

Top 5 Test Automation Challenges & How to Solve Them

Joint Webinar

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- Please participate in our live poll and end-of-webinar survey
- Ask us questions in the QA panel
- We will send you the recording and slides



- Digital Market Trends
- Key challenges in Test Automation and Continuous Testing
- Recommended Practices
- Q & A



There's a Paradigm Shift in Software Development



+



Quality Is Everyone's 'Problem'



Approaches to DevOps Testing

1. Create some scripts
2. Create more scripts
3. Even more scripts
4. (Try to) run them daily

- Too many failures
- Too much time spent on analysis

1. Create few robust scripts
2. Make sure they run daily
3. Slowly add more scripts
 1. Maintain stability & visibility
4. Add more scripts

Coverage

Full

Coverage
before
Robustness

Smoke

Sprint

Daily

Robustness
Before
Coverage

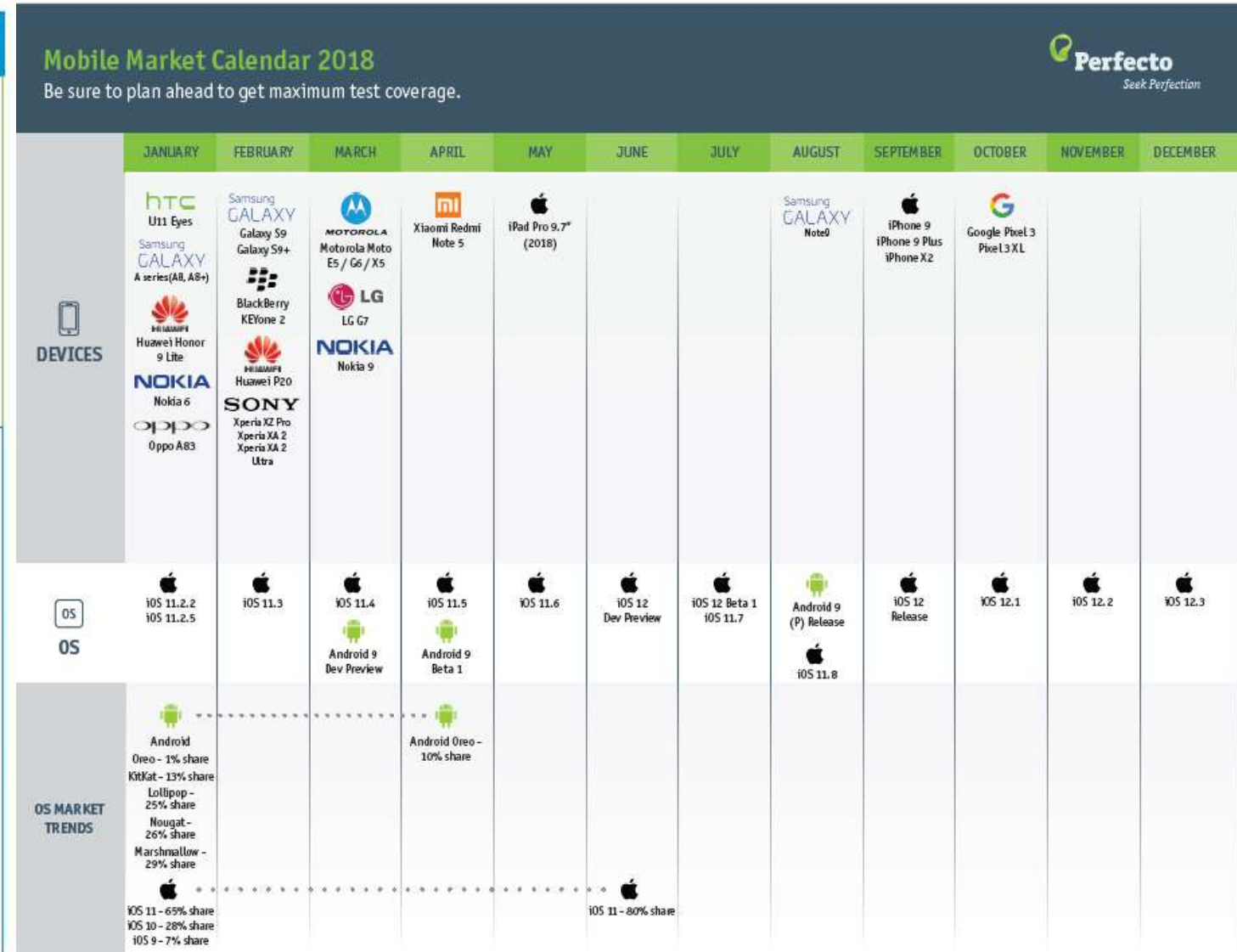


Coverage Planning Tools

Mobile Test Coverage – U.S.

