Don’t Panic

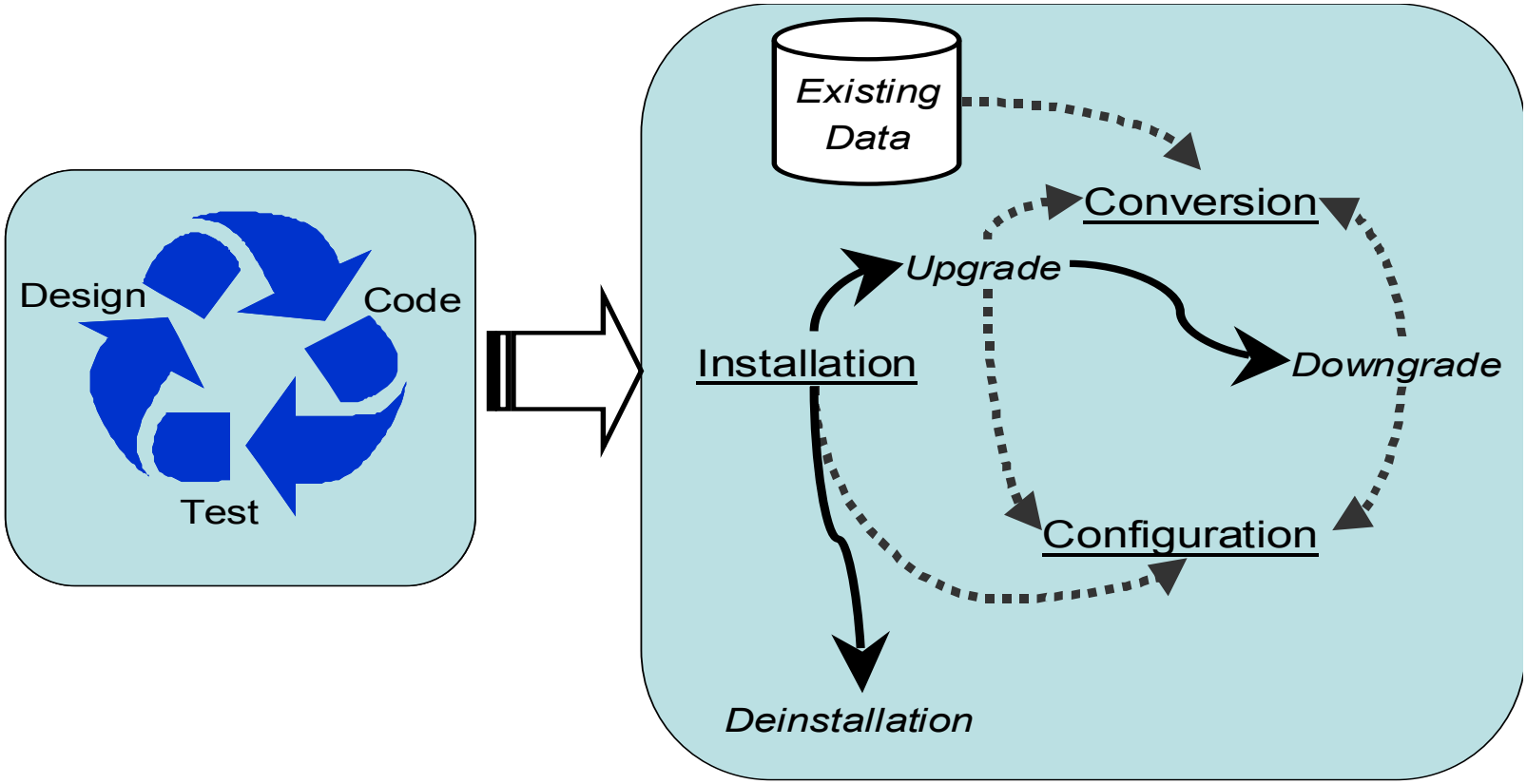
Mobile Tester’s Guide to the Galaxy

Julian Harty @SQuAD Denver

Sept 16, 2013

LIFE OF A (MOBILE) APP

Lifecycles of software



Software Development Life Cycle

Software Usage Life Cycle

Mobile Development

From *Creation* to *Use*[(i)]

Implementation

Design

Code

Build

Verification

Unit Tests

Internal Installation

System Tests

Launch

Pre-publication

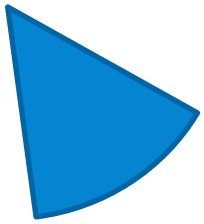
Publication

Mobile Development

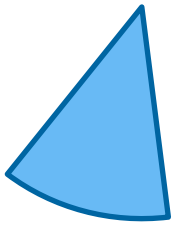
From *Creation* to *Use*[(ii)]

