CASE STUDY
Automating Regression Testing

CLIENT

Our client is a leading provider of integrated procurement technology and advanced analytics to the advertising industry. Our clients' software allows media buyers to manage media procurement, planning, billing, and tracking across all advertising channels -- analog and digital -- on a single platform with a synchronized database. The scalable platform allows for flexible workflow methodology and a customizable user interface. On top of this platform the integrated analytics suite offers dashboard management solutions that allow for unprecedented insight into data across all media types.

PROBLEM

Our client purchased HP's regression test automation tool, QTP and quickly began the process of automating their Java Based (client-server) system. They quickly realized that the *automation approach taken would yield a script maintenance burden* down the road. This client had *no fulltime automation expert on staff* at the start of their automation effort. In addition, the *software application was in a state of constant change* which made it difficult to keep pace with test automation maintenance.

SOLUTION

To solve the maintenance issue and the fact that the application was in a constant state of change we assessed the prevailing automation frameworks and decided on a hybrid approach. We implemented a hybrid Keyword Driven and Business Process Driven Automation Framework.

In creating our framework we adhered to these guidelines:

◆ Test automation is a fulltime effort, not a sideline.

◆ The test design and the test framework are totally separate entities.

> Test design: the manual process of creating test cases and modular component cases for an application.

> Test framework: the automated scripts created in the testing tools language such as common functions, drivers, and utility scripts.

◆ The test framework should be application-independent.

◆ The test framework must be reliable, scalable, and maintainable.

◆ The test strategy/design vocabulary should be framework independent.

◆ The test strategy/design should remove most testers from the complexities of the test framework.

Keyword-driven frameworks are the easiest to maintain and will give the greatest chance for long term success. The QTP .NET framework (QTP Framework) can be categorized as a hybrid framework. The heart of the QTP Framework is keyword-driven where keywords determine the

test flow. The framework is made even more powerful with the added capability of data driving user-specified data inside test case(s). The major advantage to this framework is that users (manual testers) do not have to know anything about QuickTest Professional (QTP) to write scripts. The input data is separate from the code. The framework takes an input file in the form of an Excel spreadsheet and plays back a test inside of QTP with the data specified.

Our framework

Test Tool:	HP QTP 9.2
Data:	Excel
Test Cases:	Excel

Here you can see that a hierarchy of excel spreadsheets makeup the regression automation execution flow. This client did not own Quality Center so we replaced the test set concept with (1) the test case table. The Business Process Tables (2) simply emulate a business process or manual test case broken down modularly. The data was centrally located in an excel spreadsheet (3) for each test case.

1

ThePudding (Test Case Table)

Execute	StepTable	SysCommand
Yes		InvokeApp
Yes	LogonApp	
Yes	LoanLookUp	
Yes	Correspondent	
Yes	SelectContact	
Yes	LogoffApp	

2

WindowName	ObjectName	Component	Action	Parameter
LOGIN WINDOW	Department	edit	Set	Department
LOGIN WINDOW	BYPASS	button	Press	
Links5 Database Sign-On	LINKS5 Database Sign-On	window	Type	KeyType
Links5 Database Sign-On	LINKS5_SYSTEST2	noobject	Type	Database
Links5 Database Sign-On	Close	button	Press	

LoanLookUp (StepTable)

WindowName	ObjectName	Component	Action	Parameter
LINKS5 - DEPT: [Lender Services]	LOCATE	button	Press	
WAMU Loan Look-Up	BorrowerName	edit	Set	BorrowerName
WAMU Loan Look-Up	BorrowerName	edit	Type	BorrowerName
WAMU Loan Look-Up	BorrowerSelect	object	ClickText	BorrowerSelect
WAMU Loan Look-Up	Ok	button	Press	

3

ThePuddingData (Data Table)		
Parameter	Data1	Data2
TestSet	Proof	Proof
Application	Links5	Links5
Department	Lender Services	Lender Services
Keytype	<kTab>	<kTab>
Database	LINKS5_SYSTEST2	LINKS5_SYSTEST2
BorrowerName	Public	Public
Keytype	<kReturn>	<kReturn>
M2LoanID	466789	466789
CorrLookUpName	First	First
Keytype	<kReturn>	<kReturn>
CorrName	FIRST AMERICAN BANK	FIRST AMERICAN BANK
ContactLastName	MCGEE*	PETERSON*

The key QTP components of the framework are:

Management of Application Objects: We utilized the descriptive programming feature in QTP so that object maintenance could be accomplished outside of QTP and in an excel spreadsheet.

Initialization: We developed a constant library that houses environment and application variables.

Functions: We developed a function library that contained user defined and generic functions utilized for various purposes such as verifications.

Drivers: Each Excel spreadsheet was executed by a QTP driver script. These scripts managed execution, error handling and the output of result logs.

Action Scripts: A function was created that housed all the action functions associated with objects Edit, Button, Combo Box, List Box, Table, etc.

SUMMARY

DSR supplied 1 Sr. Automation consultant and a project lead. The project duration was 3 months and completed on time and within budget. Once the automation framework was complete we trained the newly hired client Automation Engineer that managed the framework. In addition, we jump started the regression automation effort by developing critical path test cases to be executed during release testing. Our client has successfully taken full control of their automation effort. They heavily use the manual testers in the development of the Business Process Test Cases. Their problems (application changes, maintenance issues, no automation resource) were ultimately addressed by DSR's solution and are on the road to successfully utilizing Automated Regression Testing to improve the quality of their product.