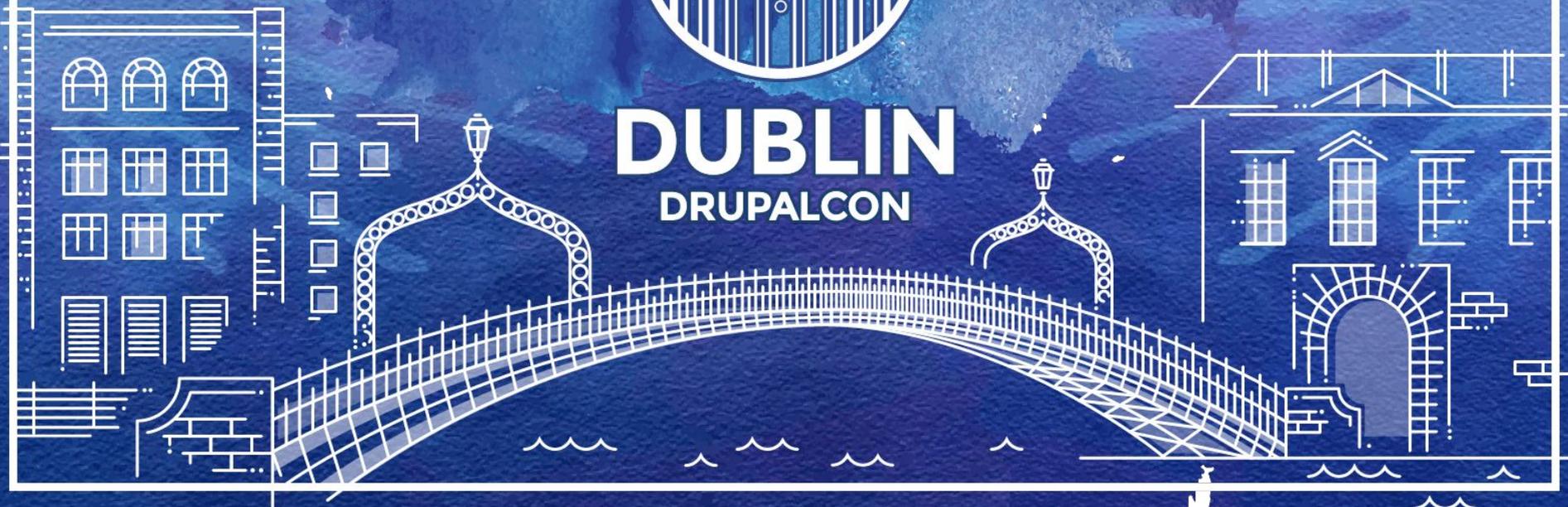




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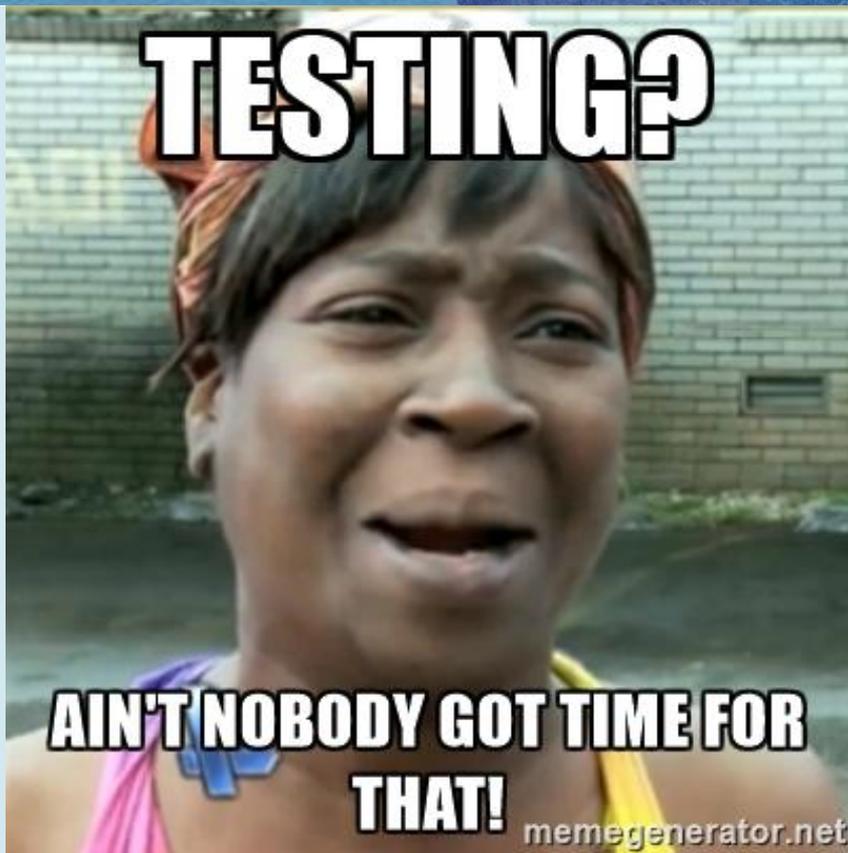
AUTOMATED END-TO-END TESTING WITH NIGHTWATCH.js