powered by  IHS Markit

| | Device Name | Screen Size | Screen Resolution | PPI (Pixel Per Inch) | Release Date | Recommended OS Version |
|-----------|--------------------------|-------------|-------------------|----------------------|--------------|------------------------|
| | | | | | | |
| Essential | Apple iPhone 6S ↑ | 4.7" | 750 x 1334 | 326 | Sep-2015 | iOS 10.3.3 |
| | Samsung Galaxy S7 ↑ | 5.1" | 1440 x 2560 | 577 | Mar-2016 | Android 7.0 |
| | Apple iPhone 7 Plus ↑ | 5.5" | 1080 x 1920 | 401 | Sep-2016 | iOS 11.0.3 |
| | Apple iPhone 6 ↓ | 4.7" | 750 x 1334 | 326 | Sep-2014 | iOS 10.3.3 |
| | Samsung Galaxy S6 ↓ | 5.1" | 1440 x 2560 | 515 | Apr-2015 | Android 6.0.1 |
| | Apple iPhone 7 ↑ | 4.7" | 750 x 1334 | 326 | Sep-2016 | iOS 11.0.3 |
| | Apple iPhone 6S Plus ↑ | 5.5" | 1080 x 1920 | 401 | Sep-2014 | iOS 10.3.3 |
| | Samsung Galaxy S5 ↓ | 5.1" | 1080 x 1920 | 432 | Apr-2014 | Android 6.0.1 |
| | Google Pixel ↑ REF | 5.0" | 1080 x 1920 | 441 | Oct-2016 | Android 8.0 |
| | Apple iPad Air 2 ↑ | 9.7" | 2048 x 1536 | 264 | Oct-2014 | iOS 11.0.3 |
| Enhanced | Apple iPhone 6 Plus ↓ | 5.5" | 1080 x 1920 | 401 | Sep-2014 | iOS 10.3.3 |
| | Apple iPhone 5S ↓ | 4.0" | 640 x 1136 | 326 | Sep-2013 | iOS 10.3.3 |
| | Apple iPad 2 ↓ | 9.7" | 1024 x 768 | 132 | Mar-2011 | iOS 9.3.5 |
| | Samsung Galaxy S8+ NEW | 6.2" | 1440 x 2960 | 529 | Apr-2017 | Android 7.0 |
| | Apple iPhone 5C ↓ | 4.0" | 640 x 1136 | 326 | Sep-2012 | iOS 10.3.3 |
| | Samsung Galaxy Note 5 ↓ | 5.67" | 1440 x 2560 | 515 | Aug-2015 | Android 7.0 |
| | Apple iPad 4 ↑ | 9.7" | 2048 x 1536 | 264 | Nov-2012 | iOS 10.3.3 |
| | Samsung Galaxy S7 Edge ↓ | 5.5" | 1440 x 2560 | 534 | Mar-2016 | Android 6.0.1 |
| | Samsung Galaxy S4 ↓ | 5.0" | 1080 x 1920 | 440 | Apr-2013 | Android 5.0.1 |
| | Samsung Galaxy S8 NEW | 5.8" | 1440 x 2960 | 570 | Apr-2017 | Android 7.0 |
| | Apple iPad mini ↓ | 7.9" | 1024 x 768 | 162 | Nov-2012 | iOS 9.3.5 |
| | Samsung Galaxy Tab S2 ↓ | 9.7" | 1536 x 2048 | 264 | Sep-2015 | Android 6.0.1 |
| | Apple iPad Pro ↑ | 12.9" | 2048 x 2732 | 264 | Nov-2015 | iOS 11.0.3 |
| | Apple iPad mini 2 ↑ | 7.9" | 2048 x 1536 | 324 | Nov-2013 | iOS 10.3.3 |
| | Apple iPad 9.7 NEW | 9.7" | 2048 x 1536 | 264 | Mar-2017 | iOS 10.3.3 |


























Coverage Planning Tools

Browser Calendar 2018

Be sure to plan ahead to get maximum test coverage.



| JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE | JULY | AUGUST | SEPTEMBER | OCTOBER | NOVEMBER | DECEMBER |
|---|--|--|---|--|--|--|--|---|--|--|---|
|  64 |  65 Beta |  65 |  66 |  67 |  68 Beta |  68 |  69 Beta |  69 |  70 |  71 Beta |  71 |
|  58 59 Beta | |  59 60 Beta | |  60 61 Beta | |  61 62 Beta |  62 63 Beta | |  63 64 Beta |  64 65 Beta |  65 |
|  16 (September 2017) | | | | | | | | | | | |
|  11.0.2 | | | | | | | | | | | |
| | | | | | | |  Mac OS 10.14 Release | | | | |



