

SYMBIOTIC TESTING IN THE S.M.A.C. AGE

UNICOM CONFERENCE BANGALORE

11 JULY 2013



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Rev: 11 July 2013

SYMBIOSIS

A relationship between multiple entities

3 main types of symbiosis

1. Parasitism: one **benefits**, the other **suffers**
2. Commensalism: one **benefits**, the other is **unaffected**
3. Mutualism: **both benefit**



The Zebra has good eyesight and
Wildebeest a good sense of smell

Between them they detect predators
early and protect one another



SYMBIOTIC TESTING

The relationships between Testing *and* Social, Mobile, Analytics & Cloud computing.

- Our terrain is changing
- Can we shape our future? and our role?
in this new terrain

SYMBIOTIC TESTING

SOCIAL

SOCIAL?

- **Social Networking Services: Facebook, Twitter, ...**
 - Integrated sign-in
 - Sharing directly from apps
 - Marketing
 - Revenue opportunities
 - Public feedback about your products and services
- **Development, Testing & bug reporting are social these days**
 - <http://facebook.stackoverflow.com/>
 - <https://developers.facebook.com/blog/post/2013/05/15/platform-updates--operation-developer-love/>
 - <http://arstechnica.com/gadgets/2013/05/facebook-plans-on-fixing-home-so-that-android-users-feel-wait-for-it-at-home/>

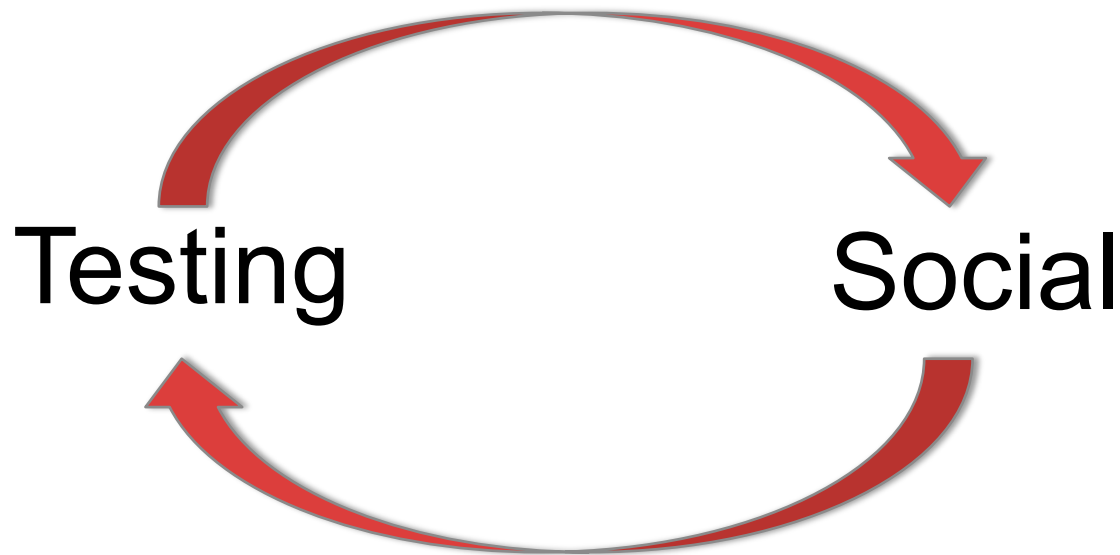
DOES SOCIAL NEED (MORE) TESTING?



But how do ads and offensive content get paired up in the first place?

“It’s a mistake,” says Joseph Turow, professor at University of Pennsylvania’s Annenberg School for Communication.

Companies use algorithms that can categorize websites in order to target people, he says. Those algorithms can mess up, the “formulas can have glitches” or certain keywords might have caused a photo or website to get miscategorized. Voila: an ad ends up next to something awful, says Turow.



Where do your test accounts come from?

https://developers.facebook.com/docs/test_users/

What can go wrong?

<http://facebook.stackoverflow.com/questions/12319491/suspended-facebook-account-after-testing-plugin>

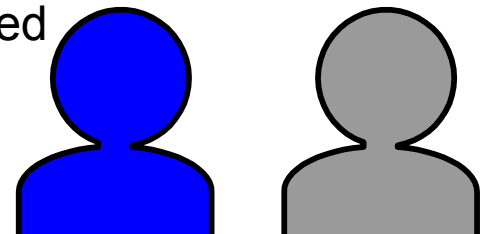
Social is a source of early feedback about quality-in-use

- Feedback is public & can be bi-directional

Social testing

- Crowdsourcing, feedback, rankings, etc. are social & shared

<http://sqa.stackexchange.com/>



SYMBIOTIC TESTING

MOBILE

MOBILE

Kinetic: Users & Devices on the move...