Vladimir Roudakov

29 Sep 2016

Front End

bit.ly/dce16-nwatch



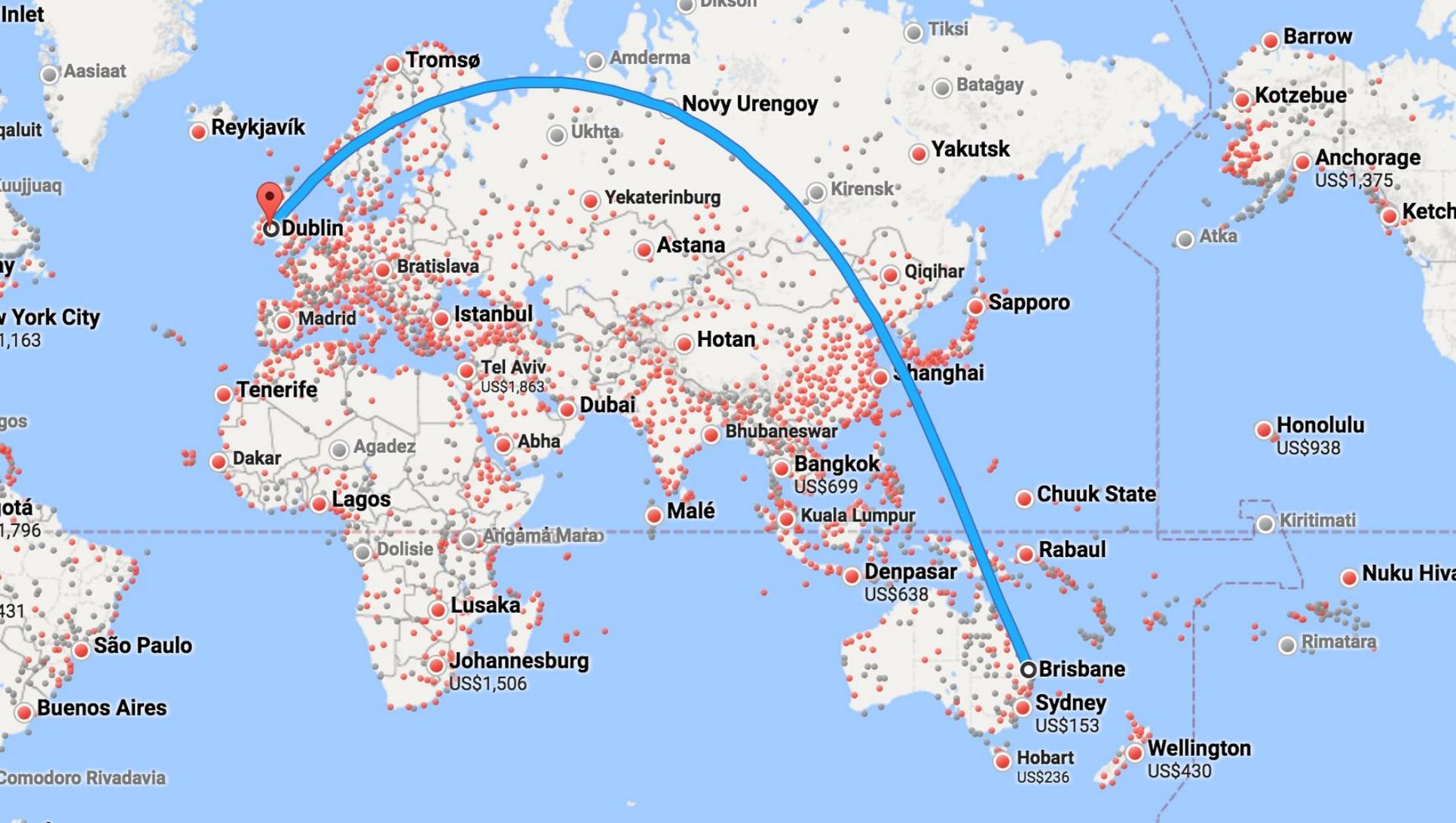
Vladimir ROUDAKOV



bit.ly/dce16-nwatch



@VladimirAus





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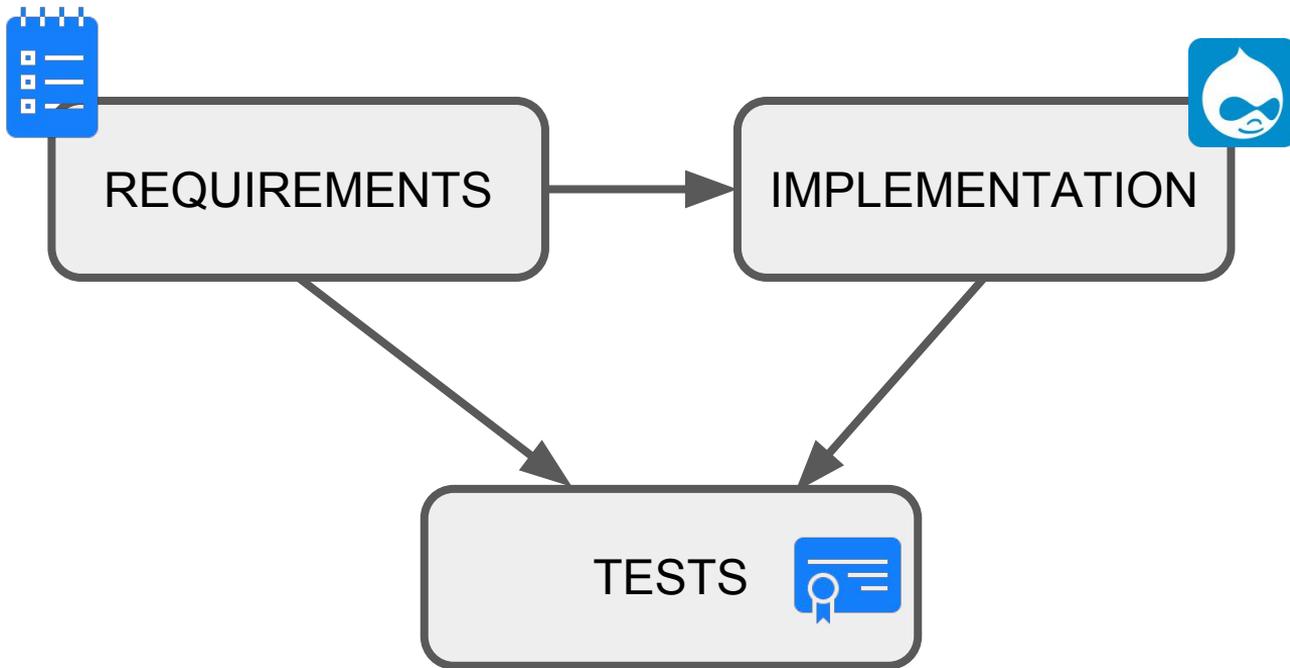
Prologue

WHY TESTING?



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SOFTWARE DEVELOPMENT CYCLE





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1. Requirements

- Search for surname
- Display person's information



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2. Manual test

- Go to search engine
- Type surname into search box
- Check for result in right hand side area

buytaert



1. Go to search engine



2. Type surname into search box

All

Images

News

Videos

Maps

More ▾

Search tools



About 558,000 results (0.32 seconds)

Dries Buytaert | On digital experiences, Open Source, startups & the ...

buytaert.net/ ▾

On digital experiences, Open Source, startups and the future. From the founder of Drupal.

Drupal

As Drupal grows — in lines of code,
... releases like Drupal 8.1.0 ...

[More results from buytaert.net »](#)

Blog

Acquia Cloud Site Factory solution
stack. Buy blog comments ...

Dries Buytaert - Wikipedia, the free encyclopedia

https://en.wikipedia.org/wiki/Dries_Buytaert ▾

Dries **Buytaert** is an open-source software programmer notable as founder and lead developer of the Drupal CMS. Contents. [hide]. 1 Career; 2 References ...

