

Quality Assurance Case Study Automation Framework - Design & Implementation

Client

Largest publicly held personal lines insurer in the country.

Client Requirements

- Simplify maintenance and execution of around 22,000 scripts or replace them altogether.
- Bring down the execution time (over 80 dedicated machines are being used to execute 22,000 scripts which is taking about 14 to 16 hours. Also, dividing so many scripts between available machines and keeping track of allocation was time consuming)
- Stream line and standardize test automation build, execution and maintenance processes.
- Create and implement a robust automation framework that will serve as a foundation for future automation projects.
- Provide rapid test script building and maintenance capability.
- Provide traceability between requirements and the automated scripts. Generate detailed and summarized status reports.
- Minimize time required to configure daily and weekly script runs. Create an efficient strategy to create, maintain and use test data (test data is being maintained in large excel workbooks with many tabs. And these workbooks are stored at multiple places on multiple machines).
- Provide a comprehensive script maintenance strategy.

Challenges

- Design and implement an automation framework that is scalable, flexible which carry low maintenance and capable of replacing 22,000 scripts in less amount of time with least possible resources.
- Meet the following deliverables WITHOUT any test management tools.
 - Minimize the test run configuration time and centralize execution control.
 - Provide traceability between test scripts and requirements.
 - Generate execution reports in tabular format.
- Store and organize test scripts such that every member of the test team can access and run them.
- System's functional requirement specifications are NOT available.
- Over one thousand data fields in the application require user input. So, test data creation and maintenance is a big challenge.
- Minimize the time required to configure test runs.

Environment

ASP, .NET, Oracle, EDINET, QuickTest Professional, TestDirector, MSSQL Server, MSAccess, etc.

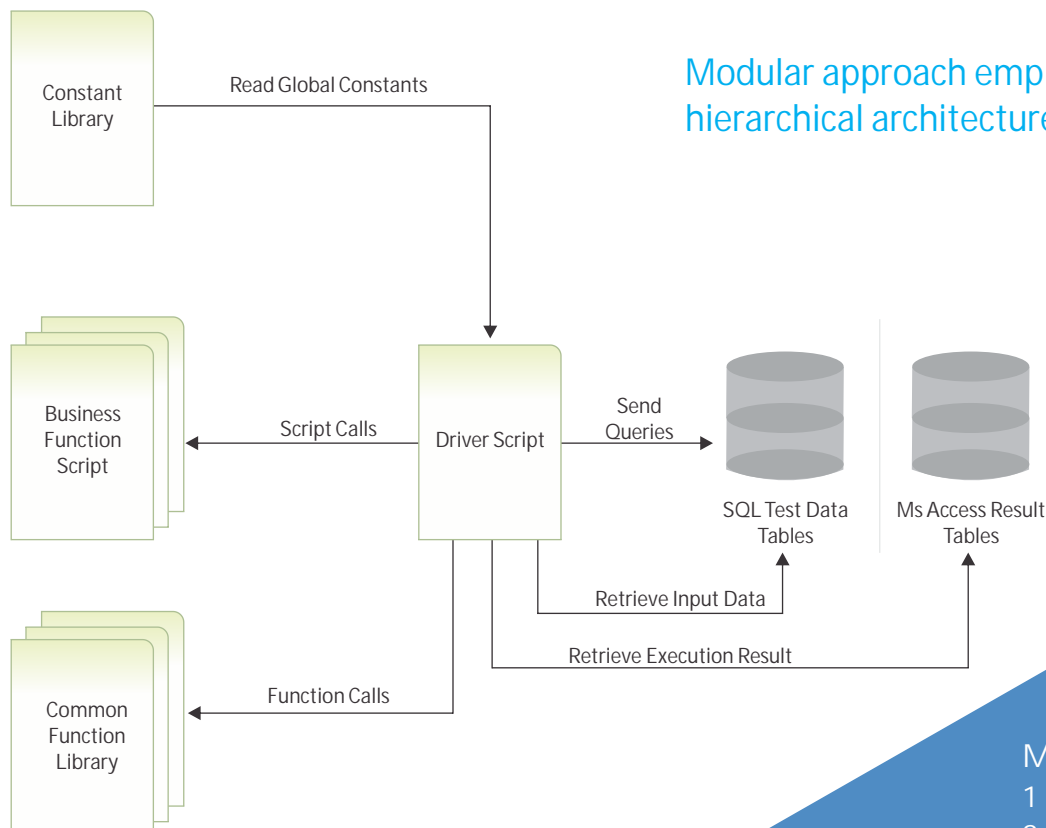
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Solution