- Multiple axes of movements

The web, viewed through mobile eyes...

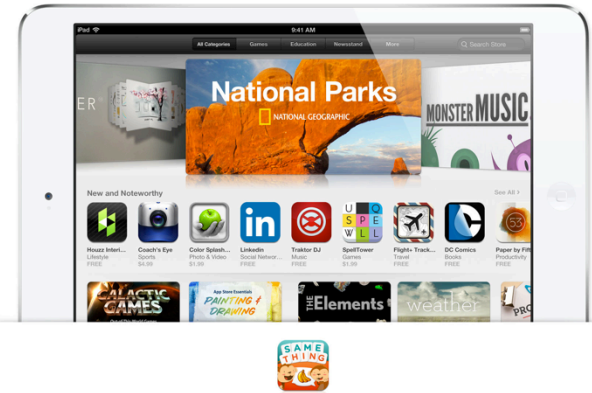
A plethora of devices, sensors & situations

AppStores

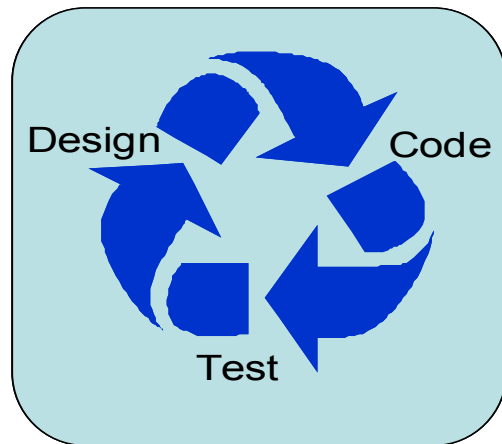
- Dealing with updates & distribution
- Feedback is public, in-bound & short

Free & opensource development & testing tools

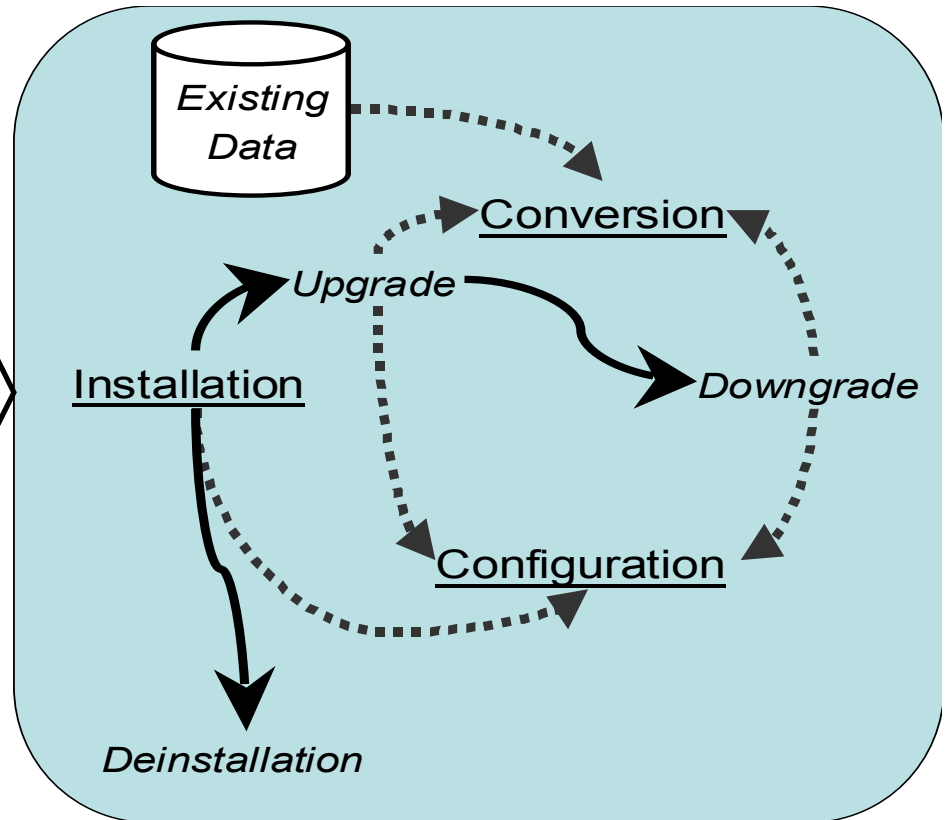
50 billion app downloads.
One really big winner.



