

Td for web testing and the most suitable

[Business](#), [Management](#)



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..... 71. Abstract: Animportant part of Software Development Life Cycle is softwaretesting. Nowadays, there are several tools available that are webbased and serve the testing purpose very well. One reason for it’ssuccess may be the fact that they run on any web browser. The systemwith increased efficiency and less cost is more preferable. Thediscussion here is about the comparison of different web automationtesting tools.

This will serve two principles, one being the understanding of all these tools and secondly, The information about the popular and competent tools available out there. Many browsers support these testing tools and provide API's and webdrivers. These API's are used in different languages to write appropriate script for testing.

One parameter to consider while choosing one of these tools as the best tool is how well and easily it can be integrated. The other parameters being performance and cost of each tool. The other thing to consider is that the tool must be suitable for the application it is going to test. 2.

Introduction This paper focuses on a thorough comparison between the leading web automation testing tools. This comparison takes into account all the important parameters necessary in determining both the best tool for web testing and the most suitable tool for a person's specific application.

The key features that are considered in comparison are: OS, Language, Type, and Browser support etc. The objective here is to involve all the important parameters that can be used to completely distinguish all the tools and help justify the preference of one or more over others. Such as the platform support which can determine if a certain tool can serve as a cross platform tool or a platform specific tool. Types of testing Static and dynamic testing: In static testing it isn't necessary to execute the program while in dynamic testing the program needs to be executed. The box approach method: The box approach method involves white-box and black-box testing.

Manual and automation testing: The main difference between automation testing and manual testing is that the manual testing does not require any

tool while the automation testing requires automation of the manual testing process. Web automation testing and tools: Web testing: The software with complete focus on web applications is called web testing tool.

Web automation testing: The main goal of using web automation testing is to check if the website is flawed or has errors in its basic functionality as well as evaluating other features of the website such as responsiveness and robustness. The benefit of web testing however, is to use the same script on different platforms, as cross platform web browsers are easily accessible.

Features: Save time and money
Improves accuracy
Increases test coverage
Does what manual testing cannot
Tools Selenium HP-QTP Test-complete Watir WET Silk-test WinRunner 3. Tools Description: Selenium: Selenium is a web testing framework that is especially known for its portability. It enables the tester to develop test scripts without having to learn a specific language. Selenium supports a range of tools for a range of requirements a script requires for web automation.

Web testers mostly use only a few of the tools supported by selenium but it is always a good idea to get full understanding of all the provided tools.

Selenium is a rich web testing framework that provides all the web-oriented tools. This helps bind all the operations of the tool according to the website and its functionality. Selenium's ability to support multiple browsers is probably its most important feature.

The basic use of Selenium is functional testing of web applications. Selenium is suitable for agile testing. Selenium is a free and cross platform software meaning that it runs on Linux, Windows and Mac. HP-QTP:

QTP(QuickTestProfessional)is developed by Hewlett Packard (HP). It doesn't need to be monitored by the tester while it performs an automated web testing of a web application. When the script is written, it uses a VBScript (Visual Basic Scripting) to automate the web application.

Because of the availability of the scripting engine in Windows Operating System, there is no need to install own your own. The VBScript that comes with Windows 7 is of version 5. 8.

VBScript is an object based language. It features automated regression testing which helps find errors or defects in the application's performance that is being tested against the required output or result. It only supports Windows Operating System and it lacks multiple language support for writing scripts. Test-complete: Test-Complete is equipped with a graphical interface. It uses a technique called record-playback to automate testing. It enables the tester to use unit testing, functional testing, GUI testing, regression testing and distributed testing.

Test-complete is used for web application testing and desktop application testing limited to Windows application. It analyzes the features and the shortcoming of the application and performs evaluation according to the required conditions. It is an essential step in the process of SDLC (system development life cycle). Companies that develop softwares strictly follow the process of SDLC as a guide while testing applications. The type of application as well as the cost regarding the use of the tool are the parameters that dictate the selection of tool to be used. As it supports both the web application and windows application testing, there is a range of

types of testing regarding web applications and windows applications, which are as follows: functional testing, unit testing, regression testing, manual testing, data-driven testing, object-driven, distributed testing, HTTP load testing, and stress and scalability testing. It does that in an environment with complete automation testing tools that support Windows, web, Java and .