Engagement

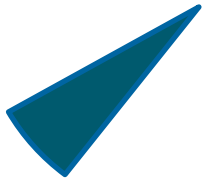
Search



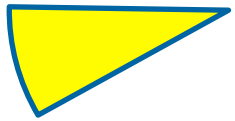
Trust



Download

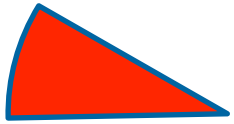


Installation

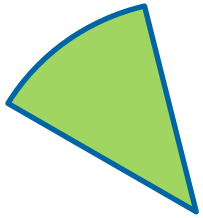


Validation

Payment

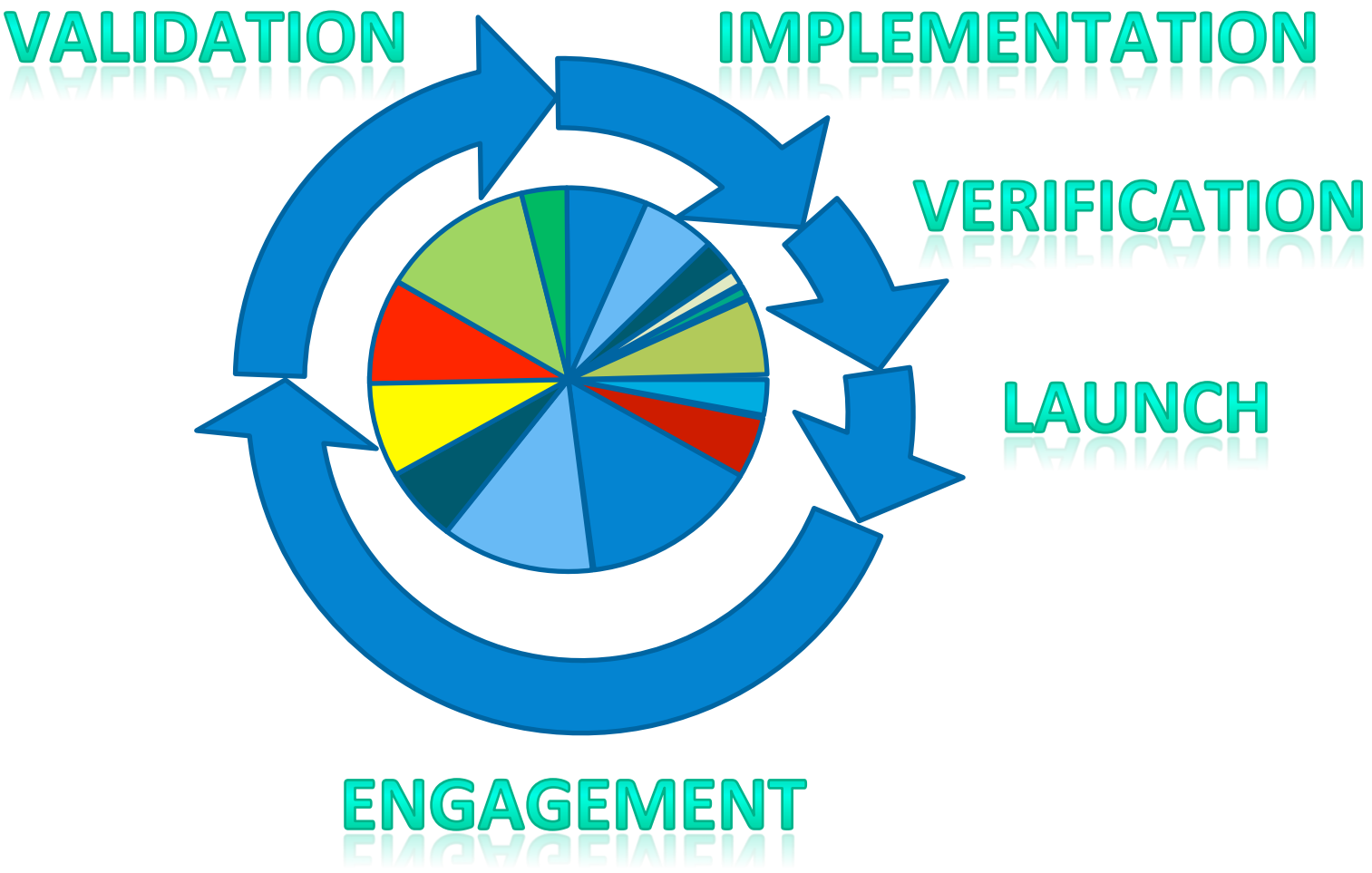


Use



Feedback

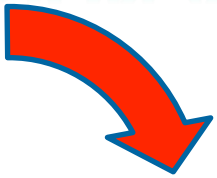
From *Creation* to *Use* Pie Chart



Note: The dimensions are indicative, rather than realistic

Iterations & Updates

VERSION A^{-1}

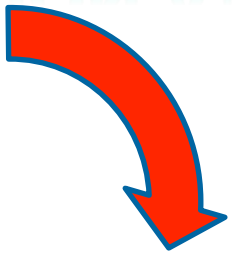


Rejected: Testing

VERSION A

Launched: OK

VERSION A^{+1}



Rejected: Approval

Next Successful Update

VERSION B

Launched: OK

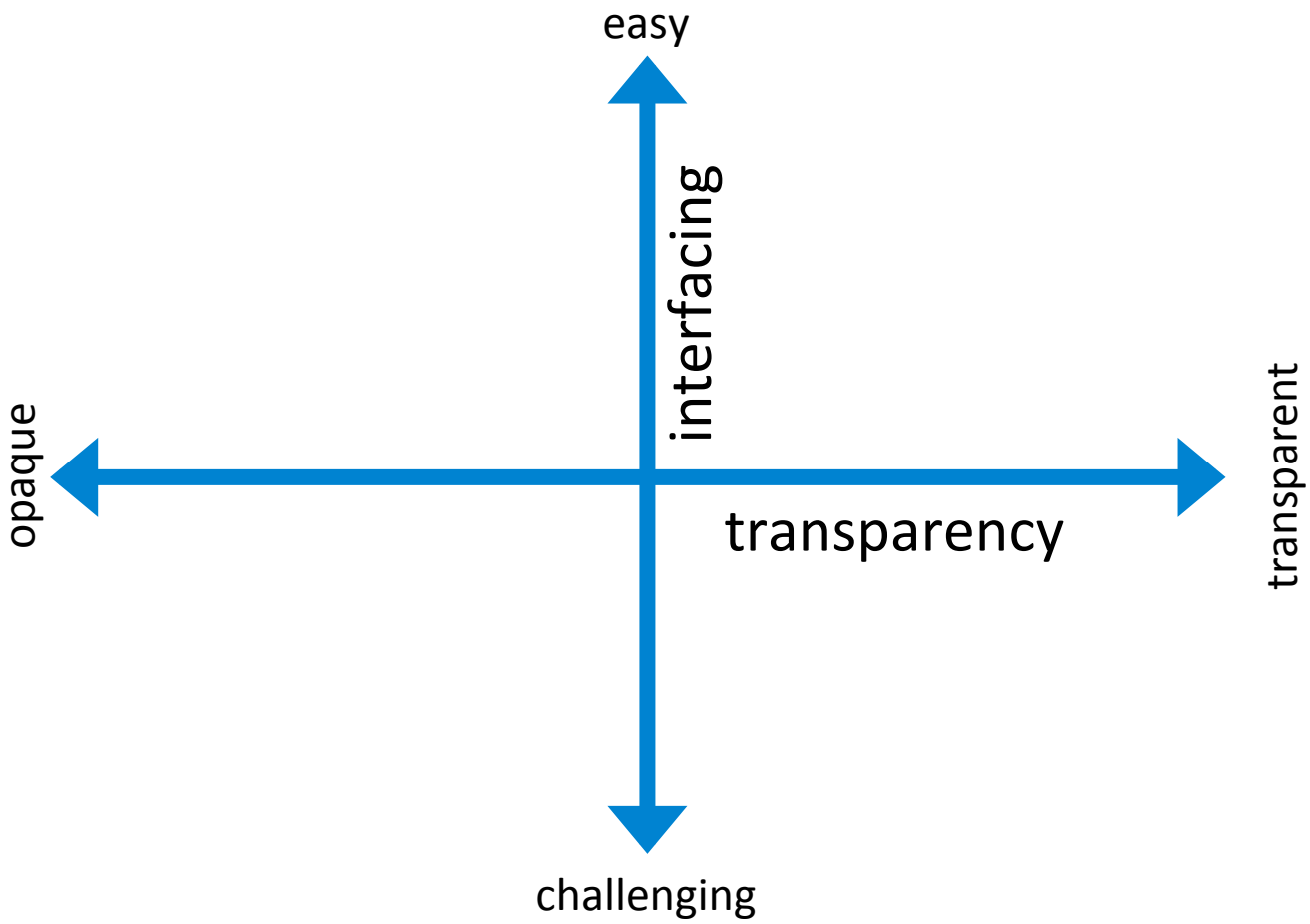
A KEY FACTOR TO CONSIDER…

What is testability?

- The concept of designing & implementing software **so it is easier to test**

- Testing can be automated
- Testing can be interactive

Scales of Testability



There are at least 2 dimensions of Testability:

- ease of *interfacing*
- *transparency* into the state & behaviour of the software being tested.

WHY BOTHER?

Find problems sooner

- We discover bugs eventually
- Sometimes it's worth finding them sooner

- Sometimes the effects are very damaging

Income

- Follow the money
- Find ways to make money
- Be at the epicenter, where things happen