LIFECYCLES OF SOFTWARE

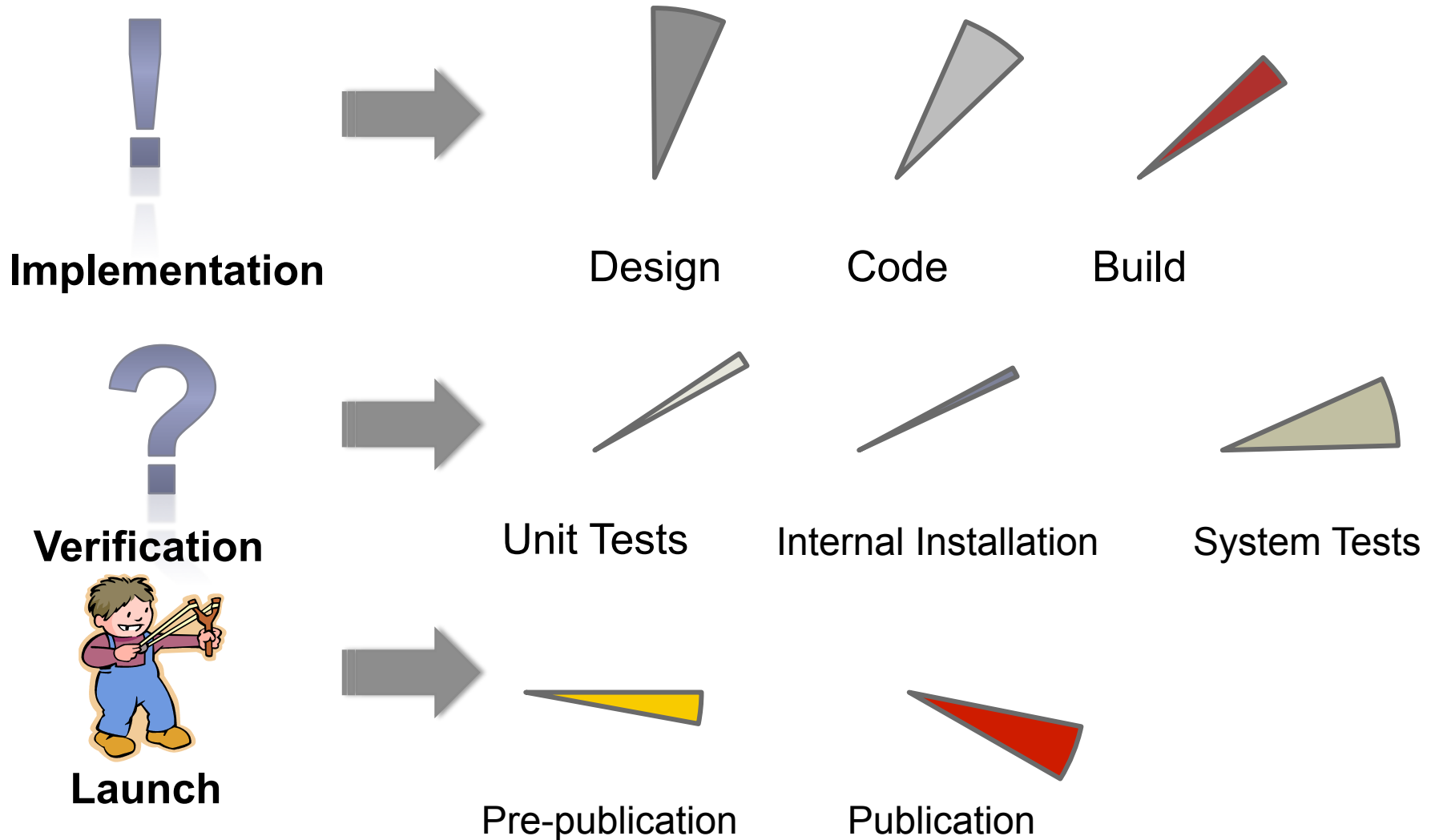


Software Development Life Cycle



Software Usage Life Cycle

MOBILE DEVELOPMENT FROM *CREATION* TO *USE*⁽¹⁾



MOBILE DEVELOPMENT FROM *CREATION* TO *USE*^(III)

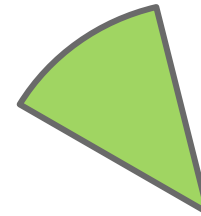
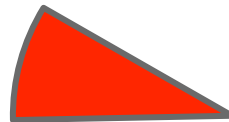
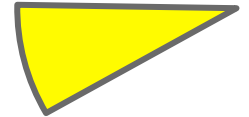
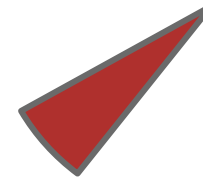
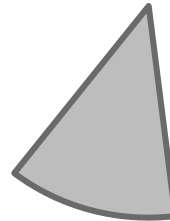
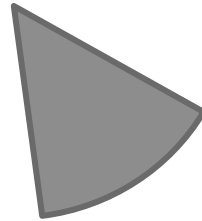
Engagement