Created and implemented a consistent and re-usable MODULAR framework of automation. This framework involves creating reusable script modules. Actual scripts are made in terms of re-usable modules. These modules are almost close to the objects in the world of object-oriented programming. Each module provides a bundle of functionality (Encapsulation), hide the details of implementation to its user (Abstraction) and behave according to the data provided to it (Polymorphism).

The only object-oriented feature they lack is 'Inheritance'. Re-usable modules provide rapid test script building capability. To store, organize, update and retrieve test data a database has been designed and implemented using SQL Server 2000. This eliminated the need for Excel workbooks altogether and maintains test data consistency and integrity. Test Scripts (via reusable modules) are capable of pulling the data directly from this database during execution. Execution control was centralized at one point. One person sitting in front of one machine can distribute work to all the machines. Access database was designed to take care of Reporting and Traceability. All scripts are made up of limited number of re-usable modules. Maintaining large number of actual scripts essentially means maintaining limited number of re-usable modules. So, maintenance was half simplified. Also, a comprehensive scripts maintenance strategy has been designed and documented.



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Modular approach employs a hierarchical architecture. The scripts in the hierarchy include:

Main/Driver Script

At the highest level is the main script also called driver script, which is the engine of the test. This script contains a series of calls to one or more script types below it in the hierarchy plus other TSL statements as needed. This is the actual script that performs the application testing. Re-usable business and generic function scripts are called as needed by Driver scripts. Every state/line flow will have a driver script.

Business Function Script

These are the scripts recorded on the application and enhanced with synchronization and checkpoints as needed. These scripts may call common/generic functions.

Common/Generic Functions

These are also user-defined functions and completely coded manually. They are application independent (for example ABC Sales Supporting System) but platform dependent (for example AS/400). One generic function may call another.

Constants

All the project constants like connection strings to SQL Server database, path to the library, GUI map etc will be stored in this library. Constants library will be saved as a regular test rather than as a compiled module. This decision was based on previous experience where saving constants library as a compiled module caused some problems.

Database

As a part of implementation strategy it has been decided to pull the test data from the SQL Server database. Business function scripts will call the database functions from the common functions library to get the required test data. All database related functions in the common functions library accept a SQL query as input and return arrays of data.

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About Microexcel Inc

Established in the year 2001, Microexcel, Inc. is a global management consulting, technology services and outsourcing company. With a proven track record in providing quality, cost effective and timely Information Technology professional services and solutions, Microexcel merges people and technology to deliver value.

Headquartered in Secaucus, NJ, Microexcel has branch offices near Chicago, IL, London, UK and two offshore locations at Hyderabad and Bangalore in India. With over 450 + employees based in USA and India, Microexcel provides 24*7 support to Clients in the areas of IT Staff Augmentation, IT Audits, Systems Analysis, Maintenance & Support, Microsoft Technologies (gold certified partner), including .Net and SharePoint, SAP, Oracle Applications (11i certified partner), Quality Assurance Testing (certified partner of HP and Borland), J2EE, Linux technologies. Microexcel is also a New Jersey Certified Minority Owned Business Enterprise. For more information please visit us at www.microexcel.com or e-mail us to sales@microexcel.com