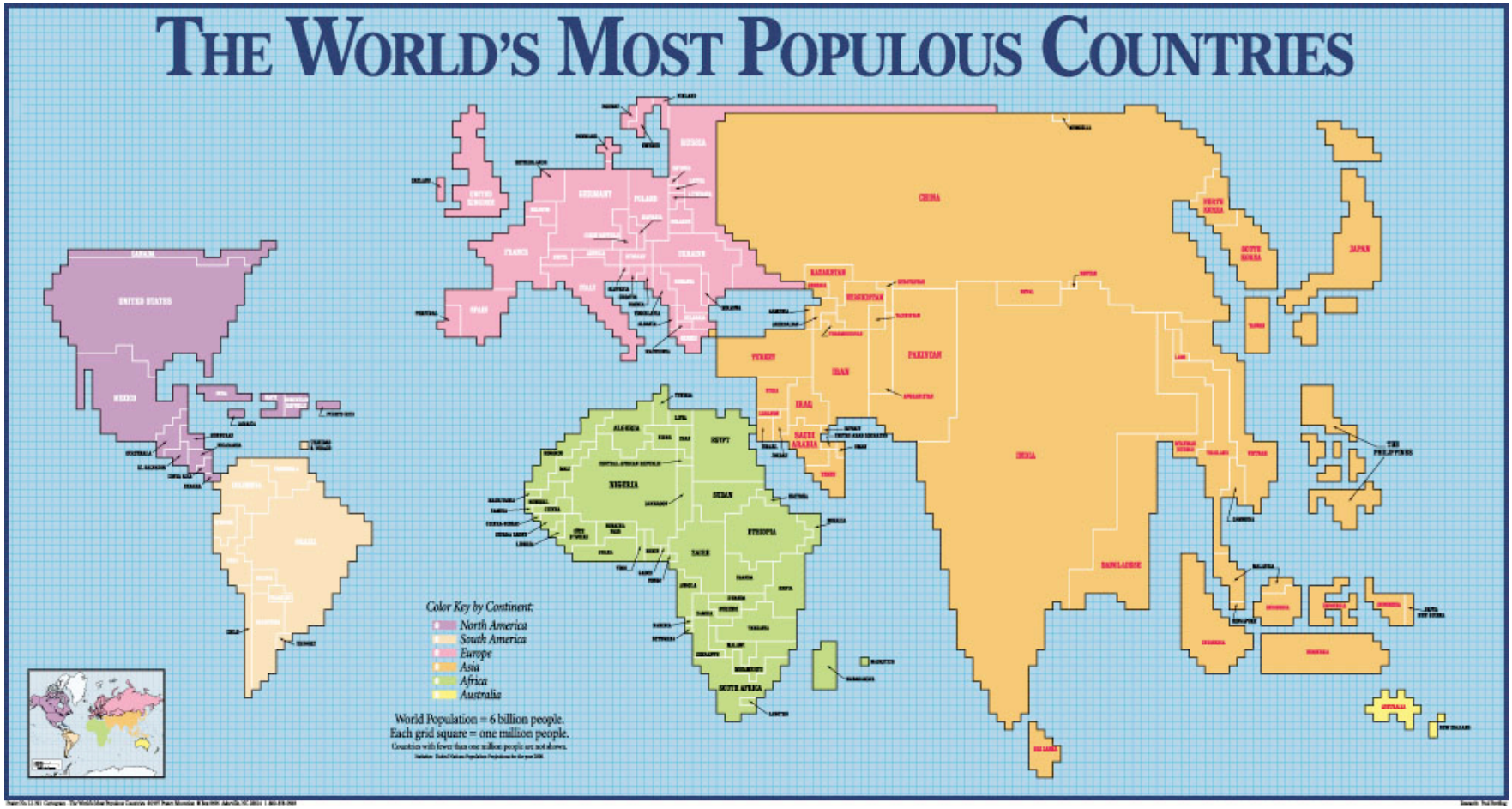
- Quality is value to some person (Weinberg)[1]
- What value do you provide that people are willing to pay for?
- What can you do *better* than a remote tester and automated tests?

[1] http://secretsofconsulting.blogspot.com/2012/09/agile-and-definition-of-quality.html

Preserve the useful life of devices

http://www.phonebloks.com/

Untapped markets?



http://www.odt.org/Pictures/poplcart.jpg

Untapped platforms? feature-phones

http://www.businesswire.com/news/home/20130425006953/en/Smartphones-Shipped-%20Q1-2013-Feature-Phones-Industry

GENERALLY RELEVANT

Conceptual Design

Who?

Blocks of Content

Main Functionality

Contexts of Use

Market Research

User Flows

Wireframes

Prototyping

Visual Design

User Testing

How can we add value?

Testing Conceptual Designs?

Human Factors

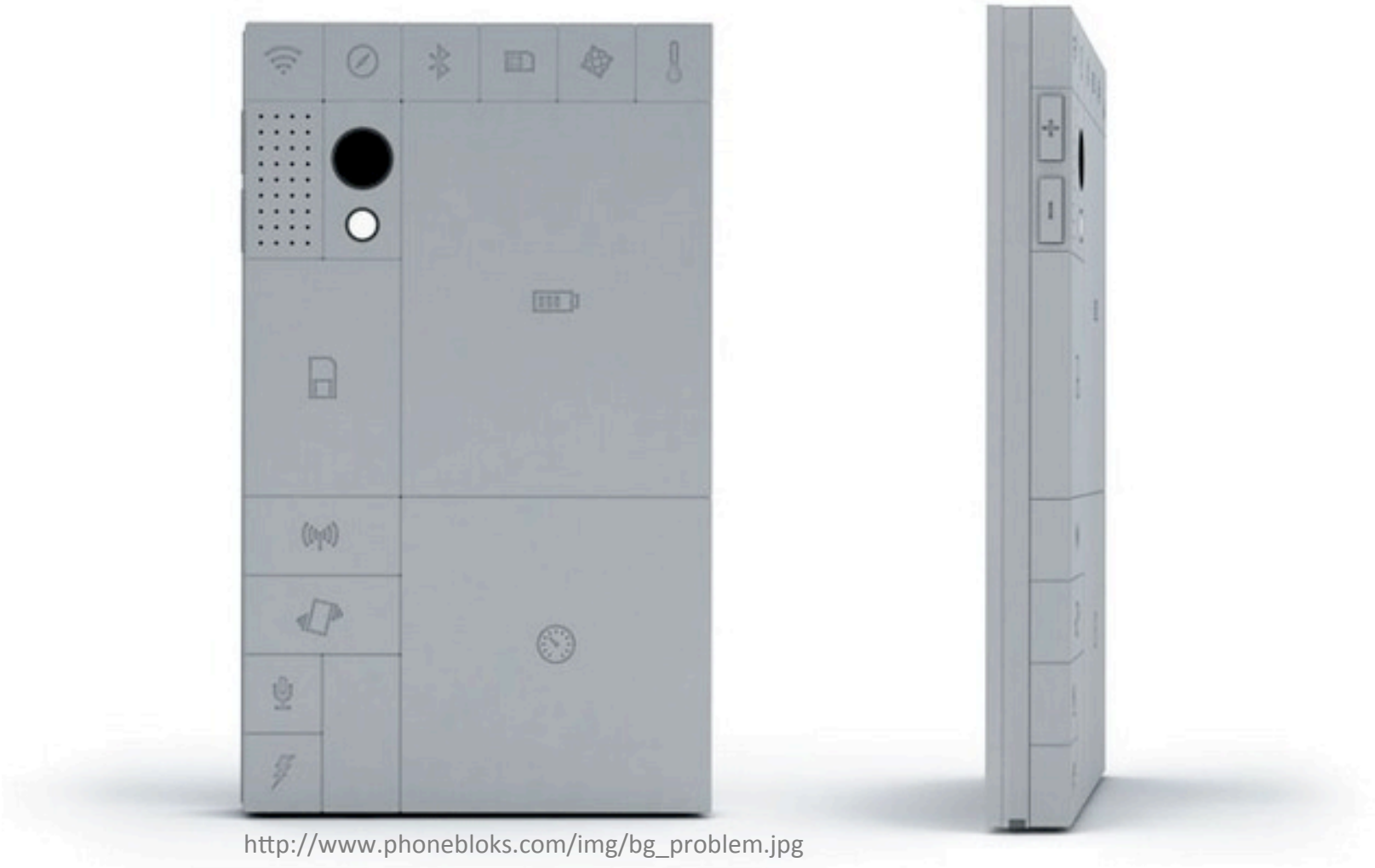
- How do people really use mobile devices & apps?

- When is a full sized keyboard a good thing?

Common Techniques

- Learn to look at logs, resource consumption,…
- Use Virtual Devices
- Try Different form factors, rotations, & aspect ratios
- Use a mix of old & new Physical Devices, manufacturers, etc.
- Control and modify the surrounding environment (remove the Oxygen?)

