SELENIUM – THE MAGIC OF TESTING

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OSSW – ICOSST 2009,
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Agenda

- What is Selenium
- Why Selenium
- Testing using record/playback and scripting tool
- Selenium Grid
- Benefits
- The Problem
- Conclusion
What is Selenium

- Selenium is a chemical element with the atomic number 34,
- Represented by the chemical symbol Se.
- It is a nonmetal, chemically related to sulfur and tellurium, and rarely occurs in its elemental state in nature.
What is Selenium

- Selenium is a portable software testing framework for web applications.
- Selenium is at present the most powerful Open Source Automation tool available. It is based on java scripting to a large extent.
What is Selenium

- Selenium was developed by a team of programmers and testers at ThoughtWorks.
- Selenium is open source software, released under the Apache 2.0 license and can be downloaded and used without charge.
What is Selenium

- It is more suited for the agile methodology of coding and testing
- A must have plug-in/tool for web development and QA
- Selenium can be deployed on Windows, Linux, and Macintosh
- Selenium is used for UAT (User Acceptance Test)
What is Selenium

- Selenium consists of following
  - Selenium IDE
  - Selenium Remote Control
  - Selenium Core
  - Selenium Grid
Selenium IDE

- **Selenium IDE** is an integrated development environment for Selenium tests.
- It is implemented as a Firefox extension, and allows you to record, edit, and debug tests.
- Selenium IDE includes the entire Selenium Core, allowing you to easily and quickly record and play back tests in the actual environment that they will run.
- Selenium IDE is not only recording tool; it is a complete IDE.
Selenium IDE

(Cont’d)
Features:

- Easy record and playback
- Intelligent field selection will use IDs, names, or XPath as needed
- Auto-complete for all common Selenium commands
- Walk through tests
- Debug and set breakpoints
- Save tests as HTML, Ruby scripts, or any other format
- Support for Selenium *user-extensions.js* file
- Option to automatically assert the title of every page
Selenium Remote-Control (Cont’d)

- Selenium Remote Control (RC) is a test tool that allows you to write automated web application
- For UI tests in any programming language against any HTTP website using any mainstream JavaScript-enabled browser
Selenium Remote-Control (Cont’d)

Selenium RC comes in two parts.

- A server which automatically launches and kills browsers, and acts as a HTTP proxy for web requests from them.
- Client libraries for your favorite computer language.
Selenium Remote-Control

Windows, Linux, or Mac (as appropriate)...

- Internet Explorer
  - Selenium Core

- Firefox
  - Selenium Core

- Safari
  - Selenium Core

Remote Control Server

Machine boundary (optional)

Java, Ruby, Python, Perl, PHP or .Net
Selenium Remote-Control (Cont’d)

- Selenium Remote Control is great for testing complex AJAX-based web user interfaces under a Continuous Integration system. It is also an ideal solution for users of Selenium Core or Selenium IDE who want to write tests in a more expressive programming language than the Selenese HTML table format customarily used with Selenium Core.
Why Selenium

- Helpful in continuous integration
- Easy to use
- Handy
- Can test complex interfaces
- Click record and playback testing
- Bundle of useful commands to be used in the IDE for testing
- Provides parallel testing facility (Grid)
Why Selenium

- Browser Fidelity
- Beginner Friendly
- Support for Badly Formatted HTML Code
- Multi-Language Support (JAVA, C++, Pearl, Ruby, C#, Python, PHP etc)
Why Selenium

Source: [http://www.youtube.com/watch?v=EDb8yOM3Vpw&feature=player_embedded](http://www.youtube.com/watch?v=EDb8yOM3Vpw&feature=player_embedded)

**Traffic Overview**

- Unique Visitors: 820K
- Visits: 1.6M
- Page views: 6.5M
Why Selenium

Traffic Sources

- Direct traffic: 16%
- Referring sites: 40%
- Search engines: 44%
- Top 5 terms account for 92%

Source: http://www.youtube.com/watch?v=EDb8yOM3Vpw&feature=player_embedded
http://selenium-grid.seleniumhq.org/

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Why Selenium

- It has been adopted as the primary testing tool by Google.
- Push to the limit testing
Why Selenium

- Selenium vs different other tools
  - Easy to use
  - Easily extendable
  - Supports various languages
  - Record and Play
  - Good for test creation
  - Google supports using Selenium for acceptance testing
  - You can place Selenium test on large scale grids (Cool :P)
Selenium Grid

- Selenium Grid is a tool that dramatically speeds up functional testing of web-apps by leveraging your existing computing infrastructure.
- It allows you to easily run multiple tests in parallel, on multiple machines, in an heterogeneous environment.
The Selenium Grid provides a hub allowing the running of multiple Selenium tests concurrently on any number of local or remote systems, thus minimizing test execution time.
Selenium Grid

Source: http://www.floridaventureblog.com/uploaded_images/grid.jpg
Why Selenium Grid

- In-Browser Tests Are Slow
- Maintenance Costs Are The Real Challenge
- Prompt and Reliable Feedback is Crucial
- Hardware is Cheap
- So Do You Need Selenium Grid?
Testing using record/playback and scripting tool

- Simple click and play test cases
Some useful Tools for better Experience

- DOM Inspector
- X-Path Checker
- Firebug
- Venkman – JavaScript Debugger
- Web Developer
- Regular Expressions Tester
- HTML Validator
- XPather
What to do after this...!!!

Source: [http://www.youtube.com/watch?v=EDb8yOM3Vpw&feature=player_embedded](http://www.youtube.com/watch?v=EDb8yOM3Vpw&feature=player_embedded)


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The Problem

- There are still 4% bug rate in the selenium testing
- Get better debugging facility
- Doesn’t give more detail about the reason why the problem has occurred
- Some necessary options missing and still in wait to be integrated
- Still in the way of reaching the expected usage rate
- Detailed features like session-level(not server) configuration testing missing
Solution

- Keep on removing bugs until they are only caused by user’s not by Selenium’s
- Should reduce their time to market
- Add support for configuration level testing (i.e. sessions etc)
- Users should continue to contribute to core, remote and IDE user level libraries
- Need to make RC more reliable
Conclusion

- Selenium more popular than ever
- Ecosystem thriving
- Renewed focus and energy
References and Where to Go

- Selenium
  - [http://seleniumhq.org/](http://seleniumhq.org/)
- Selenium Grid
- Forums
  - [http://openqa.org/](http://openqa.org/)
- News and Contact
  - [http://ph7spot.com](http://ph7spot.com)
Q & A