Search

Trust

Download

Installation



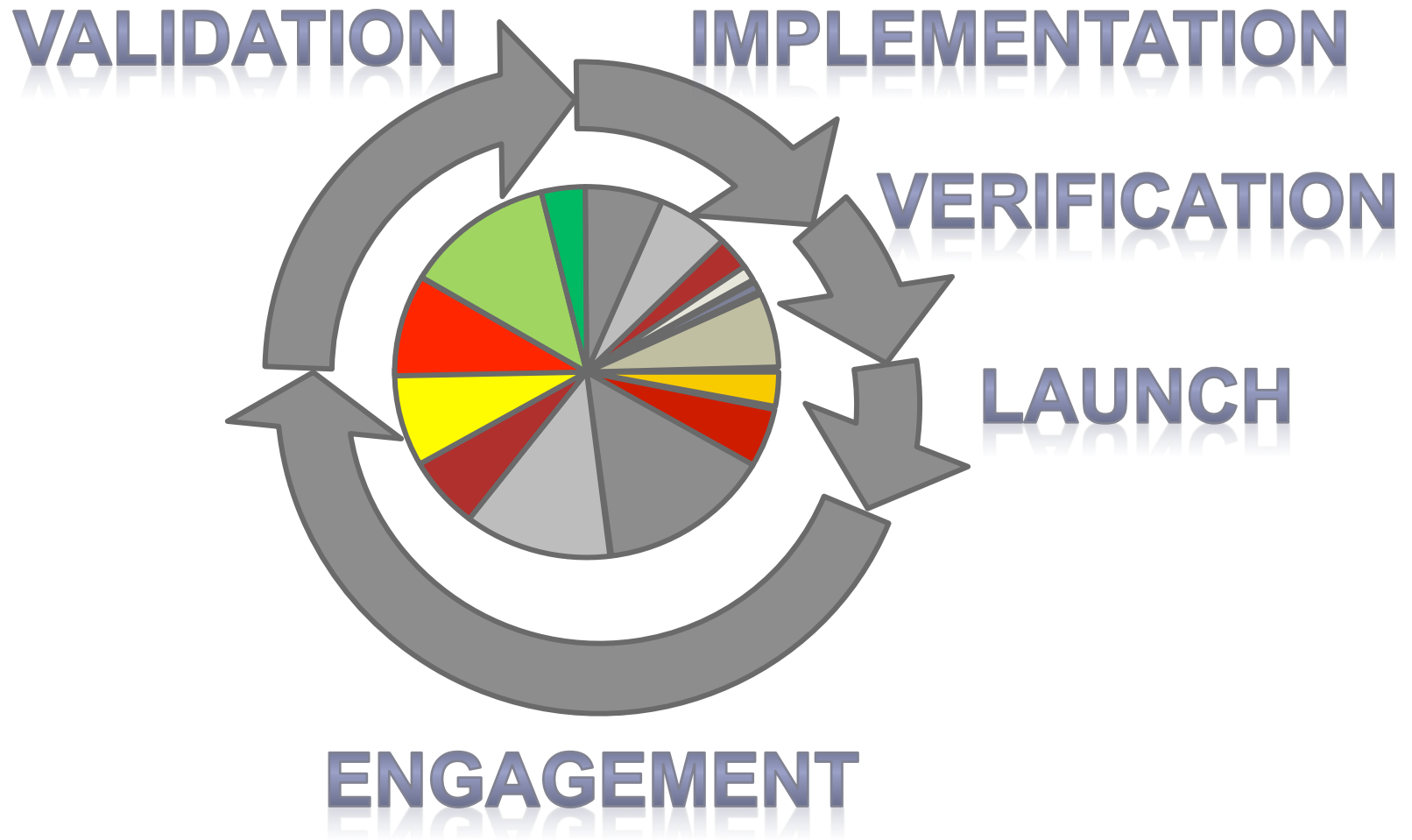
Validation

Payment

Use

Feedback

FROM *CREATION* TO *USE* **PIE CHART**



Note: The dimensions are indicative, rather than realistic

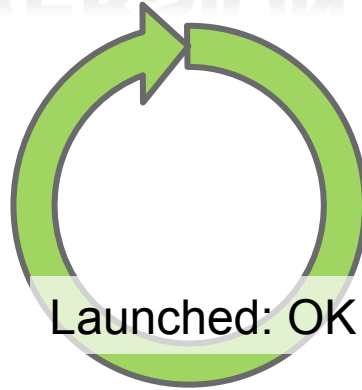
ITERATIONS & UPDATES

VERSION A⁻¹



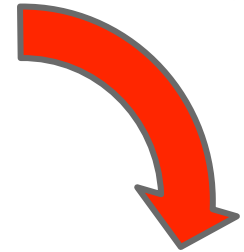
Rejected:
Testing

VERSION A



Launched: OK

VERSION A⁺¹



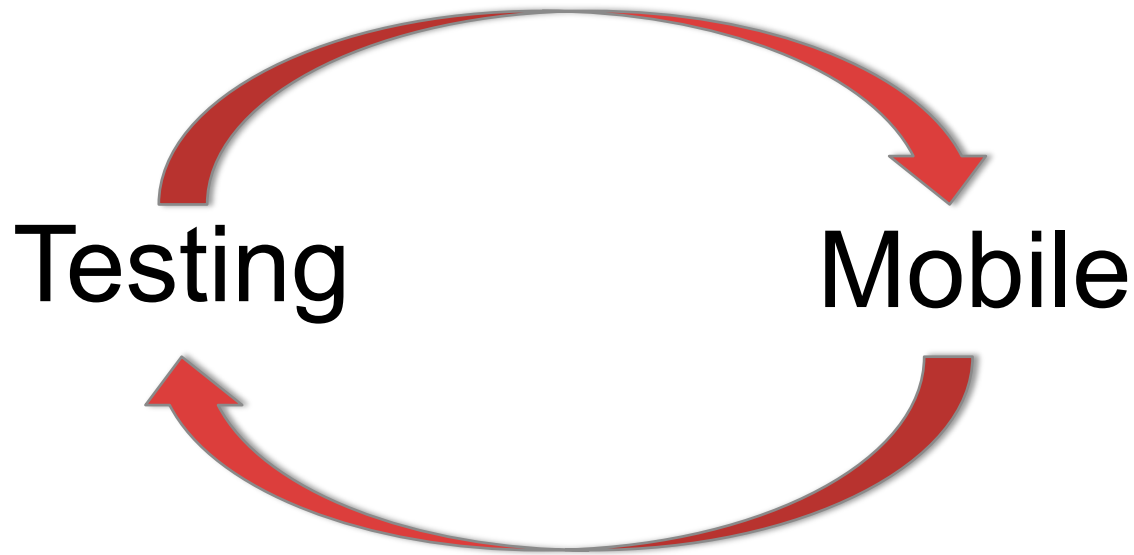
Rejected: Approval

VERSION B



Launched: OK

Next
Successful
Update



Learn how to work with AppStores effectively

Understand the development process and the App lifecycle

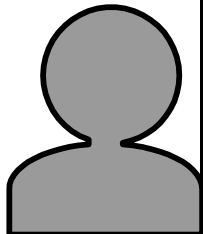
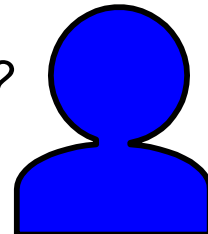
Have a collection of devices & emulators to test your web sites as well as your mobile apps

Apply automated tests to support automated builds

Boogie when doing mobile testing

Think “Mobile First”

- *What is the impact of mobile on your software?*



SYMBIOTIC TESTING

ANALYTICS

ANALYTICS

Statistics + Computer Science + Operational Research, leads to:
actionable insights

A window into your apps

Often linked to experiments, e.g.

- A/B Testing^{[1][3]}
- Multivariate Testing^[2]

Commonplace in Web, Games^[4] & Mobile apps

- Developers add code to send extra data over the network
- Third-parties often provide the libraries
- May impact privacy

Similar to:

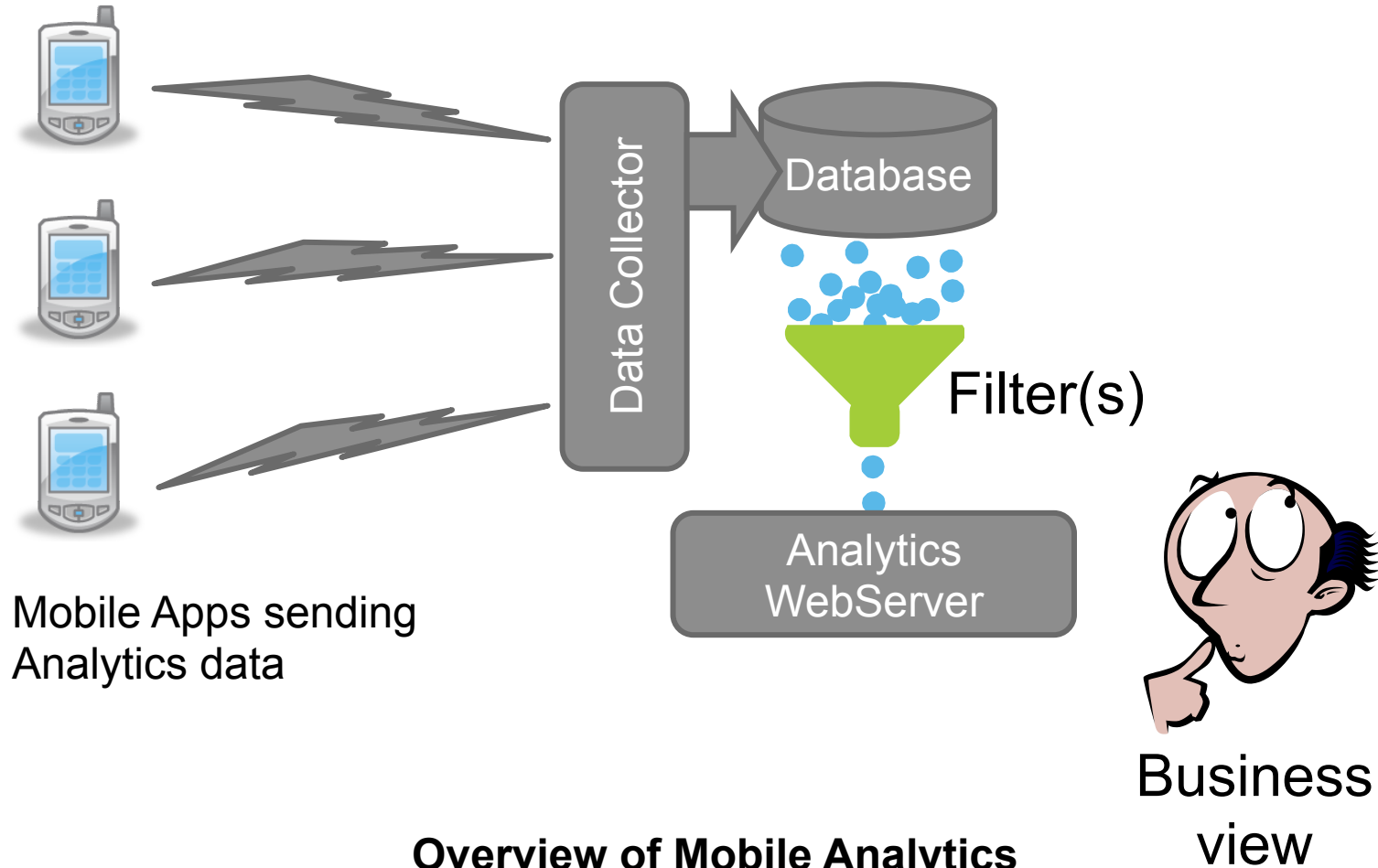
[1] One Factor at A Time (OFAT)

[2] Multiple Factors at A Time (MFAT)

[3] <http://www.wired.com/business/2012/05/the-ab-test-results-are-in/>

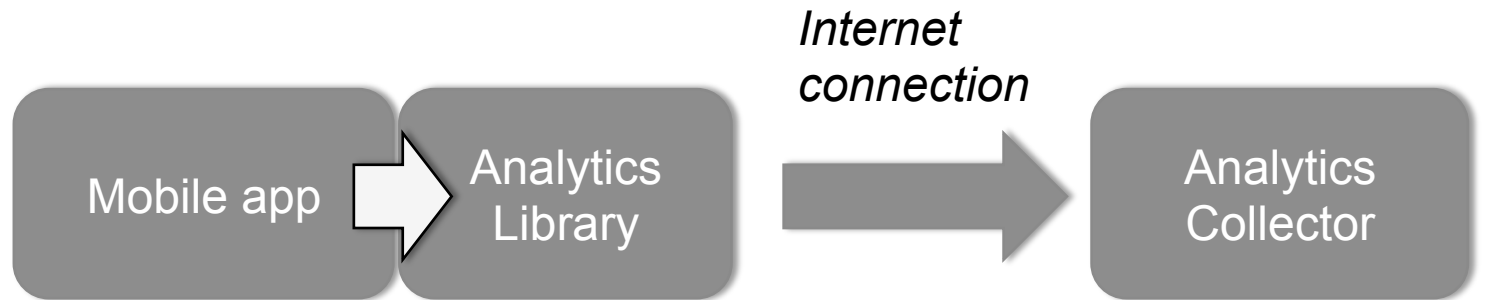
[4] <http://www.wired.co.uk/magazine/archive/2012/01/features/test-test-test>