Parts of a mobile phone



http://www.phonebloks.com/img/bg_problem.jpg

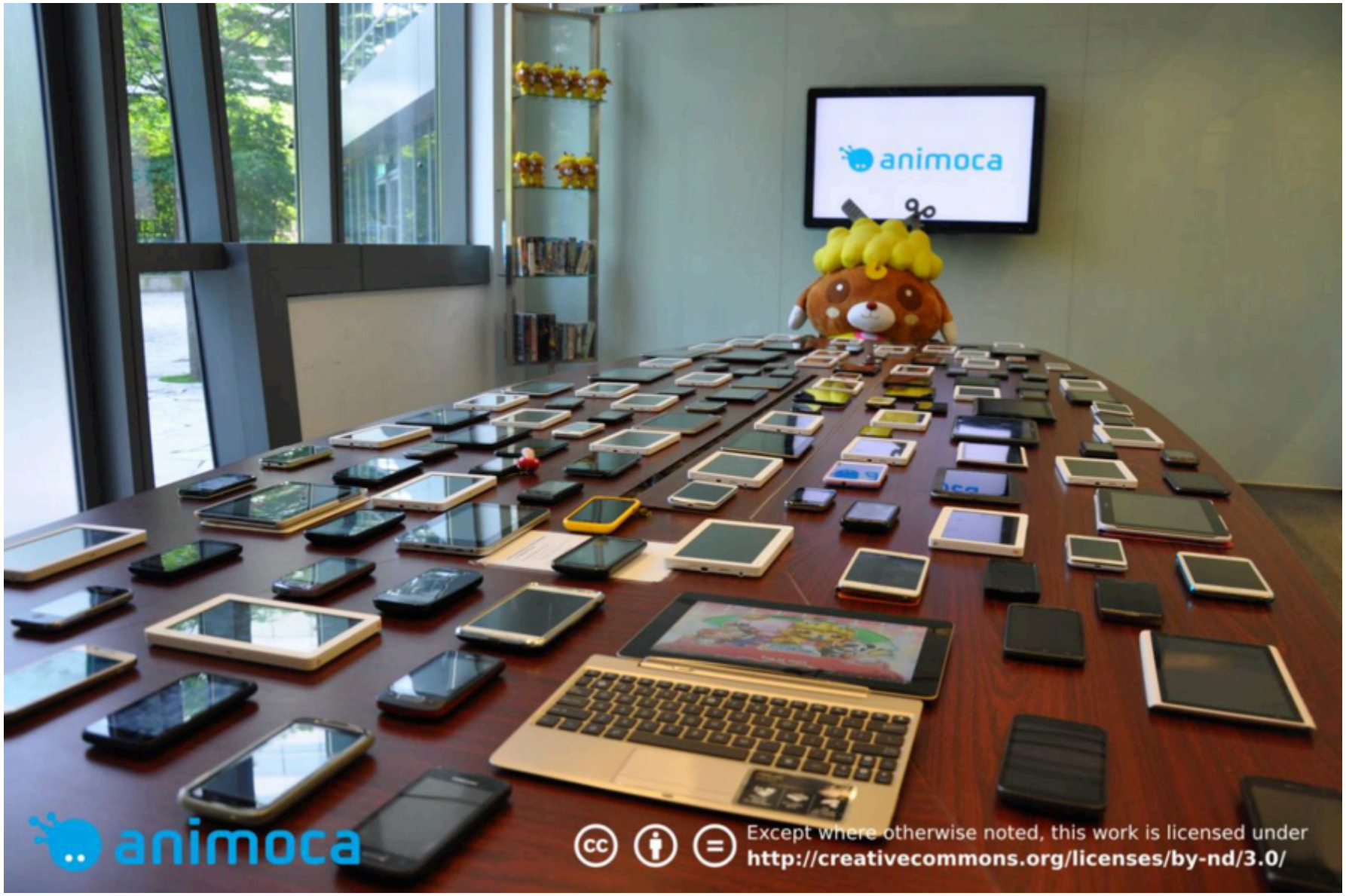
- What's the relevance of each part to our app?

Get to know your phones

- How to configure them
- How they behave
- The idiosyncrasies
- The app store & the ecosystem

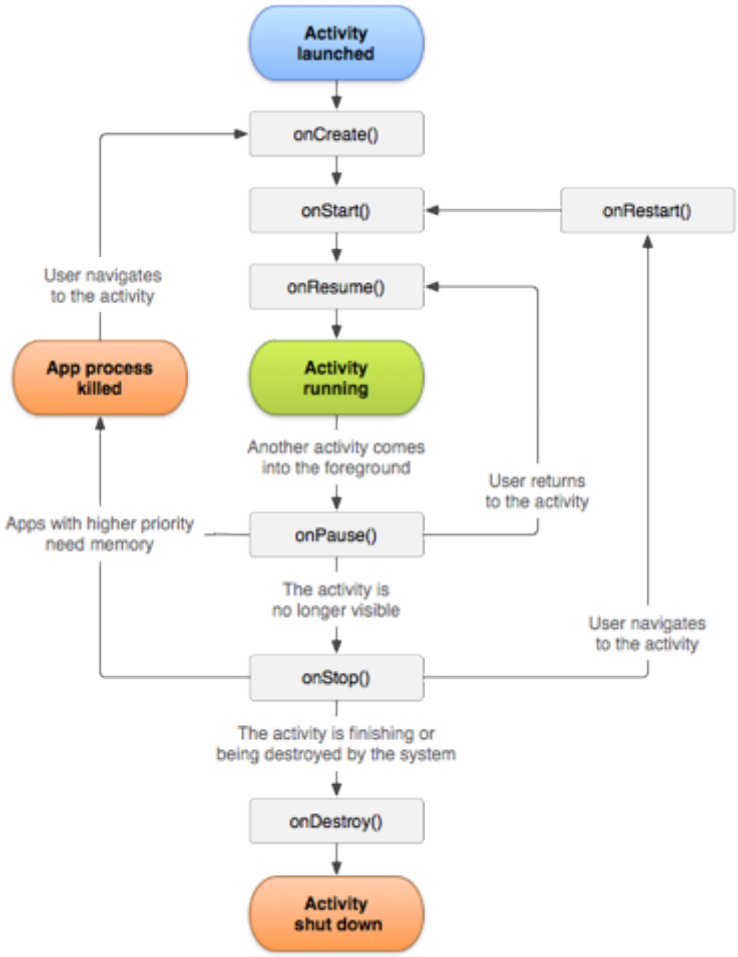
PLATFORM SPECIFIC

Testing Android



Testing Android

- Apps easy to deploy
- Learn the command line tools e.g. adb, android, monitor
- A plethora of devices to obtain sufficient coverage [1]
- Understand and test apps throughout the application lifecycle[2]
- Fake GPS easy; other inputs harder to control



[1] http://techcrunch.com/2012/06/02/android-qa-testing-quality-assurance/

[2] http://developer.android.com/reference/android/app/Activity.html

Android Test Automation tools

Many choices

- Robotium – Enhanced Instrumentation testing
- Unit tests – Simple for developers to use but dated
- Instrumentation – Underpins testing of solitary apps
- MonkeyRunner – GUI based interaction with the UI
- MonkeyTalk – Opensource cross-platform, aimed at the code illiterate. Agent-based[1]
- Calabash – High-level, easy-to-use, scripting
- Roboelectric – replica of Android core, fast testing on PC
- UI Automator – Android 4.1+ uses Accessibility interface to test any app.

[1] http://www.gorillalogic.com/monkeytalk-documentation/monkeytalk-getting-started/install-agent

Blackberry 10

- So many development options
- 3 phone models
- So few testing tools
- An excellent emulator

Testing BlackBerry 10

- The BlackBerry 10 Device Simulator lets you load and test your apps even when you don't have a physical device. You can access most of the features you would find on a physical device.