Perfecto

Seek Perfection



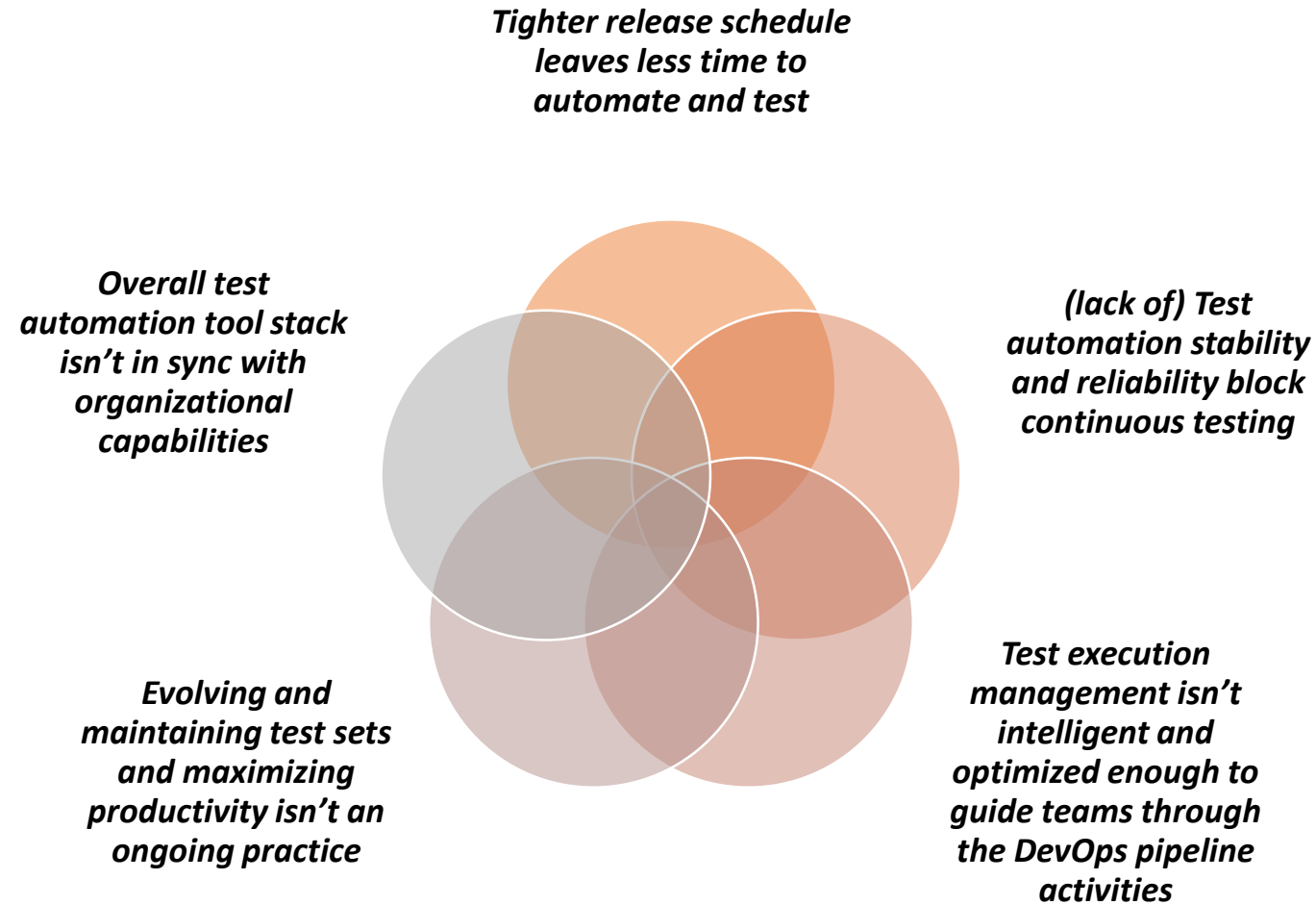
infostretch

Poll Question

Top Automation Challenges



Top 5 Automation Challenges



Tighter release schedule leaves less time to automate and test

- ✓ Consider ATDD/BDD software development practices
- ✓ Build a consistent and unified CI process between Dev-QA-OPS and eliminate 'shadow CI'
- ✓ Consider adjusting your test pyramid and focus on the highly valuable and fastest test suites
- ✓ Leverage faster test frameworks (XCUITest, Espresso, headless – Puppeteer etc.)

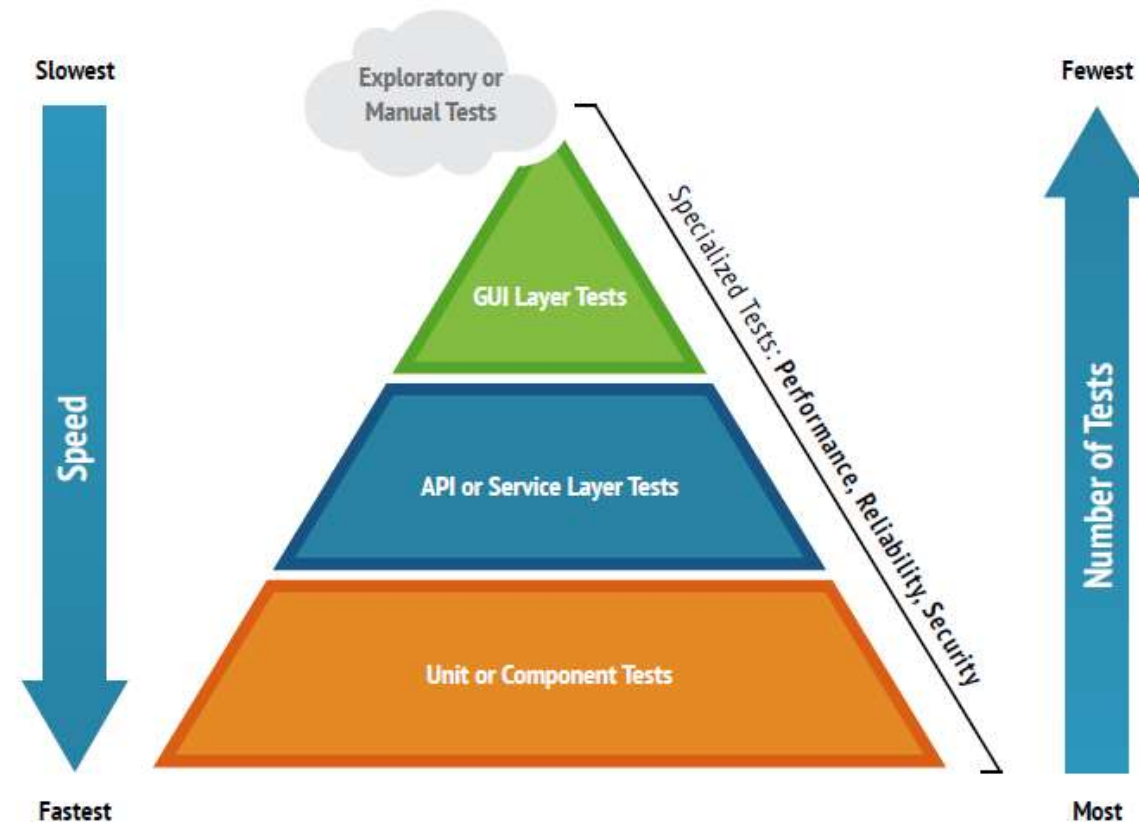


Fig. 2: The Test Automation Pyramid
(Source: Accelerate Development with Automated Testing (Forrester, March 2017))

