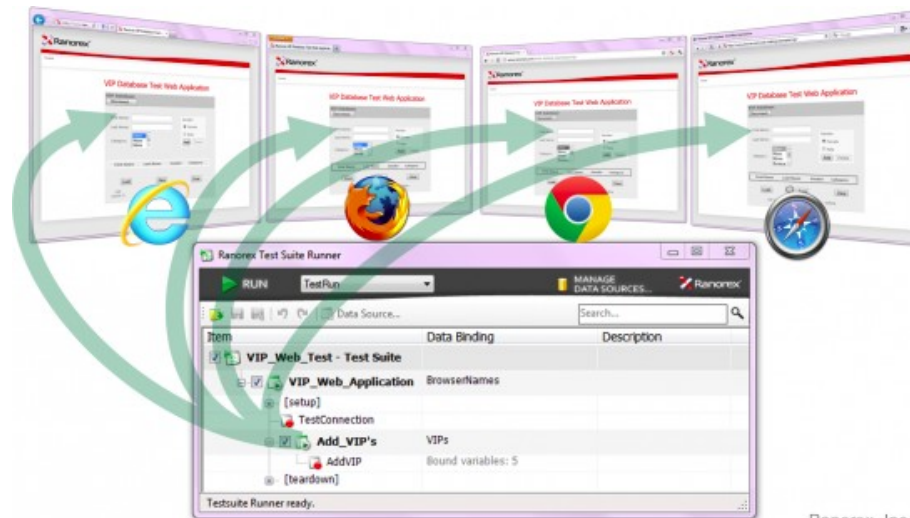# End-to-end testing with Selenium + Nightwatch.js

Unit, integration and end-to-end tests

Unit Testing

Integration testing

End to End / GUI Testing

Ranorex, Inc.

Unit, integration and end-to-end tests

	Unit	End-toEnd
Fast	🙂	☹️
Reliable	🙂	☹️
Isolates Failures	🙂	☹️
Simulates a Real User	☹️	🙂