3. Check for result in right hand side area

Dries Buytaert

Software programmer



Dries Buytaert is an open-source software programmer notable as founder and lead developer of the Drupal CMS. [Wikipedia](#)

Born: November 19, 1978 (age 37), [Antwerp, Belgium](#)

Education: [Ghent University](#), [University of Antwerp](#)

3. Automated test

- **A:** URL is available and `<body>` is visible
- **B:** Search button is visible
- Enter surname and click search
- **C:** Right hand side area is visible
- **D:** Right hand side area contains person's details

```
module.exports = {
  'As a user I want to see name prediction in right hand side block' :
    function (browser) {
      browser
        .url('http://www.google.com')
        .waitForElementVisible('body', 1000)
        .setValue('input[type=text]', 'buytaert')
        .waitForElementVisible('button[name=btnG]', 1000)
        .click('button[name=btnG]')
        .waitForElementVisible('#rhs_block', 1000)
        .assert.containsText('#main', 'Dries Buytaert')
        .end();
    }
};
```



4. Running the test

```
Vovas-MacBook-Pro:nightwatch DaBoss$ node_modules/.bin/nightwatch -e safari tests/name.js
```

```
[Name] Test Suite
```

```
=====
```

```
Running: As a user I want to see name prediction in right hand side block
```

- ✓ Element <body> was visible after 50 milliseconds.
- ✓ Element <button[name=btnG]> was visible after 23 milliseconds.
- ✓ Element <#rhs_block> was visible after 1044 milliseconds.
- ✓ Testing if element <#main> contains text: "Dries Buytaert".

```
OK. 4 assertions passed. (15.135s)
```



1. Command line test runner

```
Vovas-MacBook-Pro:nightwatch DaBoss$ node_modules/.bin/nightwatch -e safari tests/name.js
```

```
[Name] Test Suite
```

```
Running: As a user I want to see name prediction in right hand side block
```

- ✓ Element <body> was visible after 50 milliseconds.
- ✓ Element <button[name=btnG]> was visible after 23 milliseconds.
- ✓ Element <#rhs_block> was visible after 1044 milliseconds.
- ✓ Testing if element <#main> contains text: "Dries Buytaert".

```
OK. 4 assertions passed. (15.135s)
```



Nightwatch.js

2. Tests are in JavaScript

```
1 var pause = 1000;
2
3 module.exports = {
4   'As a user I want to see name prediction in right hand side block' :
5     function (browser) {
6       browser
7         .url('http://www.google.com')
8         .waitForElementVisible('body', pause)
9         .setValue('input[type=text]', 'buytaert')
10        .waitForElementVisible('button[name=btnG]', pause)
11        .click('button[name=btnG]')
12        .waitForElementVisible('#rhs_block', pause)
13        .assert.containsText('#main', 'Dries Buytaert')
14        // .pause(pause)
15        .end();
16    }
17 };
18
```



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Nightwatch.js

Browser automated testing done easy.

3. Uses CSS selectors

- `input[type=text]`
- `button[name=btnG]`
- `#rhs_block`
- `#main`



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Nightwatch.js

4. Continuous Integration support



Iron.io





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Nightwatch.js



BrowserStack Live Automate More ▾

 SAUCELABS



Live, Web-Based Browser Testing

Instant access to all real mobile and desktop browsers. Say goodbye to your lab of devices and virtual machines.

[Sign up for free](#)

5. Cloud services support

TESTING AT THE
SPEED OF AWESOME.

Accelerate your software development and bring your great ideas to market faster with the world's largest automated testing cloud for web and mobile apps.



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Nightwatch.js

Browser automated testing done easy.

6. Easy to extend

- Custom commands
- Custom assertions
- Custom reporters



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REPORTS

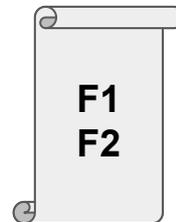


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STANDARD PROCESS



Developer



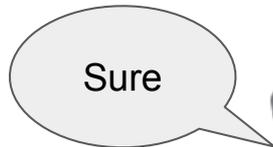
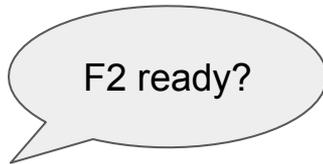


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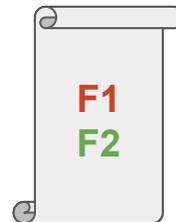
STANDARD PROCESS



PM



Developer





STANDARD PROCESS



PM

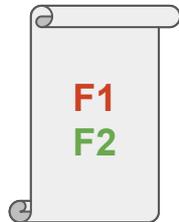
F2 ready?

F3, ...