- Using the simulator, you can use your mouse to simulate gestures, configure snapshots for debugging, and simulate features like tilting or rotating the device.

https://developer.blackberry.com/develop/simulator/

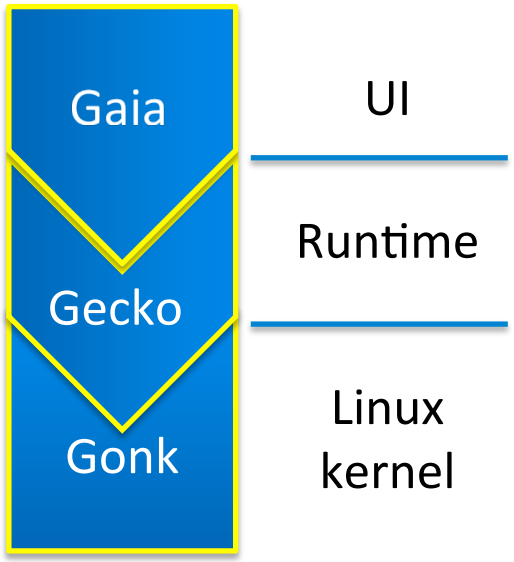
Testing Firefox OS

Understanding Firefox OS

- Hosted apps: on the web
- Packaged apps: on the phone
- WebAPI: do something
- MozActivity: call something

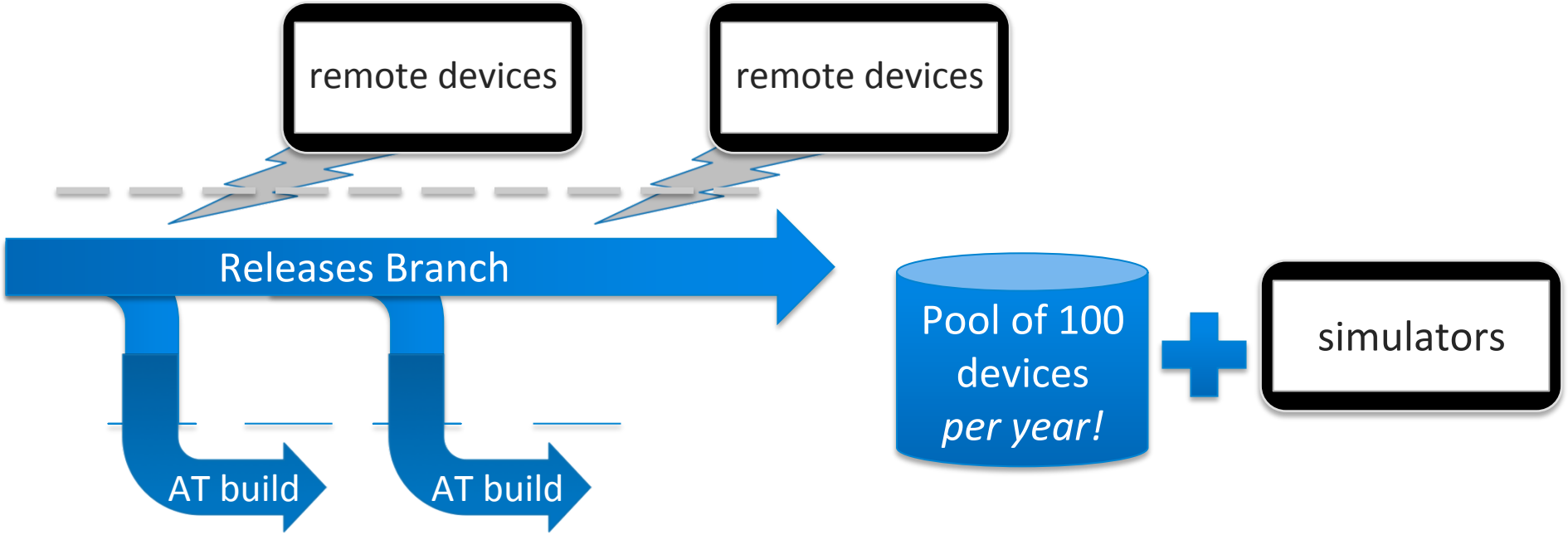
Testing Firefox OS

- Simulator running in Firefox
- Phones sold via eBay
- test automation tools hiding online



Testing iOS

Remote Deployment: TestFlight, HockeyApp



Parallel Test Project adds an Agent to the iOS app

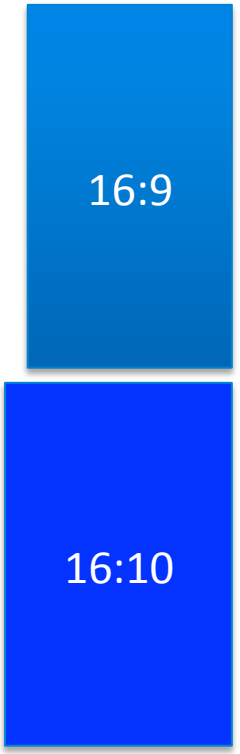
And

- Unit Testing
- UI Automation framework: uses Accessibility Interface
- Instruments: collection of useful tools

iOS Automation vs the rest of the world

Testing Windows Phone

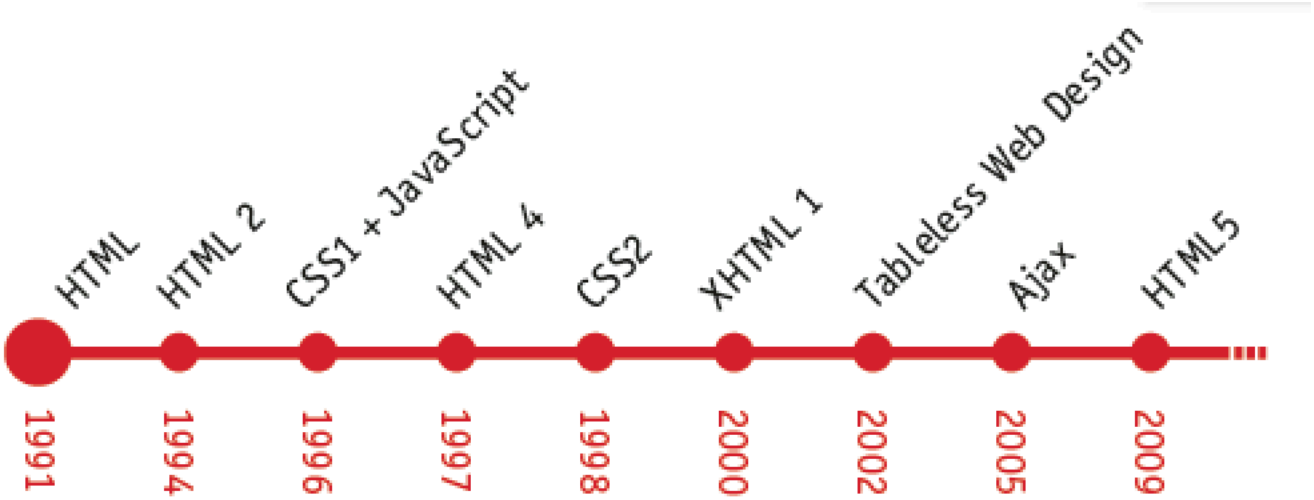
- Devices based on reference specifications from Microsoft
- Test the different screen dimensions: 16:9 & 16:10
- Apply the guidelines from Microsoft before uploading app to AppStore
  - Windows Phone Store Test Kit [1]
- UI Test (automation) project[2]



[1] http://msdn.microsoft.com/en-us/library/windowsphone/develop/hh394032(v=vs.105).aspx

[2] http://code.msdn.microsoft.com/wpapps/Simple-UI-Test-for-Windows-dc0573a9

Web technologies



Rough timeline of web technologies

What you get in your web browser

- There are vast differences in their capabilities, dimensions
- Adaptation of content to suit the mobile web browser

Client-side adaptation

- Responsive web design
- Progressive enhancement

Server-side adaptation

- Device databases

Find ways to reduce the burden

<input type="email">

<input type="tel">

http://mobileinputtypes.com/

Testing Web Apps

With

- Embedded Browser
- Pre-installed Browser
- User-installed Browsers e.g.