(lack of) Test automation stability and reliability block continuous testing

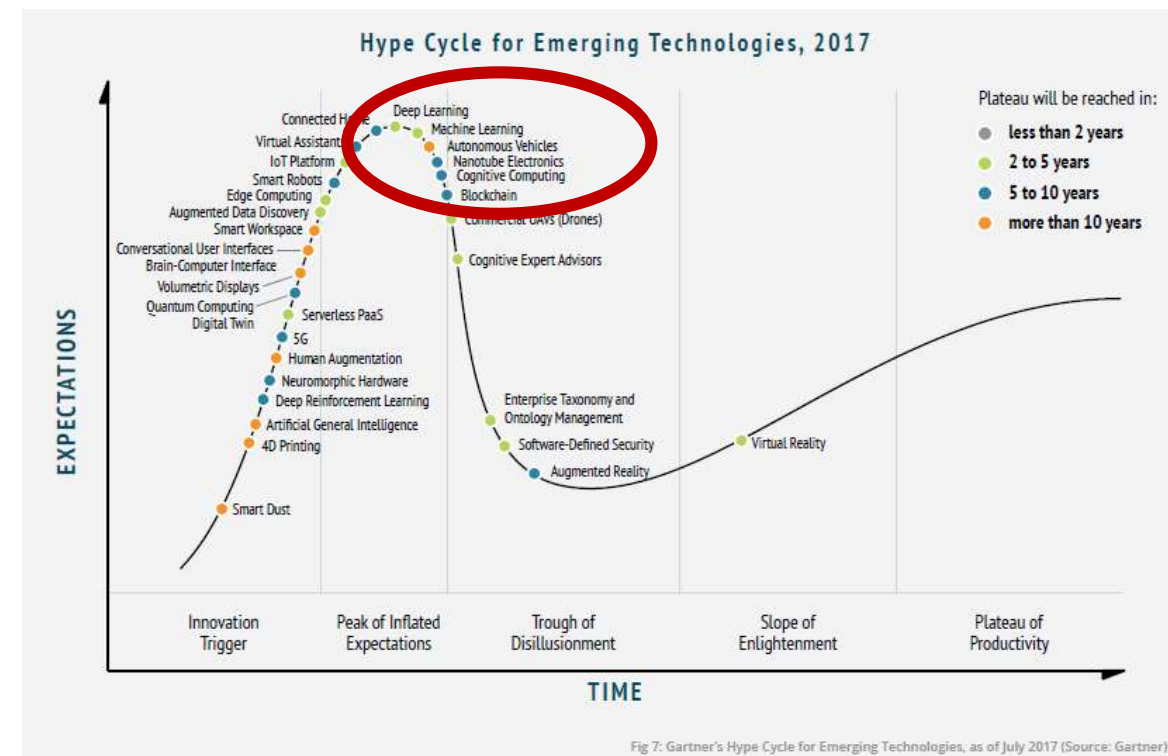
- ✓ Test authoring based on industry standards (POM, automate what's write)
 - ✓ Continuously maintain your test as you maintain code (SCM)
 - ✓ Consider breaking your tests into sub test suites based on context
- ✓ Gain control over your test suites through measurements and agreed upon KPI's
- ✓ Stabilize your lab and testing environment
- ✓ Make sure your target platforms are in "ready state" mode



Fig. 4: Sketch Notes from SeleniumConf 2017 (source: [KatjaSays Site](#))

Test execution management isn't intelligent and optimized enough

- ✓ Start exploring innovative machine learning tools that can optimize your test code
- ✓ Re-factor test code and include tagging, analytics hooks and other post-execution debugging capabilities
- ✓ Periodic test code review throughout the pipeline



Evolving and maintaining test sets and maximizing productivity

- ✓ Open-source technologies struggle to keep up with innovative features (Face ID etc.)
- ✓ A mix of commercial and open-source tools seems like a winning strategy for many organizations



Fig. 9: Infrastructure as a freeway (source: USAA and Perfecto Webinar)

