Test Automation Tool comparison – HP UFT/QTP vs. Selenium

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"This whitepaper has been created as a guide to help QA Heads understand, compare and implement industry's best test automation tools – HP UFT/QTP and Selenium."
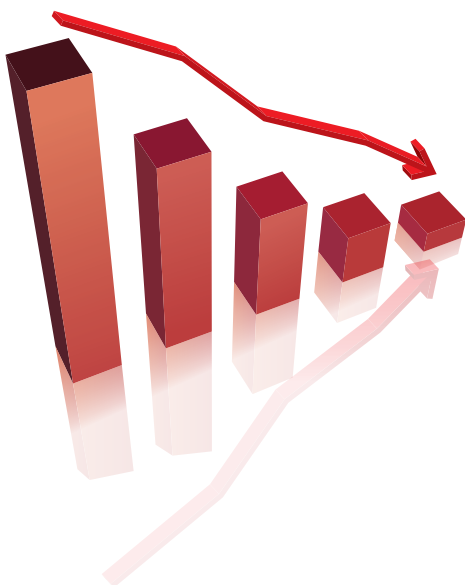
Introduction

It's a known fact - Automated testing will shorten development cycles, avoid cumbersome repetitive tasks and improve software quality. But how do you get started? Success in any Test Automation (TA) effort lies in identifying the right tool for automation. There are so many test automation tools (both open source and commercial) available in the market and it is extremely important to choose the right tool that best suits your overall requirements. But it is always wise to set a bench mark by comparing HP Quick Test Pro or HP Unified Functional Testing and Selenium as these tools have been the talking point in the automated testing tools market and they have acquired majority of the tools market share. So we will start from one of the pioneers in the Test Automation space – HP Quick Test Pro (aka HP UFT).

HP Quick Test Pro (QTP) or HP Unified Functional Testing (UFT)

Without a doubt, the most dominant commercial player in the market when it comes to functional automation is QTP. It is an easy and extremely user-friendly tool that works well with Windows & Web based applications.

Let us talk about the advantages first.

a) The primary language is VB script and tool being power-packed with features. Organization doesn't need to have a skilled coder to write a basic automation script. Its related add-ons give you the flexibility and power to test web-services and service virtualization.

b) Object repository is one of the greatest features of any commercial tool that automatically suffices a need to be component oriented. This tool is at its best when it comes to navigation, results validation and reports etc. and Organizations don't need to worry on integration of QTP with other supporting components.

c) QTP is integrated with Quality Center so different high quality dashboards can be configured. Another big advantage is different type & level of support you would get in case you run into technical issues. You would always have someone to bank upon for services & solutions.

Now the other side of the coin - Disadvantages

a) QTP is phenomenally costly when you compare it with any open-source or commercial tools and license cost is entirely dependent on volume and the type of licenses. On top of it, if you want to have add-ins integrated, you further need to shell out additional hundreds of dollars.

b) The licensing cost is not done with one time purchase but it stretches over years to come since applications will always mature over a period of time with new features and technology to meet the demands of the competitive market.

c) If Organizations upgrade their applications and don't upgrade QTP, then it would be technically impossible to sustain automation allowing all the dollars spent on tool & effort spent by automation resources. Hence, Organization needs to continuously spend to upgrade QTP for new features that support new technology.

d) Though the scripting time is less, the execution time is relatively higher as it takes the entire armor along pushing load on CPU & RAM. Also, it primarily caters to windows environment and limited number of browsers support.

Selenium

As a marque tool in open source test automation space, QA decision makers always feel good if something comes to them as a freebie especially in the cost consuming test automation space. Selenium has the open source edge and moreover it supports a variety of languages that include Java, Python, PHP, C#, Ruby and even pure JavaScript. Selenium is at present the most powerful Open Source Automation tool available and it is based on java scripting to a large extent. It is more suited for the agile methodology of coding and testing.

From the advantages perspective, here are the few:

a) Selenium supports many languages such as Java, C#, ruby, python. It doesn't support windows based application but is one of the best tools for web-based automation and supports all browsers such as IE, FF, Chrome, Safari etc.

b) Being into open source world, Selenium can integrate with just about anything to give you a robust framework such as Maven or Ant for source code compilation, Test NG to drive tests (unit or functional or integration), Jenkins or Hudson or Cruise Control to integrate into a Continuous Integration and different reports or dashboards out of Jenkins.

c) Selenium also helps you enter bugs or issues into JIRA (Bug management tool) through Jenkins. With the help of Jenkins or Grid, testers can connect multiple nodes to run different tests in parallel.

d) Cost is the biggest advantage as it is a freeware and is integrated with other open-source tools. As mentioned above, the only cost that you need to spend is on the human resource (single or team) who knows all of the above stuff.

Now let us look into the disadvantages part.

a) Organizations need to invest in a resource who knows coding as per standards. The resource should also be well versed in framework architecture and various components that fit in.

b) Tool support is done by way of communities and more and more people are joining together to contribute to provide solutions and support free-ware. But issues may not be addressed in the next release cycle like any other commercial vendors do routinely. So it can potentially leave Organizations themselves to find a solution on their own and contribute to community or wait for someone to give a solution.

Comparison Matrix:

Feature	QTP(UFT)	Selenium
Language Support	VB Script	Java, C#, Ruby, Python, Perl PHP , Javascript
Windows (Non-browser) based Application support	Yes	No
Browser support	Google Chrome (uptill ver 23) Internet Explorer , Firefox (ver 21)	Google Chrome , Internet Explorer , Firefox , Opera , HtmlUnit
Environment Support	Only Windows	Windows , Linux , Solaris OS X , Others (If brower & JVM or Javascript support exists)

Feature	QTP(UFT)	Selenium
Mobile (Phones & Tablets) support	Different commercial product i.e. HP UFT Mobile (formerly known as MobileCloud for QTP)	Android , iPhone & iPad , Blackberry , Headless WebKit
Framework	Easily integrated with HP Quality Center or HP ALM (separate commercial products)	Selenium + Eclipse + Maven / ANT + Jenkins / Hudson & its plugins / Cruise Control + TestNG + SVN
Continuous Integration	Possible through Quality Center / ALM or Jenkins	Possible through Jenkins / Hudson / Cruise Control
Object Recognition / Storage	Inbuilt Object Repository (storing Element Id, multiple attributes) along with weightage that gives flexibility on deviation acceptance in control recognition	UI Maps and different object location strategy such as -XPath Element ID or attribute DOM
Image based Tests	Easily possible	Possible but not easy
Reports	Quality Center has in-built awesome dashboards	Integration with Jenkins can give good reporting & dashboard capabilities
Software Cost	License & Annual maintenance fees	Zero
Coding Experience of Engineer	Not Much	Should be very good along with technical capabilities of integrating different pieces of framework
Script Creation Time	Less	High
Hardware resource (CPU + RAM) consumption during script execution	High	Low
Product Support	Dedicate HP support along with support forums	Open Source Community

Conclusion

At the end of the day it is as simple between buying a branded car and assembling a car on your own. Branded car has its cost & services attached whereas in assembled car, you need to take care of everything on your own. But, there is a hybrid solution where you can go to a custom workshop to get an assembled car (sales and post-sales support) and pay for their services.

The same concept is now available in IT too such as you go to a service provider who has everything i.e. who has developed automation frameworks using different open source components, who has coders ready to put in muscle & tissue to the pre-existing wire-frame and deliver it to you. This concept is the new trend in town and many companies have switched to open source frameworks built by service providers thereby reducing their overall product cost.

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