Sure



Developer

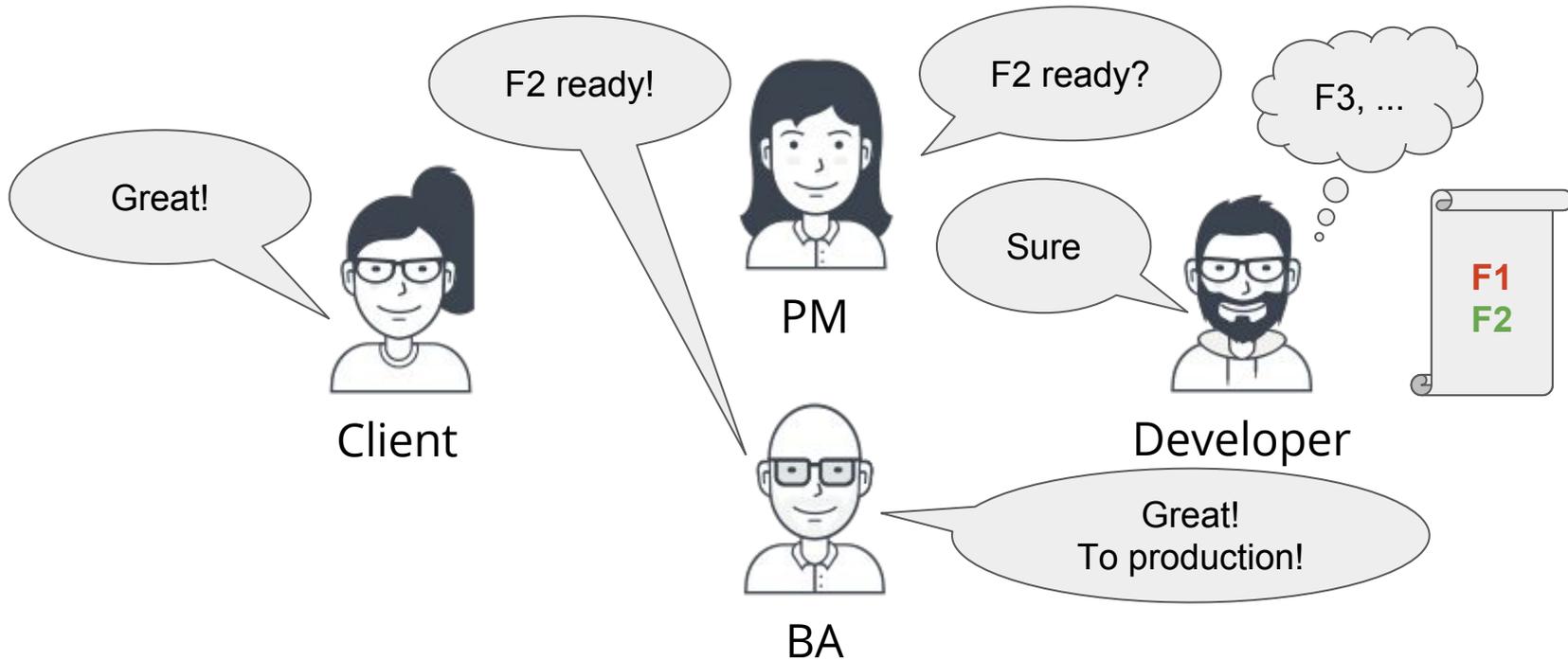


BA

Great!
To production!