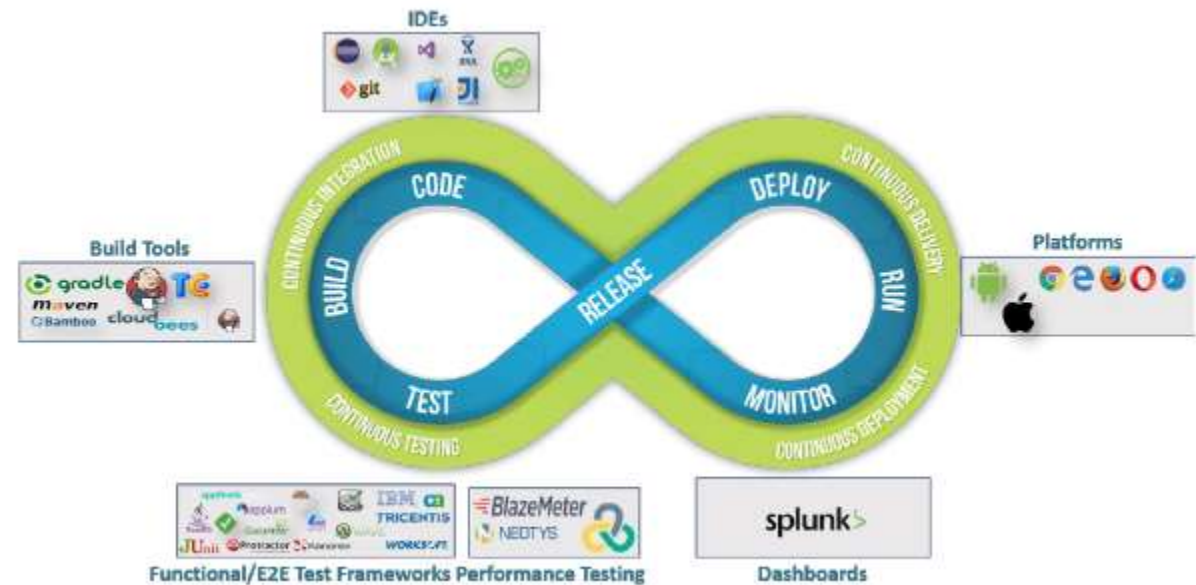
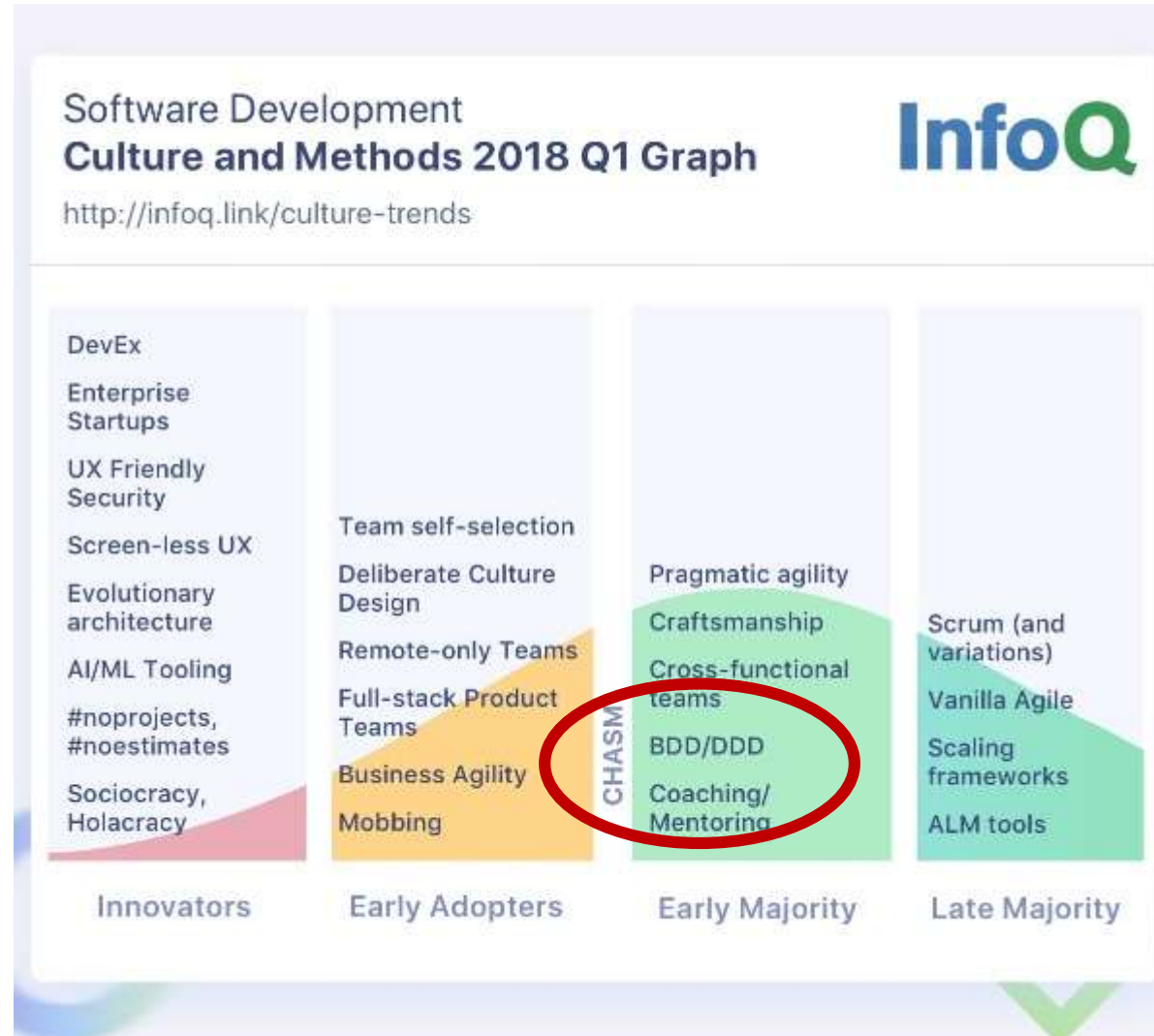
