of what to automate and what not to. Essentially automation was done only on tests that would be repeated in every test cycle. An Actual Test Case Document was developed using spreadsheet containing special keywords. This approach ensured that the entire process was data-driven, including the functionality.

Java edition of the product was first automated and then the script was used for .net version. VbScript was used for scripting. Few OCX controls were written for adding custom functions to the scripts all parts of the scripts were programmed instead of using the conventional record and playback approach. Scripts were written in such a way that any number of test cases could be added without making modification to it.

5. Benefits

Gateway brought to table the following business benefits to the client

- The Client was able to deliver customized versions faster to its end-customers
- Use of effective automation techniques resulted in a good saving to the client.
- More than 80% of the test cases automated, bringing the down the time required to do build verification & basic testing from 3 days to 8 hours.
- Modular and reusable scripting in VB script reduced the initiation time by 20%.