The Automation Pyramid

Coverage
Maintenance
Fragility
Duration
Cost

UI
API
UNIT

number of tests

70/20/10 rule
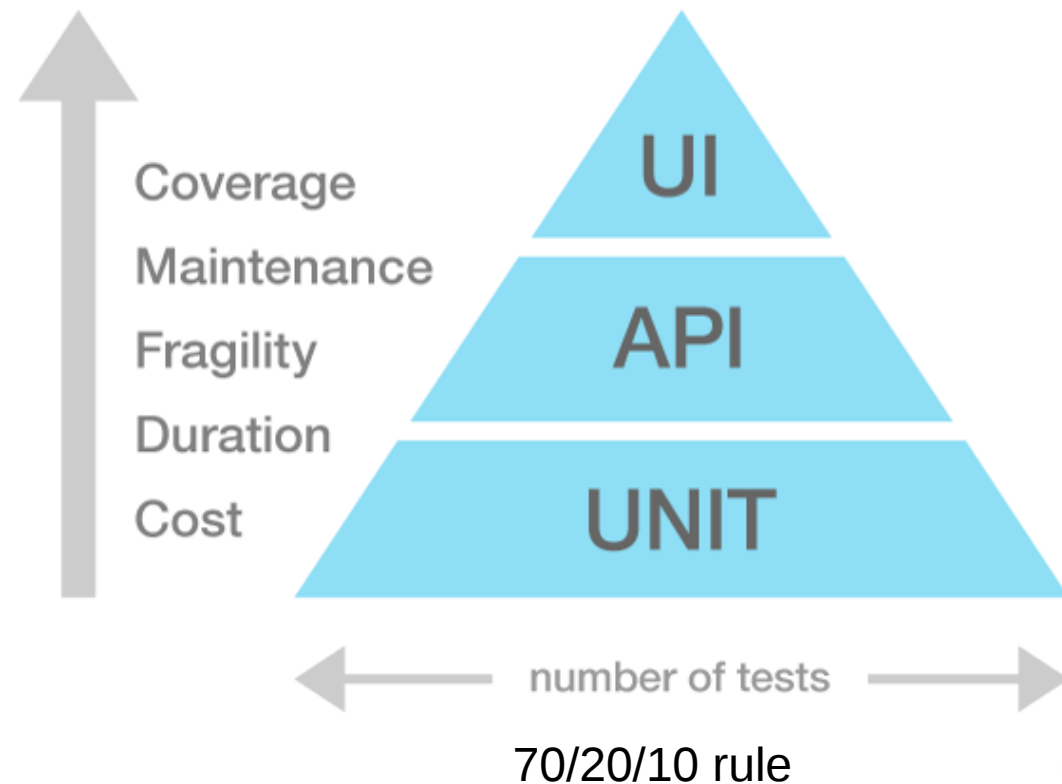
Selenium

- Set of tools for browser automation.

- The first implementation worked by injecting JavaScript in the browser.

- New implementation (Selenium WebDriver) is a REST API and a JSON protocol to send commands to the browser.

- This API is now a W3C standard.

- Allows writing tests in many languages.