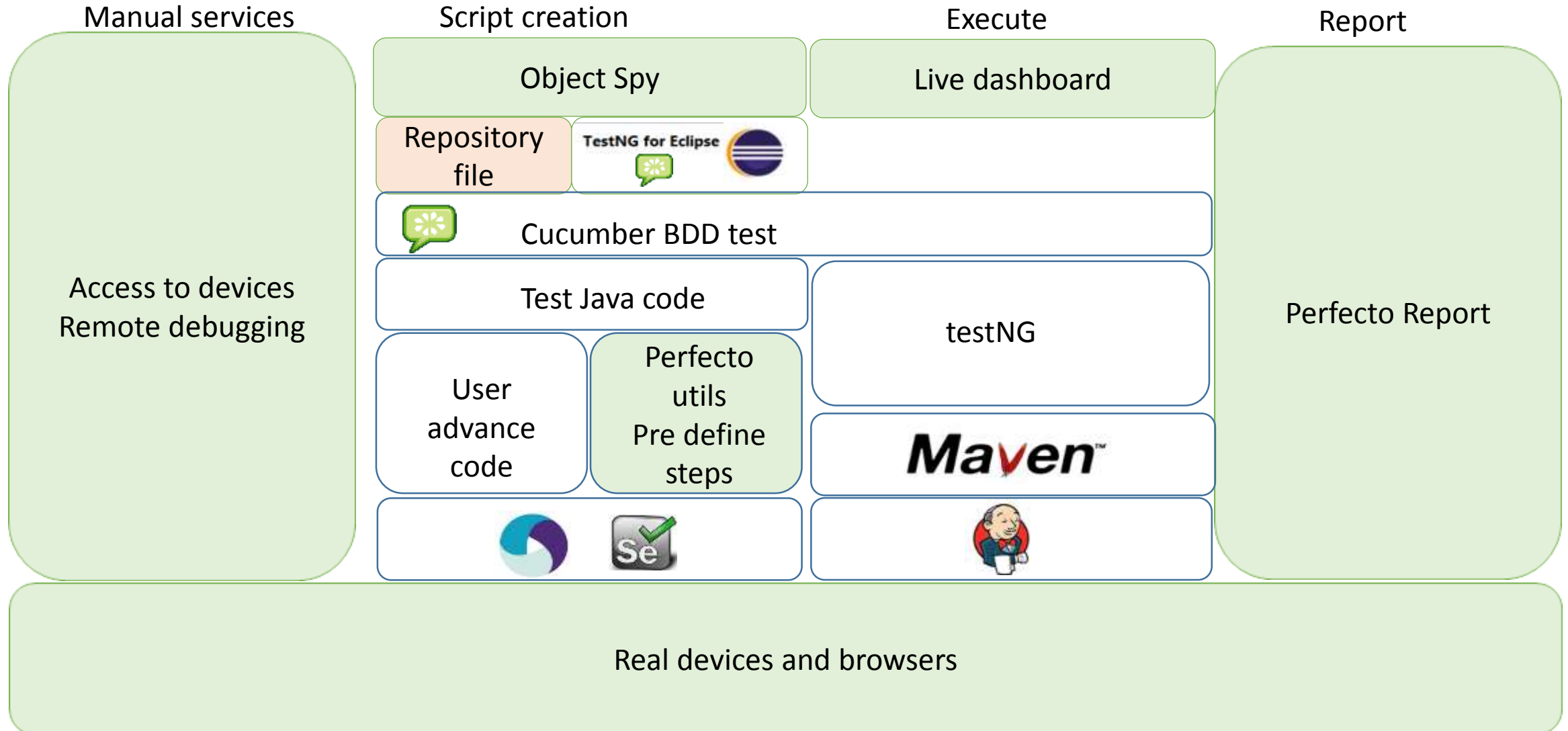