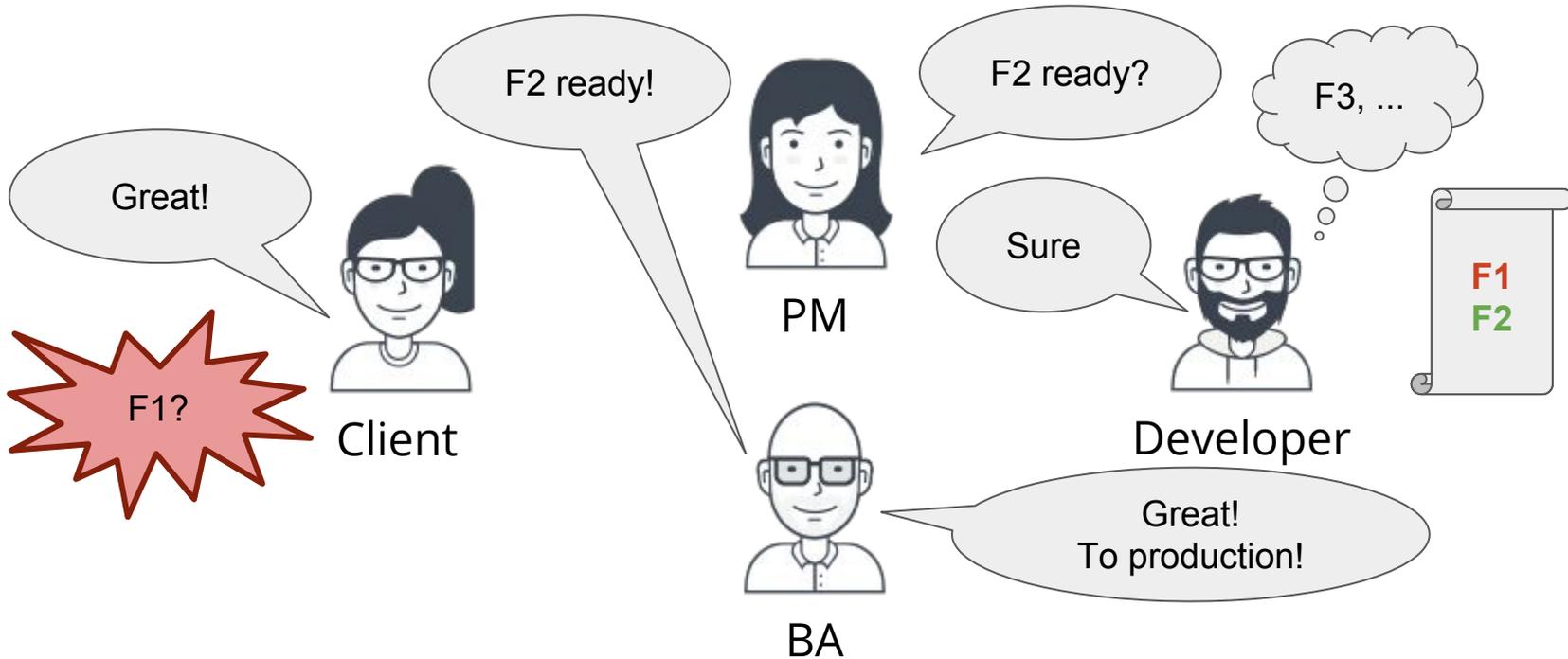


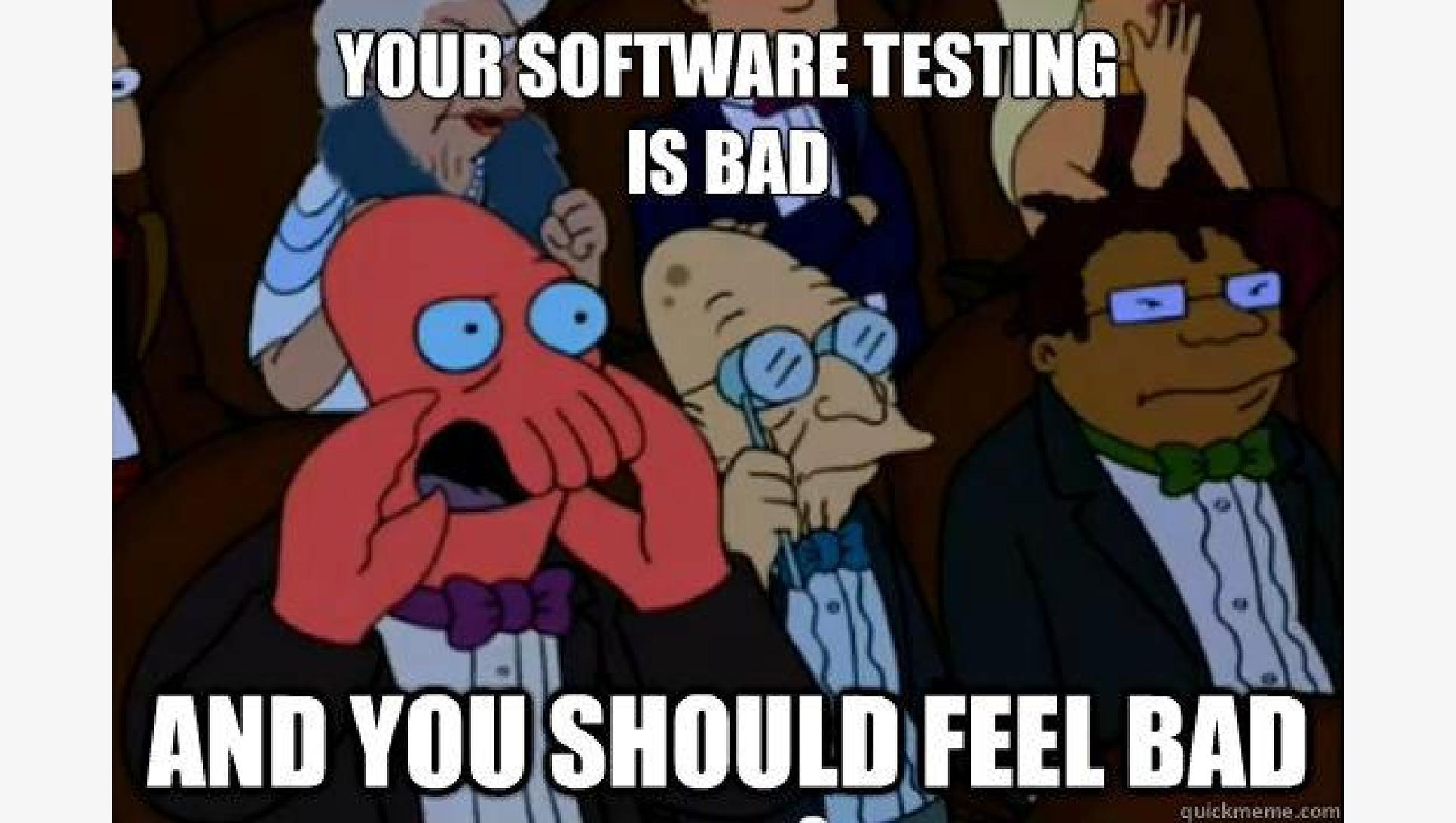
STANDARD PROCESS





STANDARD PROCESS





**YOUR SOFTWARE TESTING
IS BAD**

AND YOU SHOULD FEEL BAD

ADDING AUTOMATED TESTING



Client



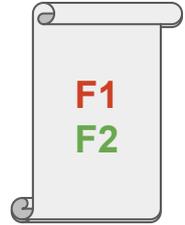
PM



BA



Developer





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ADDING AUTOMATED TESTING



Client



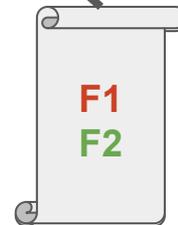
PM



BA



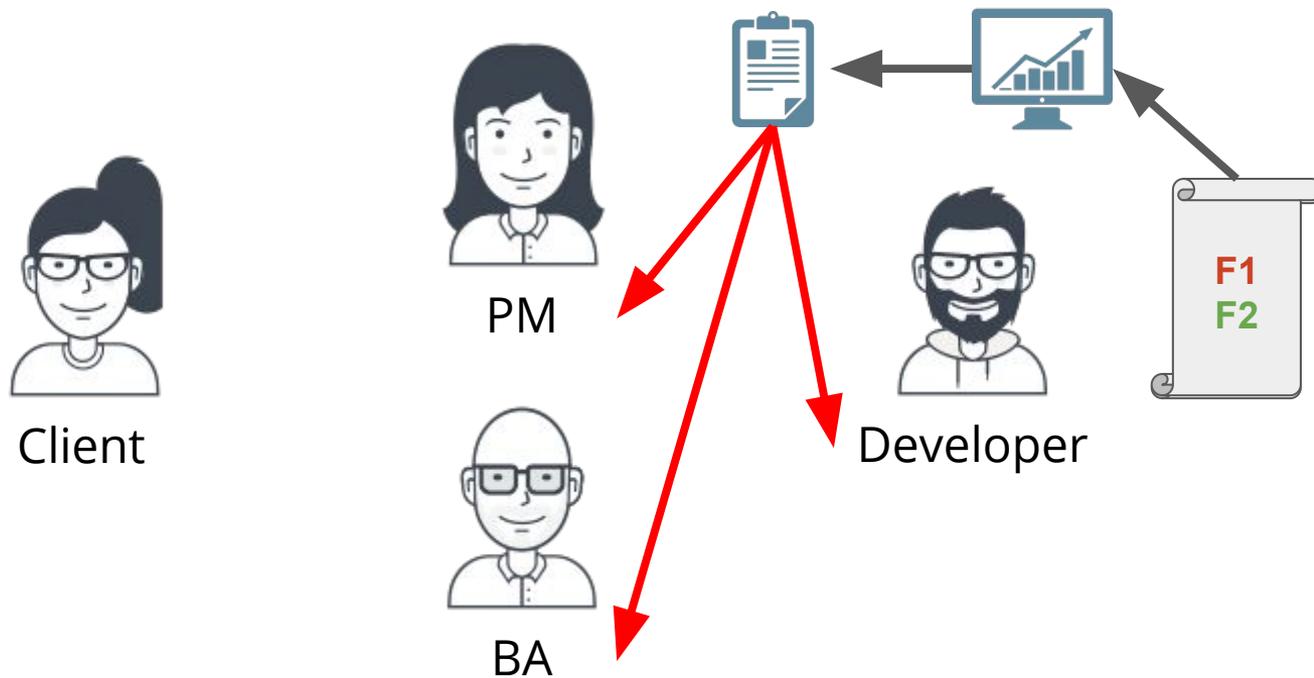
Developer





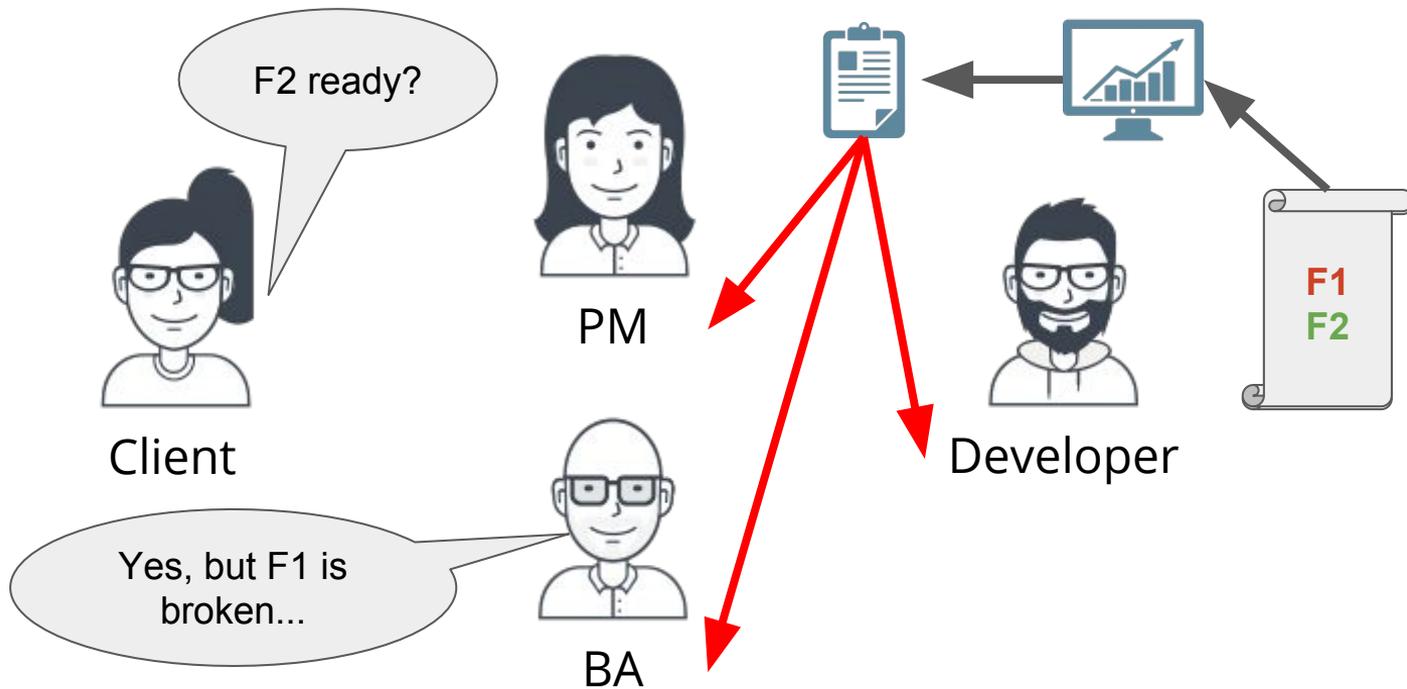
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ADDING AUTOMATED TESTING





ADDING AUTOMATED TESTING



SHUT UP AND



TAKE MY MONEY!



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Who like reports?

DEVELOPERS

Technical detailed report on

- New features and existing functionality
- Integration on latest test environment and UAT
- Sprint retrospective



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Who like reports?

INTERNAL TEAM: Managers, PMs, BAs

Report with less technical details on multiple environments

- Track sprint / release progress
- Measure velocity
- Integrate with internal tools: email, chat



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Who like reports?

CLIENTS

Report with no technical details on pre release environment

- Test coverage
- Ability to identify missing / not clarified features



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Report output

- Visual
- Command line
- JUnit XML
- Custom reporters, e.g. JSON



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TESTS



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Nightwatch tests

- Written in JavaScript
- Each test can have multiple assertions

```
module.exports = {
  'As a user I want to see name prediction in right hand side block' :
  function (browser) {
    browser
      .url('http://www.google.com')
      .waitForElementVisible('body', 1000)
      .setValue('input[type=text]', 'buytaert')
      .waitForElementVisible('button[name=btnG]', 1000)
      .click('button[name=btnG]')
      .waitForElementVisible('#rhs_block', 1000)
      .assert.containsText('#main', 'Dries Buytaert')
      .end();
  }
};
```

```
module.exports = {
  'As a user I want to see name prediction in right hand side block' :
    function (browser) {
      browser
        .url('http://www.google.com')
        .waitForElementVisible('body', 1000)
        .setValue('input[type=text]', 'buytaert')
        .waitForElementVisible('button[name=btnG]', 1000)
        .click('button[name=btnG]')