SELENIUM WEBDRIVER ARCHITECTURE

languages

JAVA

PHP

C#

SERVER

JSON
API

Drivers

Firefox

Chrome
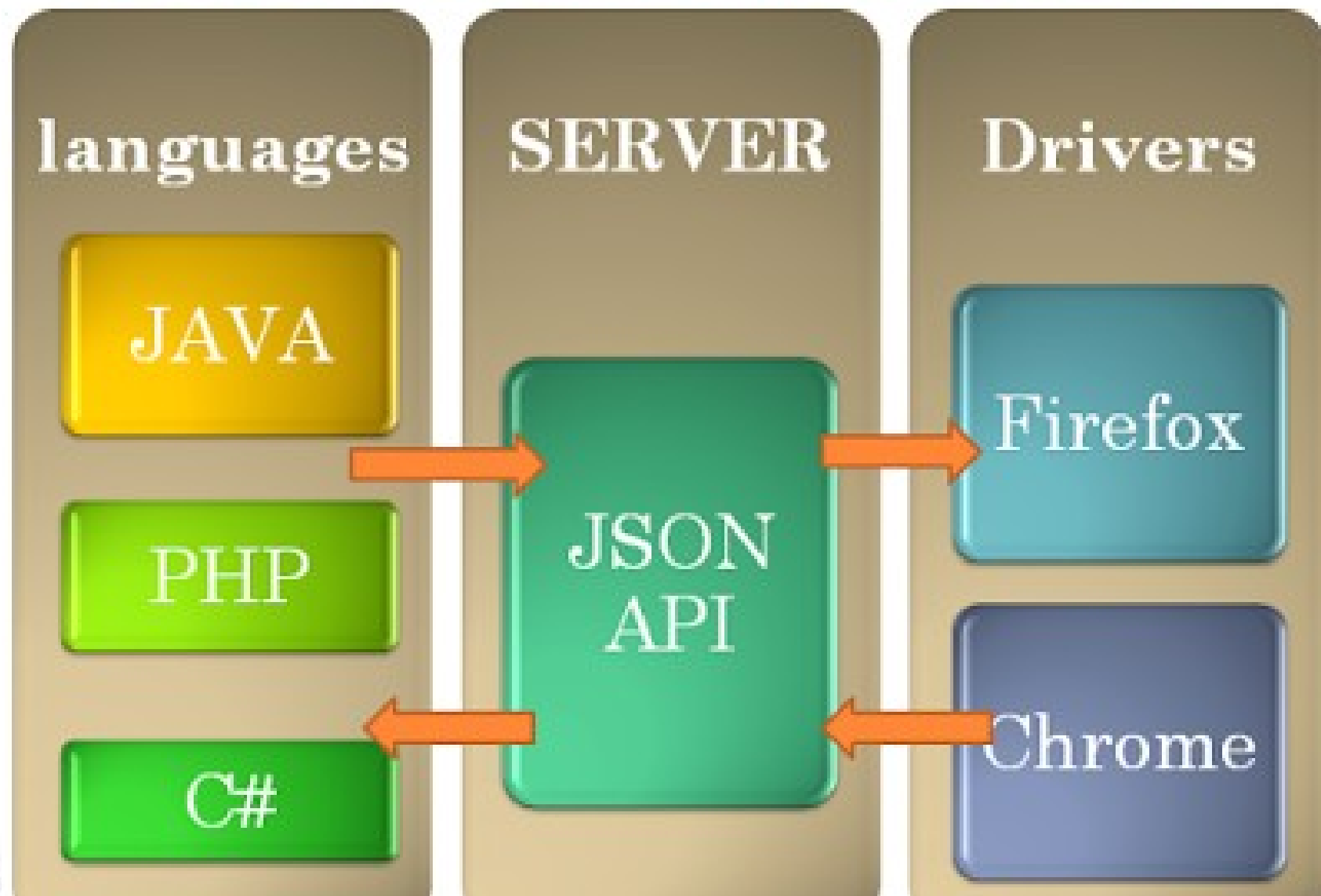
Selenium Server

- A Java application that acts as a proxy between a language binding and a driver.

- Implements the full WebDriver API

- Presents the same API for all language bindings.

- Allows for remote execution of commands.

Selenium Grid

- Selenium-Grid allows you to run your tests on different machines against different browsers in parallel.

- Supports running a single test suite against many combinations of browsers and operating systems at the same time.

- Can be configured to run the same test suite on the same browser in different machines to reduce the time the tests take to run.