NET application testing. It relieves the developers of the excessive energy and time a manual testing requires. Watir: It is developed with Ruby which is an object-oriented scripting language. This is used for system testing of large scale systems, automating user acceptance testing and functional testing. Watir uses programming language to write scripts that enable user to control web page's objects such as HTML and JavaScript directly.

It is free and open source software. HTML and test scripts have no layers between them which makes it easy to create user specific scripts without having to worry about its license as it is free of cost. WET: WET Web Tester is a web based testing tool that drives an IE Browser directly and so the automated testing done is equivalent to how a user would drive the web pages. The tool allows a user to perform all the operations required for testing web applications – like automatically clicking a link, entering text in a text field, clicking a button etc. One may also perform various checks as a part of the testing process by using Checkpoints.

The latest version of WET is 1. 0. WET sits on top of Watir, an automated test tool which uses Ruby scripting language.

WET retains all the features that Watir has and adds many usability-related functionality. WET started off as a small extension library for Watir – Watir Extension Toolkit. It has come a long way and is now bundled with many compelling features. As the WET code base has grown multiple times, it now uses Watir just as the library to drive IE. WET not only offers all that Watir offers but many more powerful features to make test automation effort a success. Its base code has received a massive increase which helped it become stand alone software with an independent identity.

It was once considered an extension of Watir but now it is identified as WET.

SILK-TEST: It is developed by Segue. It is used for: regression testing and functional testing for large-scaled applications serving environments like .Net, Web, Java or a client-server. It provides a range of features to choose from making it a highly efficient automation tool for software testing.

Customization, creating tests using work-flow, validation, complete data base access, robust and flexible testing, automated recovery system, multiple platform, browser support are among these features. **Win-Runner:**

Automated testing with WinRunner addresses these problems by dramatically speeding up the testing process. You can create test scripts that check all aspects of your application, and then run these tests on each new build. As WinRunner runs tests, it simulates a human user by moving the mouse cursor over the application, clicking Graphical User Interface (GUI) objects, and entering keyboard input—but WinRunner does this faster than any human user. 4. Feature Description: Selenium: Easy to use and adopt. No need to learn test scripting language. Browser independent. Free software. Runs

on major platforms i. e Windows, Mac, and Linux
 HP-QTP: No skilled coder is required
 Object Oriented programming language
 Easy to use and navigate
 Easy monitoring and scheduling
 Support testing of Mobile Applications
 Test-Complete: Fully automated test recording from interactive usage of the application
 Uses key-word driven testing
 Test visualization
 Data-driven test using test, Excel and Database data sources
 Multi-browsers support and cross-browser testing
 WATIR: It supports cross-platforms
 Requires skilled coder
 String and dynamic typing discipline
 Written in Ruby (Programming language)
 Does not run multiple scripts
 WET: Record-playback technique is used for automation
 Setting parameters of objects
 Support multiple scripts
 Script Re-usability
 Supports Integrated Data Driven testing
 Makes creation of scripts easy
 SILK-TEST: Provides 24/7 unattended testing
 Basic Work flow for rapid productivity
 Uses externally stored data for Data Driven Work flow to test business logic functionality
 Auto-Complete for instant test automation and customization
 Infrastructure development
 Organizing and sharing test information with the help of Project Workspaces
 Re-usability and maintenance of scripts and tests are made easy with the help of GUI Scripting language
 is extensible, easily maintainable and highly portable
 Distributed testing for efficient usage of excessive portability and hardware resources
 Silk-Test provides reporting and execution of tests on runtime
 Win-Runner: Testing tool for functional regression
 Only supports Windows platform
 Only for applications based on GUI (Graphical User Interface)
 Uses OOT (object oriented technology) concept
 For static content only
 Record-playback tool
 5. Comparison of Tools

noNameof toolLanguageuseOSTypeRelease/DevelopmentyearLicenceDevelopmentstatusDevelo-perLanguagesupportedBrowsersupport1SeleniumJavaCross-plat-formSoftwaretesting framework for web applicationMay22, 2013,(2004)Apache2.