        .waitForElementVisible('#rhs_block', 1000)
        .assert.containsText('#main', 'Dries Buytaert')
        .end();
    }
};
```

```
module.exports = {
  'As a user I want to see name prediction in right hand side block' :
    function (browser) {
      browser
        .url('http://www.google.com')
        .waitForElementVisible('body', 1000)
        .setValue('input[type=text]', 'buytaert')
        .waitForElementVisible('button[name=btnG]', 1000)
        .click('button[name=btnG]')
        .waitForElementVisible('#rhs_block', 1000)
        .assert.containsText('#main', 'Dries Buytaert')
        .end();
    }
};
```

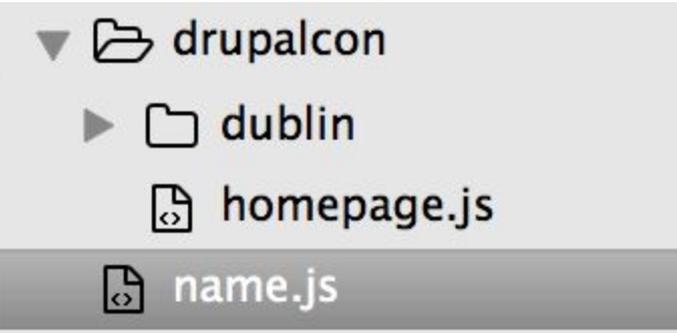
```
module.exports = {
  'As a user I want to see name prediction in right hand side block' :
    function (browser) {
      browser
        .url('http://www.google.com')
        .waitForElementVisible('body', 1000)
        .setValue('input[type=text]', 'buytaert')
        .waitForElementVisible('button[name=btnG]', 1000)
        .click('button[name=btnG]')
        .waitForElementVisible('#rhs_block', 1000)
        .assert.containsText('#main', 'Dries Buytaert')
        .end();
    }
};
```

```
module.exports = {  
  'As a user I want to see name prediction in right hand side block' :  
    function (browser) {  
      browser  
        .url('http://www.google.com')  
        .waitForElementVisible('body', 1000)  
        .setValue('input[type=text]', 'buytaert')  
        .waitForElementVisible('button[name=btnG]', 1000)  
        .click('button[name=btnG]')  
        .waitForElementVisible('#rhs_block', 1000)  
        .assert.containsText('#main', 'Dries Buytaert')  
        .end();  
    }  
};
```

```
module.exports = {
  'As a user I want to see name prediction in right hand side block' :
    function (browser) {
      browser
        .url('http://www.google.com')
        .waitForElementVisible('body', 1000)
        .setValue('input[type=text]', 'buytaert')
        .waitForElementVisible('button[name=btnG]', 1000)
        .click('button[name=btnG]')
        .waitForElementVisible('#rhs_block', 1000)
        .assert.containsText('#main', 'Dries Buytaert')
        .end();
    }
};
```

Nightwatch tests

- Each file can be
- Each folder can



```
▼ drupalcon
  ► dublin
  homepage.js
  name.js
```

es



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Nightwatch tests

- Group tests according to functionality
- Tag your tests for better granular testing

```
module.exports = {  
  '@tags': ['sprint3', 'issue 15674'],  
  'demo login test': function (browser) {  
    // test code  
  }  
};
```