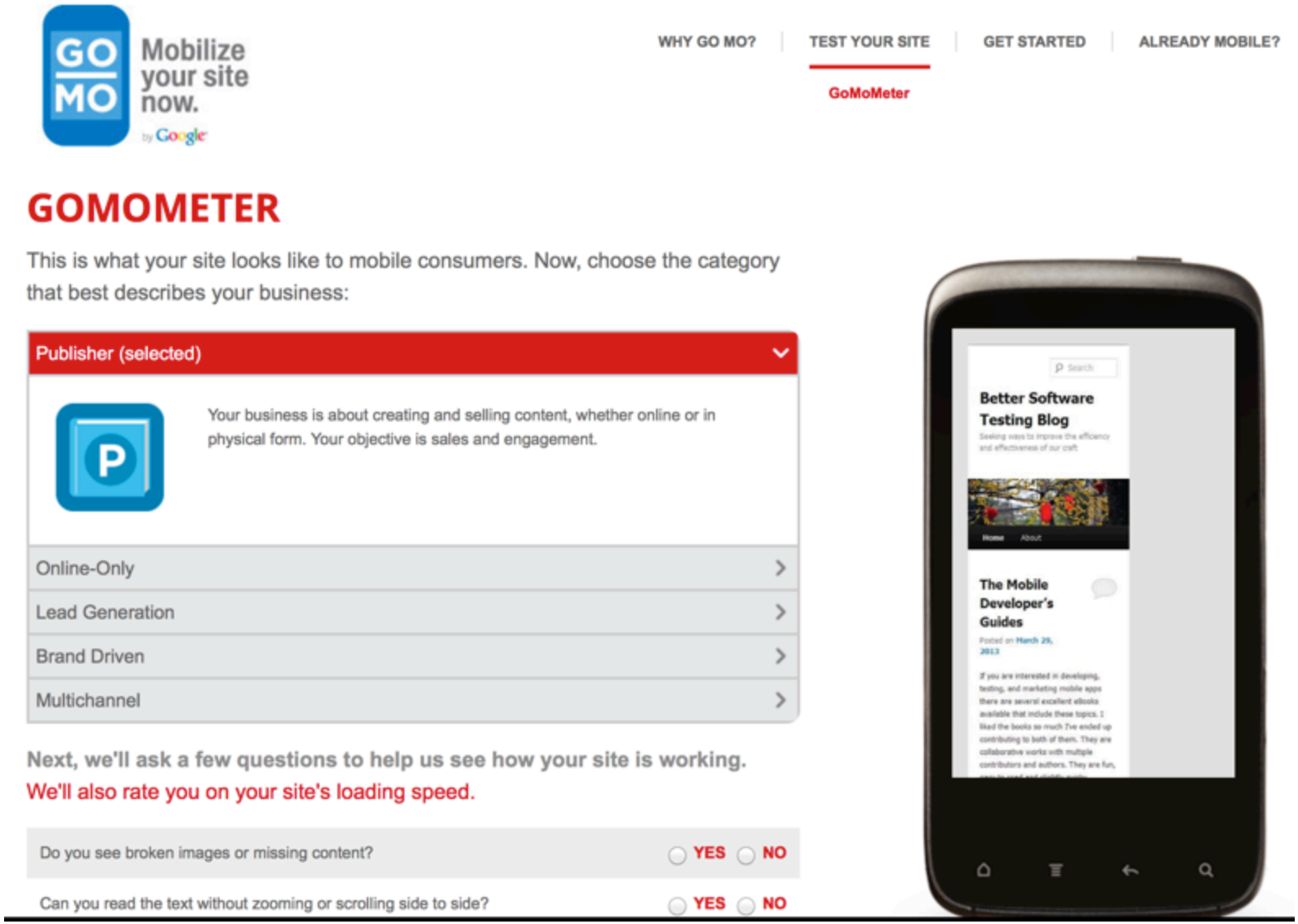
  Firefox, Opera, Dolphin

How

- Spoofing
- Using online tools
- Selenium-WebDriver for iOS & Android

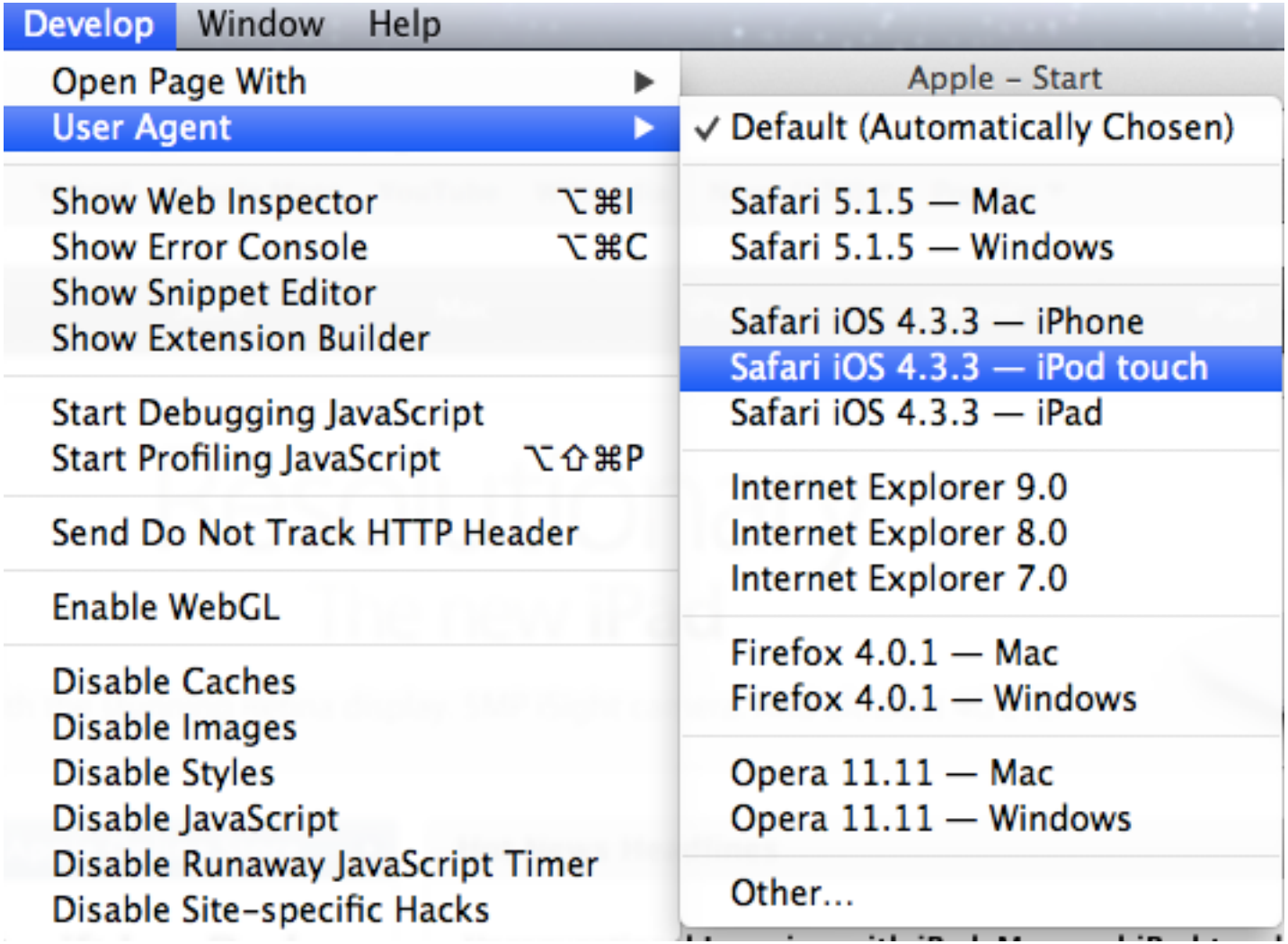
http://seleniumhq.org/projects/webdriver/
https://sites.google.com/a/chromium.org/chromedriver/getting-started/getting-started---android