Fig. 8: Matching commercial and open-source tools throughout the DevOps Lifecycle (Source: Perfecto)

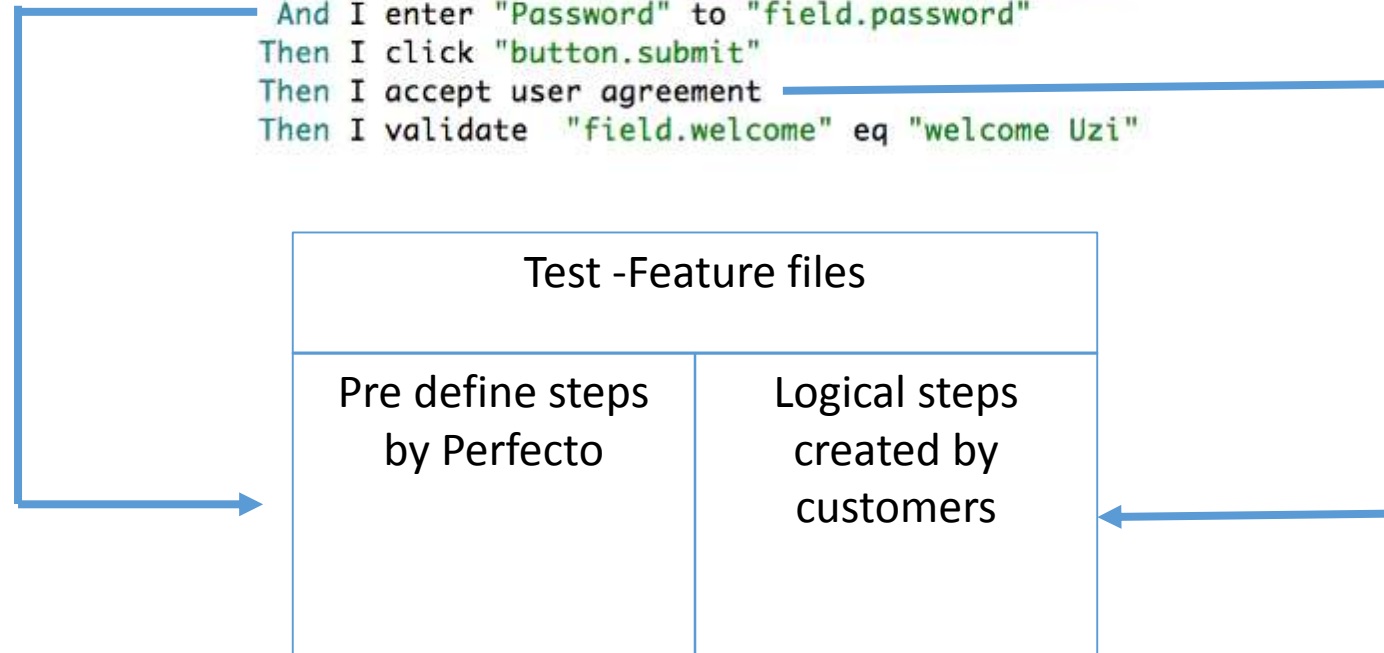
BDD method has crossed the chasm

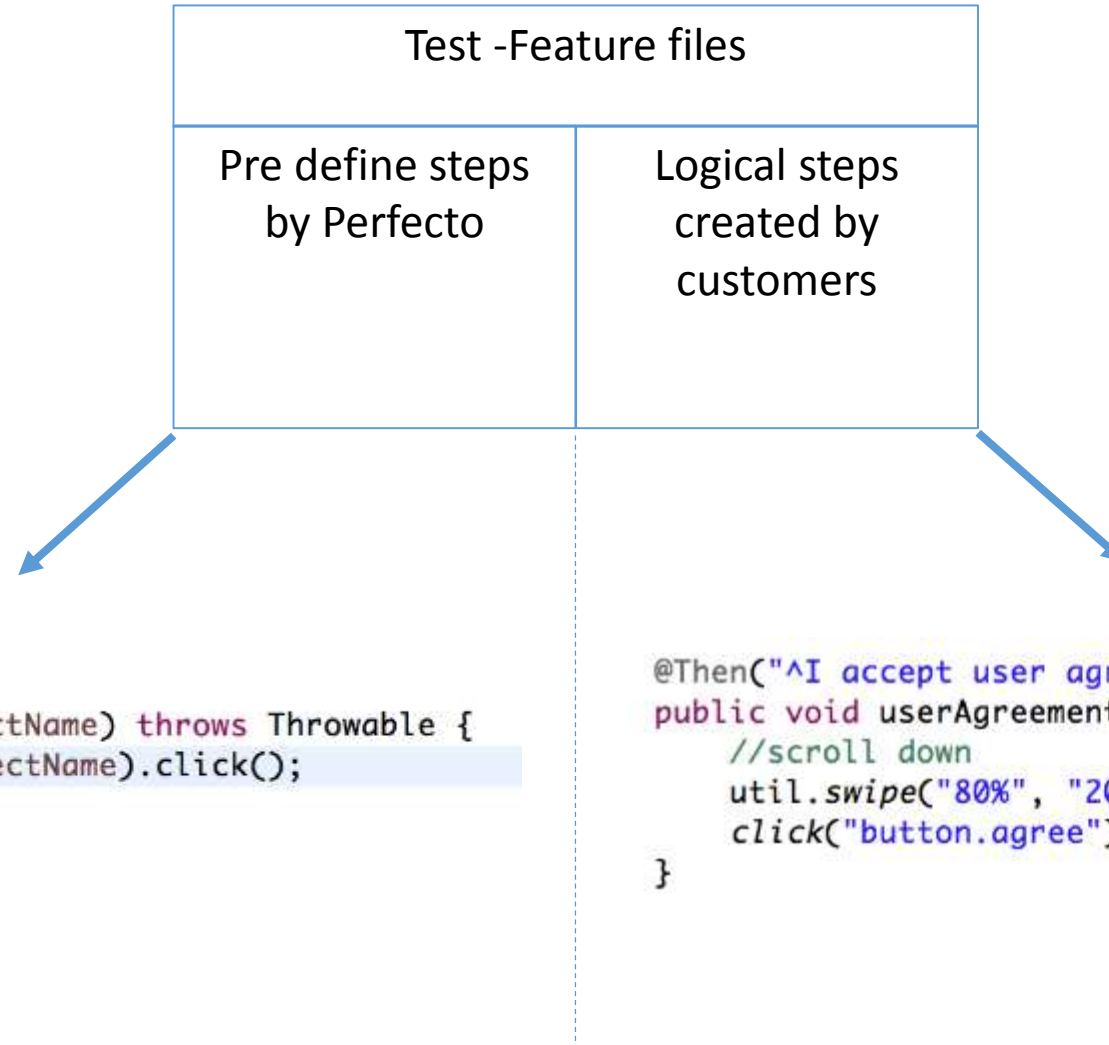


Source: [InfoQ](http://infoq.link/culture-trends)




```
@smoke
Scenario: login
  Given I connected to perfecto
  Then I enter "Uzi.eilon@gmail.com" to "field.user"
  And I enter "Password" to "field.password"
  Then I click "button.submit"
  Then I accept user agreement
  Then I validate "field.welcome" eq "welcome Uzi"
```





@smoke

Scenario: login

Given I connected to perfecto

Then I enter "Uzi.eilon@gmail.com" to "field.user"

And I enter "Password" to "field.password"

Then I click "button.submit"

Then I accept user agreement

Then I validate "field.welcome" eq "welcome Uzi"



objectID = locatorID = locator

field.user = id=username

field.password = id=password

button.submit = xpath=//*[@type='submit']

field.welcome = xpath=//*[@name='welcomeData']

| Test -Feature files | |
|--|--|
| Pre define steps by Perfecto (Low Level) | Logical steps created by customers |