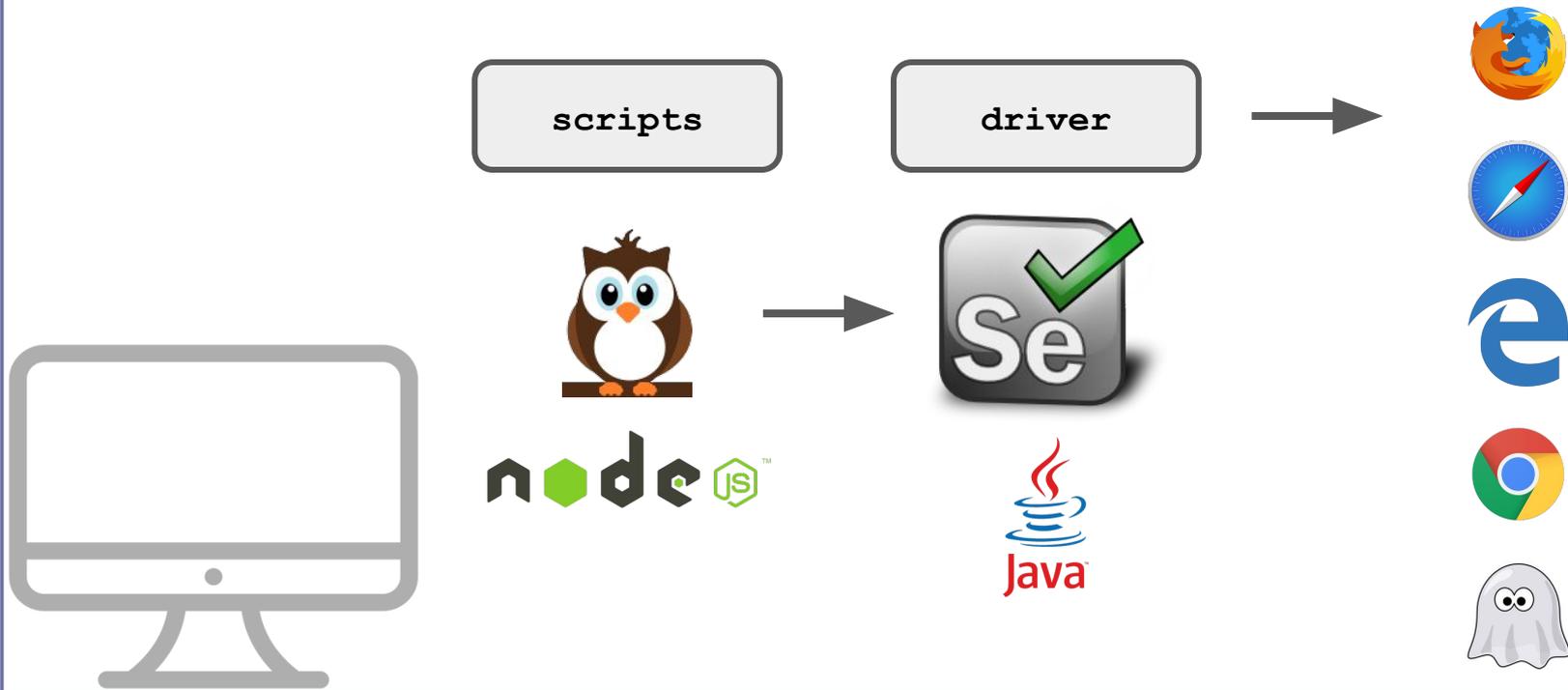
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ENVIRONMENT



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Local environment - selenium



Selenium

- Selenium is a suite of tools to automate web browsers across many platforms.
- Supports many operating systems
- Runs as a server on Java
- Writing tests is complicated

...

```
"selenium" : {  
  "start_process" : false,  
  "server_path" : "/usr/local/.../seleniumserver2.jar",  
  "log_path" : "",  
  "host" : "127.0.0.1",  
  "port" : 4444,  
  "cli_args" : {  
    "webdriver.chrome.driver" : "./chromedriver",  
    "webdriver.gecko.driver" : "./geckodriver",  
    "webdriver.ie.driver" : ""  
  }  
}
```

...

```
Vovas-MacBook-Pro:code DaBoss$ selenium-server -p 4444
16:01:41.922 INFO - Launching a standalone Selenium Server
16:01:41.982 INFO - Java: Oracle Corporation 25.92-b14
16:01:41.983 INFO - OS: Mac OS X 10.12 x86_64
16:01:42.005 INFO - v2.53.1, with Core v2.53.1. Built from revision a36b8b1
16:01:42.098 INFO - Driver provider org.openqa.selenium.ie.InternetExplorerDriver registration
is skipped:
registration capabilities Capabilities [{ensureCleanSession=true, browserName=internet explore
r, version=, platform=WINDOWS}] does not match the current platform MAC
16:01:42.099 INFO - Driver provider org.openqa.selenium.edge.EdgeDriver registration is skippe
d:
registration capabilities Capabilities [{browserName=MicrosoftEdge, version=, platform=WINDOWS
}] does not match the current platform MAC
16:01:42.099 INFO - Driver class not found: com.opera.core.systems.OperaDriver
16:01:42.099 INFO - Driver provider com.opera.core.systems.OperaDriver is not registered
16:01:42.101 INFO - Driver class not found: org.openqa.selenium.htmlunit.HtmlUnitDriver
16:01:42.102 INFO - Driver provider org.openqa.selenium.htmlunit.HtmlUnitDriver is not registe
red
16:01:42.203 INFO - RemoteWebDriver instances should connect to: http://127.0.0.1:4444/wd/hub
16:01:42.203 INFO - Selenium Server is up and running
```

Selenium web driver

Allows selenium to use native browser engines

- Firefox - new Gecko driver
- Safari - requeres
- chrome
- IE / edge browser - ability to run IE in linux
- PhantomJS

Extensions



General



Tabs



AutoFill



Passwords



Search



Security



Privacy



Notifications



Extensions



Advanced



WebDriver



WebDriver 2.48.0 by [The Selenium Project](#)

Browser automation made simple

Uninstall

“WebDriver” can read, modify, and transmit content from all webpages. This could include sensitive information like passwords, phone numbers, and credit cards.



Automatically update extensions from the Safari Extensions Gallery

More Extensions...



...