Online tools for Web Sites



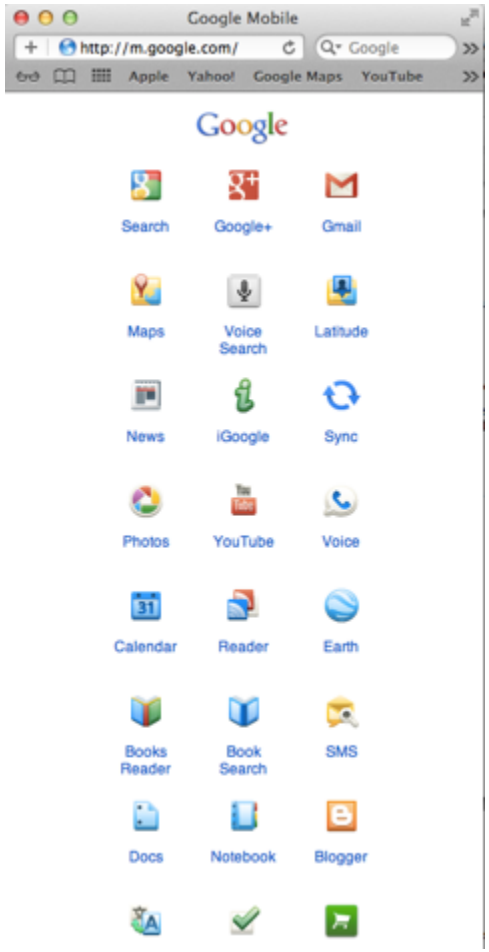
http://www.howtogomo.com/en/d/test-your-site/#gomo-meter

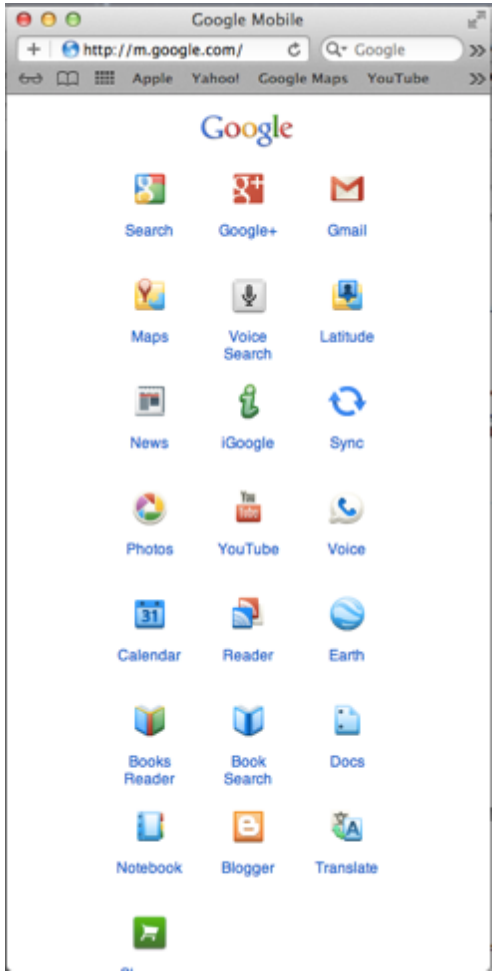
Browser emulation

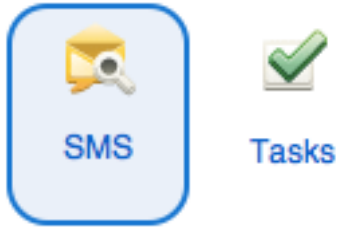


In Apple's Safari Browser

Effects of browser emulation







- Google Mobile for iPhone; and iPad
- Notice 2 extra icons?

WHAT TO USE

Using Virtual Devices

- Run on computers, not mobile devices.
- Pretend to be the real thing to varying degrees of authenticity
- Often provide permissive security
- Available in:
  - Mobile Development SDKs
  - From manufacturers of devices
- Useful when:
  - You have no alternative
  - You don't need rich fidelity

Using Real Devices

- Valuable & Expensive
- Must be maintained & available when needed
- Enable rich (scenario) testing

- Ease of coverage:
  - iOS: easy
  - Windows Phone: fair
  - Android: impractical

Feeling suicidal?