0ActivejasonhugginsDomainspecific languageAllmajor developer2HP-QTPVBscriptMS-wind-owsTestautomation2006proprietaryActiveMercuryInteractiveVBscriptFirefox3.0 and later Google chrome3Test-CompleteJavaMS-windowsTestautomationSept. 32013/1999proprietaryActiveSmartBearsoftware Inc.

VBscript, Jscript, C++, C#script, DelphiScriptIE, Firefox, Google Chrome4WatirRubyCross-plat-formSoftwaretesting framework for web applicationSept. 30, 2012BSDActiveBretPettichard and Paul RogerJava,. Net, c#IE, later multiplebrowsers5WETRubyMS-WindowsWeb-BasedTesting Tool2012MITActiveGov.

of CanadaRubyIE6Silk-test4TestScripting languageMS-windowsTestautomationOct. 10, 2012proprietaryActiveSeguesoftwareJava, 4Test, VB, C#, VB. netIEand Firefox7Win-RunnerClanguageMS-windows, LinuxLoadTesting Tool2006proprietaryActiveHPsoftware divisionTestScripting languageIE, NetscapeSelenium: Ituses Java language and also supports cross-platform. It has Apache2.0 and it runs on all web browsers. It has language support fordomain specific languages.

HP-QTP: Ituses and supports VB Script and operates on MS-Windows. It hasproprietary license. It runs on IE, Firefox and Google Chrome.

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Test-Complete: It uses Java language and has MS-Windows support. It has proprietary license. It runs on IE, Firefox and Google Chrome Browsers.

It supports VB Script, JavaScript, C++, C# Script and Delphi Script. Watir:

It uses Ruby language and supports cross platforms. It has BSD license.

It initially had only IE support but later it received multi-browsers support. It

supports java, . Net, and C#. WET: It uses and supports Ruby language and has MS-Windows support. It has MIT license.

It has IE (browser) support. Silk-Test: It uses 4Test scripting language and has MS-Windows support. It has proprietary license. It runs on Internet Explorer and Firefox. It supports Java, 4Test, VB, C#, and VB. Net. Win-runner: It uses C language, and has MS-Windows and Linux support.

It has proprietary license. It runs on IE and Netscape. It supports testScripting language. 6.

Conclusion We analyzed various web automation tools in this paper. A web automation tool tests a web application for flaws or errors of any kind without performing any manual operation. There are a number of web automation testing tools that serve this purpose.

To decide which tool is best, one has to tally the requirements with the tool's features. For instance if an organization is looking for rapid results he will go for speed and if an organization struggles with their budget, it is likely to search for a cost effective tool. The requirements can be categorized according to the feasible tools.

If an organization requires speed in testing then the possible testing tool is Test-Complete, but the tool comes with a cost. The Test-Complete has to be licensed and its license is quite costly. So if the organization prefers speed over cost then it will be the right call to use Test-Complete. However if the organization can't handle the cost then they will have to manage the trade-off. On the other hand if an organization wants a tool that is cost effective, they may have to settle for a tool that has a very slow testing speed. Or if the material to be tested is on a large scale the tool should be chosen according to this specific need.

For example for large-scale testing Watiris is most suitable choice. So it is clear that a tool is best for a job only if it is chosen according to the need.

An organization that wants a balanced tool may consider Selenium. It is both cost effective and flexible but again it is not best known for its speed. So in general it is a good tool but specifically- well it depends on the specifications.

Finally, all testing tools have their strengths and weaknesses or limitations. It is important to know the requirements to choose the best tool for a test case to perform most effectively. All cases are to be judged by their suitability instead of their sheer performance or cost. 7.

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