Selenium Grid
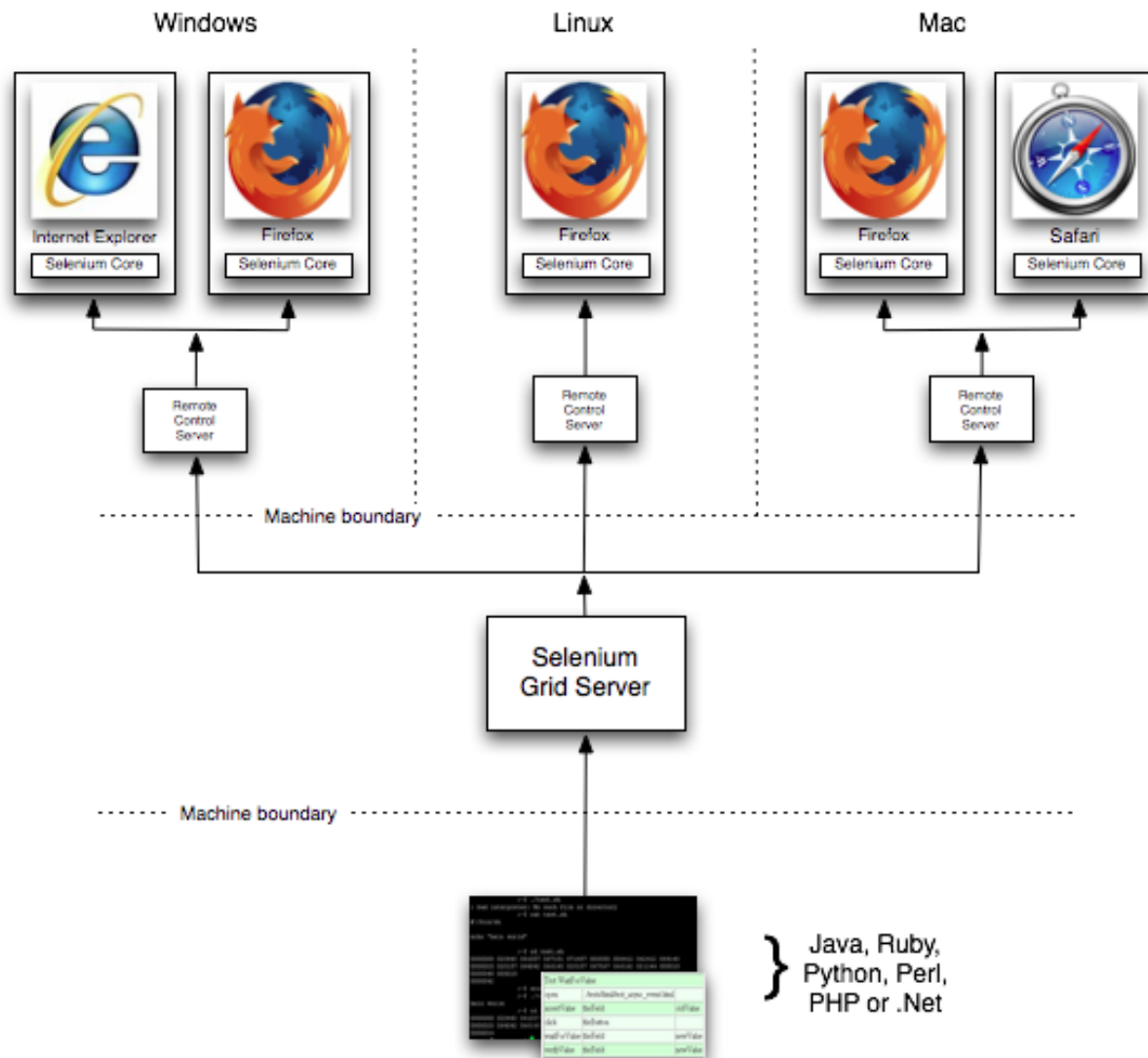
BrowserStack support

- Remote execution of tests via Selenium Grid.

- Offers a public endpoint which the test framework/Selenium Server can connect to send commands.

- Requires a subscription to use this service.

Enter Nightwatch.js

- A Node.js binding for Selenium.

- Provides a fluent API to write tests.

- Includes its own test runner.

- Powerful yet simple syntax.

- Allows finding elements in the page via CSS selectors or XPath or a mix of both.

- Check it out from http://nightwatchjs.org/

- Extend it with your own commands!

- Useful extensions here: https://github.com/maxgalbu/nightwatch-custom-commands-assertions

Our first example!

- A Nightwatch.js test to check the Head to Head section of the WTA site.

- Clone it from https://bitbucket.org/roberto-balarezo/ll-nightwatch.git

- Gecko Driver can be downloaded from: https://github.com/mozilla/geckodriver/releases

Issues

- Cannot click on overlapped elements.

- The text of non-visible elements is always the empty string.

- Text of elements is returned as shown in the page, not as present in DOM

Cucumber

- According to their site: "Cucumber is a tool for running automated tests written in plain language."

- Allows defining tests as stories or series of steps.

- Makes tests understandable for non-technical people.

- It is a framework which parses Gherkin language files and executes code based on what is declared on them.

- Implementations of Cucumber exist for the most popular languages.

Gherkin language

- Plain text language to define "executable specifications".

```
Feature: Google Search
  Checks that Google search is working as
  expected.

  Scenario: Searching Google
    Given I open Google's search page
    Then the title is "Google"
    And the Google search form exists
```

Show me the code!

- The same example as before now reimplemented in Gherkin.

- You can clone it from https://bitbucket.org/roberto-balarezo/ll-nightwatch-cucumber.git

Drawbacks

- All steps are in the same namespace. You cannot have a step with the same name but different implementation.

- Process does not exit on test failure when you have a mix of Nightwatch and Cucumber tests.

Links

- https://testing.googleblog.com/2015/04/just-say-no-to-more-end-to-end-tests.html

- https://codeahoy.com/2016/07/05/unit-integration-and-end-to-end-tests-finding-the-right-balance/

- https://www.linkedin.com/pulse/selenium-webdriver-architecture-core-ankur-shrivastava

- http://qeworks.com/selenium-webdriver-architecture/

- http://nightwatchjs.org/api

- https://cucumber.io/

- https://github.com/cucumber/cucumber-js

- https://github.com/cucumber/cucumber/wiki/Gherkin

- https://github.com/maxgalbu/nightwatch-custom-commands-assertions

- https://huddle.github.io/Resemble.js/

- https://github.com/webdriverio/webdrivercss-adminpanel

Thank you!