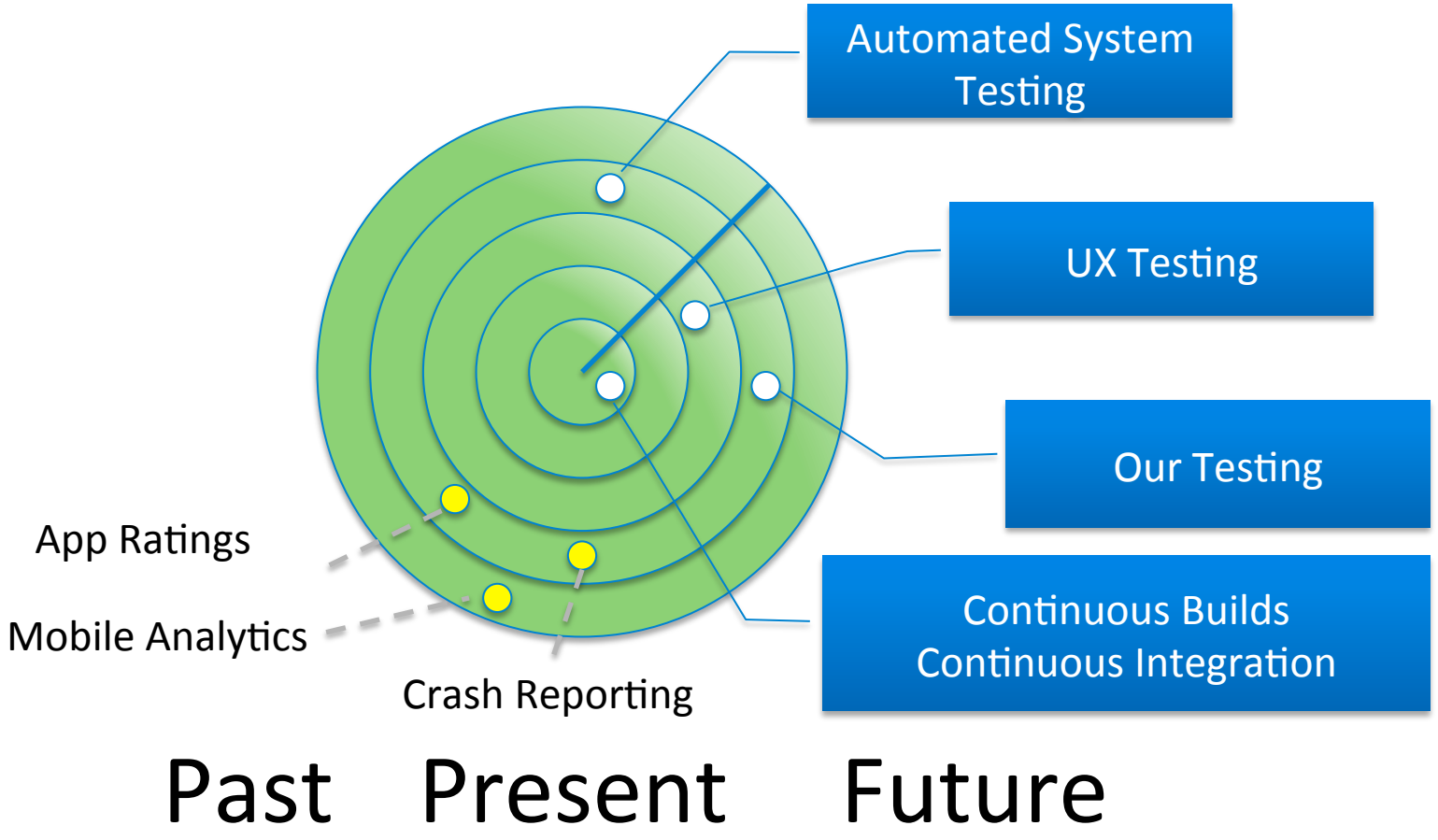
Call the Test Automation Teams

- LessPainful[1]
- GorillaLogic

24 hour satisfaction guaranteed

1. Now part of xamarin

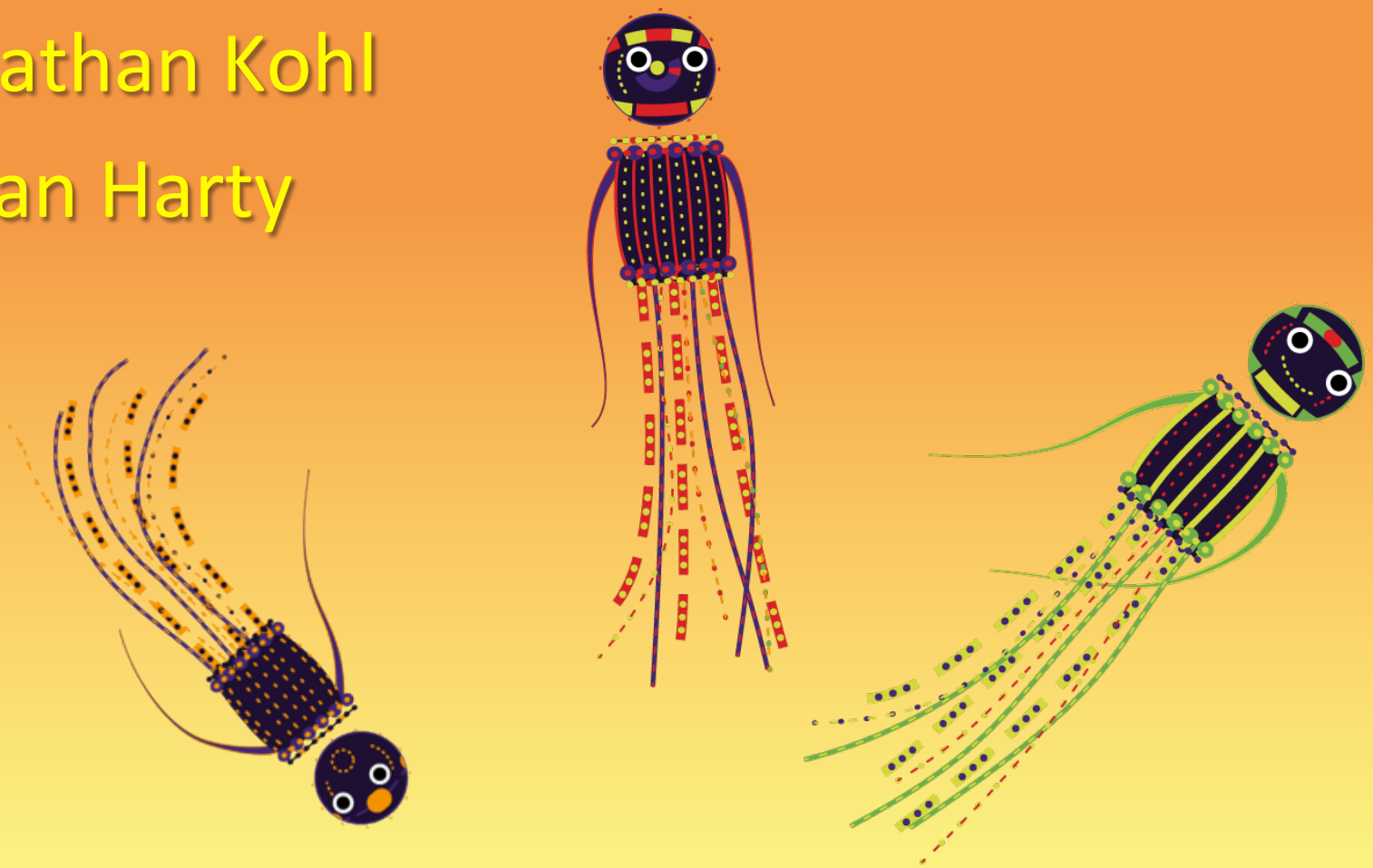
Information RADAR



Further Reading

3 ‘J’s of mobile testing

1. Karen Johnson
2. Jonathan Kohl
3. Julian Harty



The end?

To contact me

julianharty@gmail.com

What I do

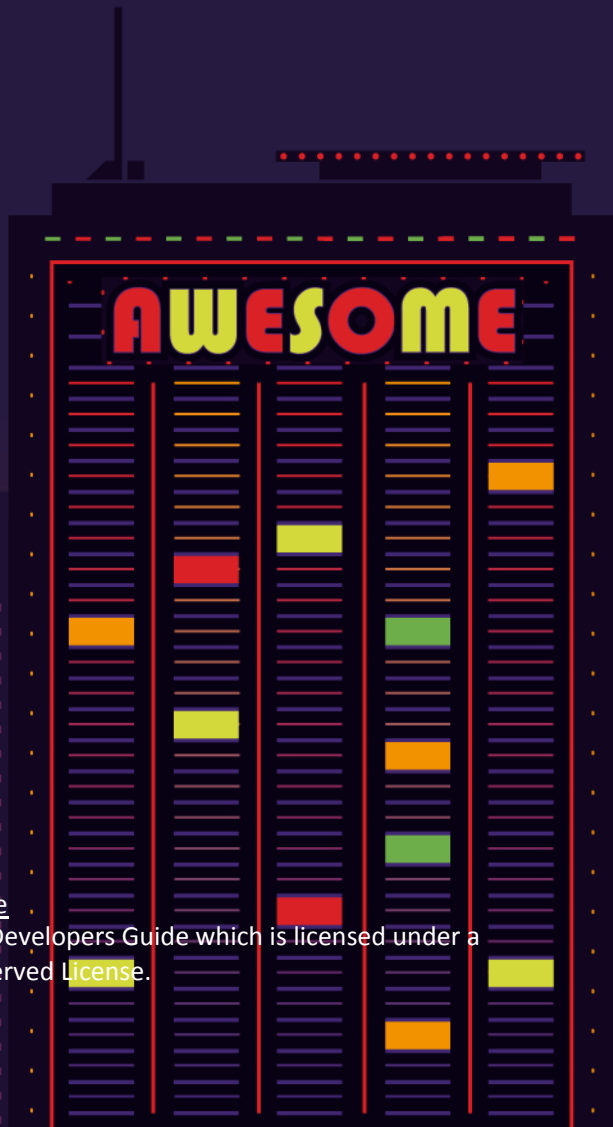
http://kusaidiamwalimu.org

http://blog.bettersoftwaretesting.com

To download the

Mobile Developers Guide

http://enough.de/mdgg/



Comparing planets and platforms

- Heat, close to the sun
- Cold, nothing of value, seldom visited
- Death stars (imploding (which may have happened light-years ago, we're just a long way away and watching time-delayed content) – Symbian, Nokia, Blackberry Java,

UI metaphor

- Horizontal
- Vertical
- Gestures
- Touch

Brain dump of ideas

- Subway map analogy – complex, parallel paths
- Flow diagrams, showing when an app enters the tester's domain, types of testing, and the transition back to the business
- Glass-box visibility into an app's data (testing for minimum security bar)
- Greedy pigs – apps as resource gobblers
- Under-water