- Standard BDD – cucumber
- Auto complete by standard Cucumber plugin

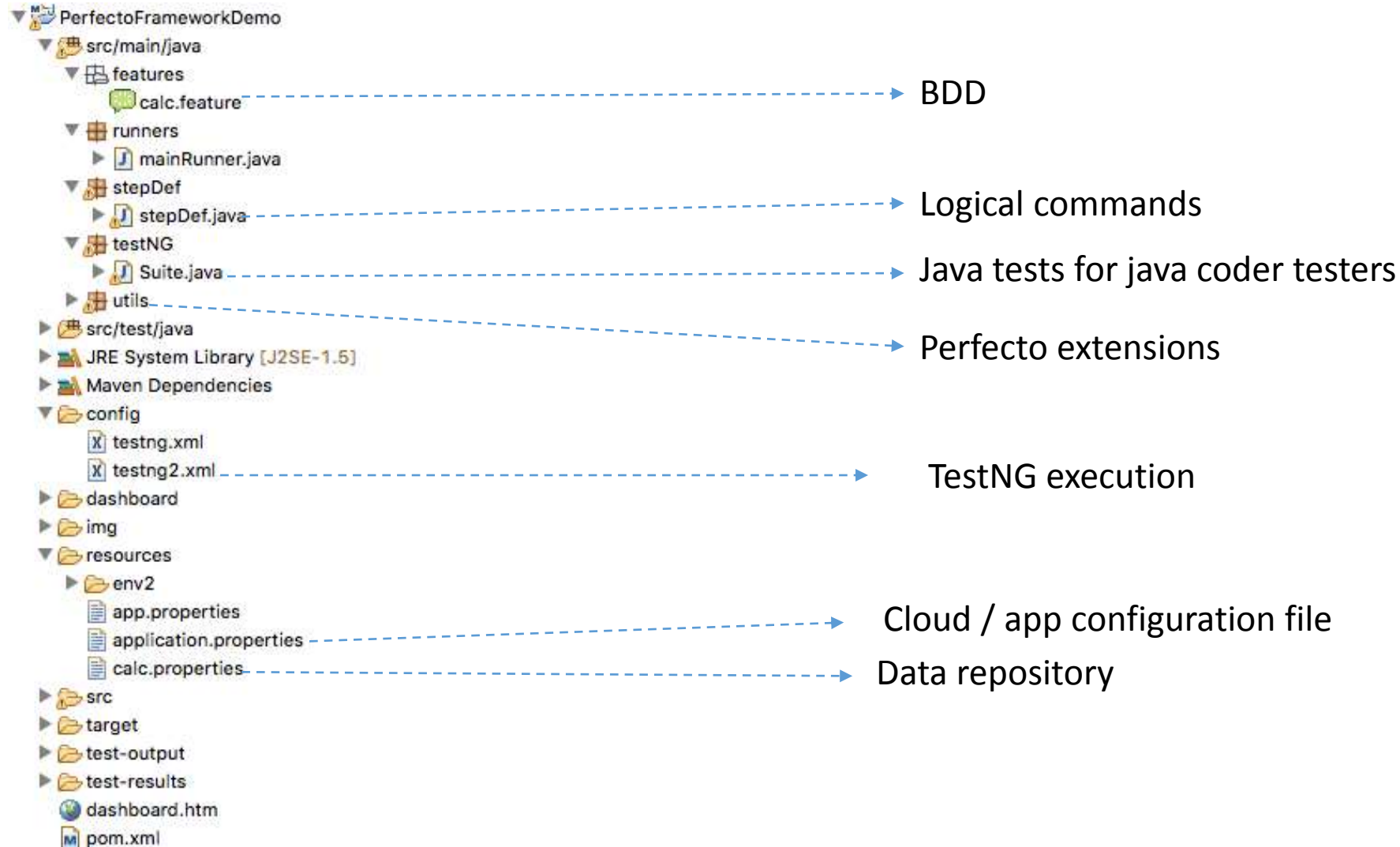
Requirements from user:

- Identified elements and add to repository
- Build flow by using low level and logical functions

| Test -Feature files | |
|---------------------------------|--|
| Pre define steps by Perfecto | Logical steps created by customers |

- **Customer code**
 - Standard java code
 - Focused only on the test actions and validations
- **QAF manage**
 - Driver init
 - `getDriver()` – provide the exiting driver
 - Object repository
 - Predefine functions (`sendKeys`, `assertText`,...)
 - Integration with Reportium execution and steps (no code need to added)
- **Perfecto**
 - Utils code with specific commands like (WT, swipe)

Project Structure



Appium

```
remote.server= https://beta.perfectomobile.com/nexperience/perfectomobile/wd/hub
remote.port= 80
appium.capabilities.automationName = Appium
driver.capabilities.user = uzie@perfectomobile.com
driver.capabilities.password = Pass
driver.capabilities.driver.class=io.appium.java_client.android.AndroidDriver
driver.capabilities.bundleId = com.perfectomobile.calr
driver.capabilities.appName = calR

driver.name=appiumRemoteDriver
```

Selenium





```
1 env.baseUrl=http://www.starbucks.com/
2
3 #[selenium]
4 remote.server= https://beta.perfectomobile.com/nexperience/perfectomobile/wd/hub
5 remote.port= 80
6 appium.capabilities.automationName = Appium
7 driver.capabilities.user = uzie@perfectomobile.com
8 driver.capabilities.password = Pass
9 driver.capabilities.browserName = MobileOS
10 driver.capabilities.scriptName = StarBucksLogin
11
12 driver.name=appiumRemoteDriver
13 selenium.wait.timeout=30000
```

Each test = new thread with the requested device

| | |
|---------------------|--|
| Thread 1 iOS | <pre><test name="Generic_ios" enabled="true"> <parameter name="driver.capabilities.platformName" value="ios"></parameter> <classes> <class name="runners.mainRunner"></class> </classes> </test></pre> |
| Thread 2 Android | <pre><test name="Generic_Android" enabled="true"> <parameter name="driver.capabilities.platformName" value="Android"></parameter> <classes> <class name="runners.mainRunner"></class> </classes> </test></pre> |



= Simple.

| Area | Components | Quantum |
|------------------|-------------------------------|--|
| Management | Reporting | |
| | Execution Manager | ✓OSS |
| Test Development | Test Authoring (IDE+Language) |     |
| | Object Repository | ✓OSS |
| | Object Locator/Spy | |
| | Appium/Selenium | ✓OSS |

```
@appium
Scenario: Appium Example Scenario
  Given I start application by name "Calculator"
  And I am using an AppiumDriver
  When add "3" to "5"
  Then result should be "8"
```

<http://projectQuantum.io>



Demo



Available Resources



Download the free eBook here -
<http://bit.ly/2E0ZfzS>



Download the free Whitepaper here -
<http://bit.ly/qewhitepaper>



Read Chapter 15:
Master Your “Shift Left”
Moves -
<http://bit.ly/2GrXkpp>

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Chief Technology
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Infostretch

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Assessment - See how your
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Thank You!