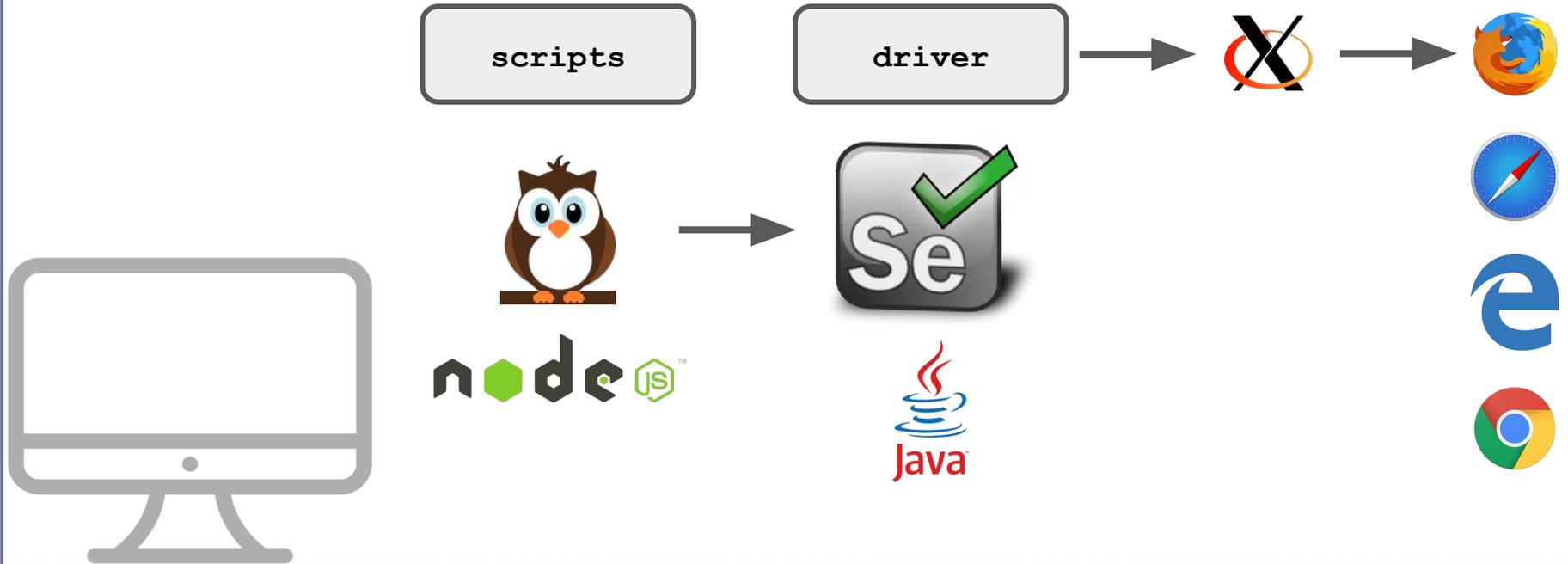
```
"selenium" : {  
  "start_process" : false,  
  "server_path" : "/usr/local/.../seleniumserver2.jar",  
  "log_path" : "",  
  "host" : "127.0.0.1",  
  "port" : 4444,  
  "cli_args" : {  
    "webdriver.chrome.driver" : "./chromedriver",  
    "webdriver.gecko.driver" : "./geckodriver",  
    "webdriver.ie.driver" : ""  
  }  
}
```

...



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No desktop environment - Xvfb





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Xvfb

- Virtual screen to run browser
- Native functionality



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Using cloud services

scripts



node JS™



	Dashboard
	Tunnels
	Archives
	Sauce Runner BETA
	Docs
	Team Management
	My Account
	User Settings
	Support
	Sign Out

✓	Dpe D8 / General / Page Home started Sep 17th at 3:11PM by @VLADIMIRXVT	⚡	⊗ 10.11	🔗 53	Success ran for 37s
!	Dpe D8 / General / Page Contact started Sep 17th at 3:11PM by @VLADIMIRXVT	⚡	⊗ 10.11	🔗 53	Failed ran for 11s
✓	Dpe D8 / General / Page Home started Sep 17th at 8:08AM by @VLADIMIRXVT	⚡	⊗ 10.11	🔗 53	Success ran for 35s
!	Dpe D8 / General / Page Contact started Sep 17th at 8:08AM by @VLADIMIRXVT	⚡	⊗ 10.11	🔗 53	Failed ran for 14s
✓	Dpe D8 / General / Page Home started Sep 17th at 8:01AM by @VLADIMIRXVT	⚡	⊗ 10.11	🔗 53	Success ran for 35s
?	Dpe D8 / General / Page Home started Sep 17th at 7:54AM by @VLADIMIRXVT	⚡	⊗ 10.11	🔗 53	Complete ran for 32s

```
"selenium" : {
  "start_process" : false,
  "host": "ondemand.saucelabs.com",
  "port": 80
},
"test_settings" : {
  "default" : {
    "output": true,
    "selenium_host": "ondemand.saucelabs.com",
    "selenium_port": 80,
    "username": "${SAUCE_USERNAME}",
    "access_key": "${SAUCE_ACCESS_KEY}",
    "desiredCapabilities": {
      "browserName": "chrome",
      "platform": "Windows 10",
      "version": "48"
    }
  }
}
```

```
"selenium" : {
  "start_process" : false,
  "host": "ondemand.saucelabs.com",
  "port": 80
},
"test_settings" : {
  "default" : {
    "output": true,
    "selenium_host": "ondemand.saucelabs.com",
    "selenium_port": 80,
    "username": "${SAUCE_USERNAME}",
    "access_key": "${SAUCE_ACCESS_KEY}",
    "desiredCapabilities": {
      "browserName": "chrome",
      "platform": "Windows 10",
      "version": "48"
    }
  }
}
```

```
"selenium" : {
  "start_process" : false,
  "host": "ondemand.saucelabs.com",
  "port": 80
},
"test_settings" : {
  "default" : {
    "output": true,
    "selenium_host": "ondemand.saucelabs.com",
    "selenium_port": 80,
    "username": "${SAUCE_USERNAME}",
    "access_key": "${SAUCE_ACCESS_KEY}",
    "desiredCapabilities": {
      "browserName": "chrome",
      "platform": "Windows 10",
      "version": "48"
    }
  }
}
```



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Epilogue

WHY NIGHTWATCH.js?



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Conclusion

- Command line test runner
- Uses JavaScript
- Uses CSS selectors / XPath
- Continuous Integration support
- Cloud services support



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Advantages

- Test ANY website
- Complements unit testing
- Various reports
- Visual artifacts (screenshots, videos)
- CI / Cloud services support



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Disadvantages

- Takes time for initial setup
- Basic cording knowledge required



Resources

- <http://nightwatchjs.org/>
- <https://github.com/nightwatchjs/nightwatch>
- <http://www.seleniumhq.org/>
- <http://www.saucelabs.com/>



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More resources



JavaScript Unit Testing

Matthew Grill

<https://events.drupal.org/dublin2016/sessions/javascript-unit-testing>



events.drupal.org/dublin2016/schedule

Evaluate This Session
THANK YOU!



NO TESTING REQUIRED



IT WILL WORK.

QUESTIONS?



bit.ly/dce16-nwatch



@VladimirAus