TOPOLOGY

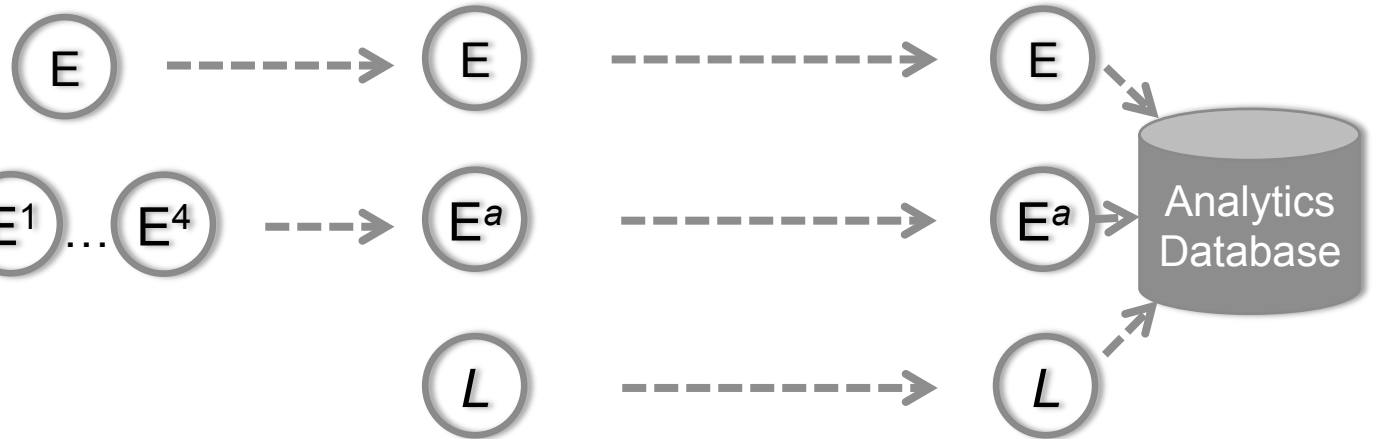


Overview of Mobile Analytics
Each step may be delayed

TYPES OF EVENTS



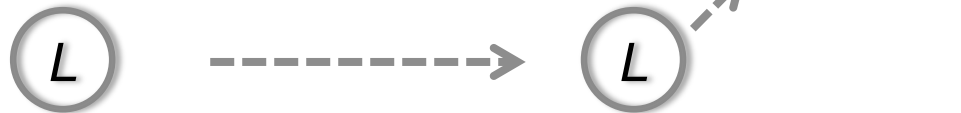
1:1 App-initiated event



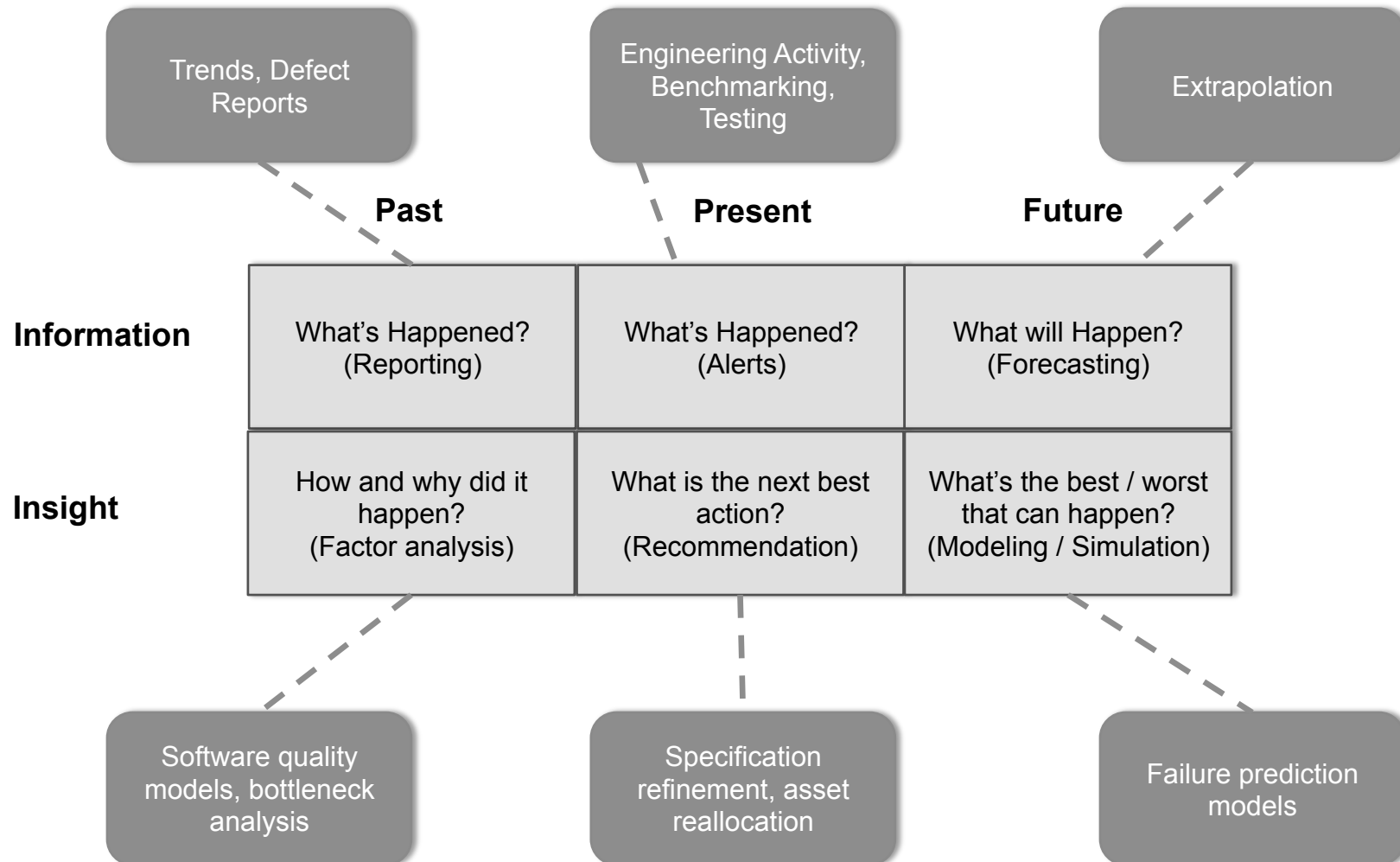
m:1 App-initiated event

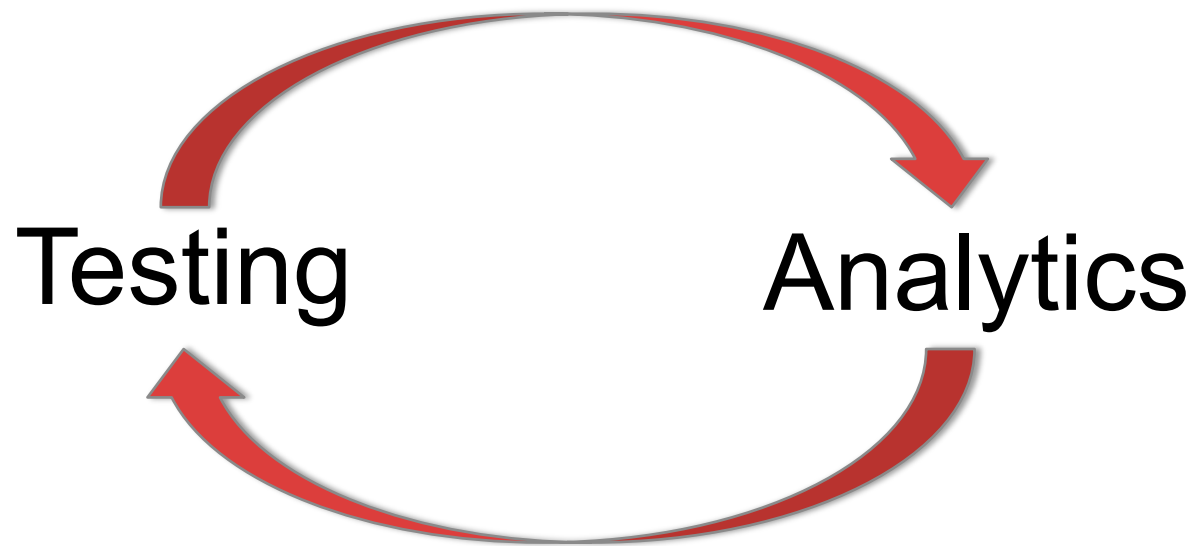


Library-initiated event



ANALYTICAL QUESTIONS



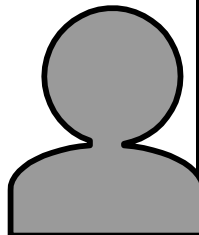
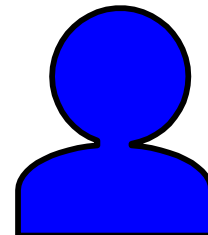


Quis custodiet ipsos custodes?

- Can we trust the Analytics software and reports?
- Who tests them?

Once we have confidence in the tools we can use Analytics to:

- Better understand our apps and how they are used
- Find problems sooner; and predict problems & their impact
- Better understand and improve our testing



SYMBIOTIC TESTING

CLOUD

CLOUD

Inexpensive compute power

- No longer limited by IT, equipment budgets, etc
- Pay as you go

Complex legal and commercial situations

Nebulous, expands & contracts, morphs

Finite, yet they always exist

Boundaries hard to identify

NETFLIX CASE STUDY

Online delivery of videos

One of the world's most prominent and advanced users of cloud computing



Bitten by a major outage of Amazon Web Services (AWS)

Created the Simian Army to continuously test & monitor

- Chaos- Monkey, Gorilla, Kong
- Latency Monkey
- 10-18 Monkey
- Security Monkey

<http://techblog.netflix.com/search/label/simian%20army>

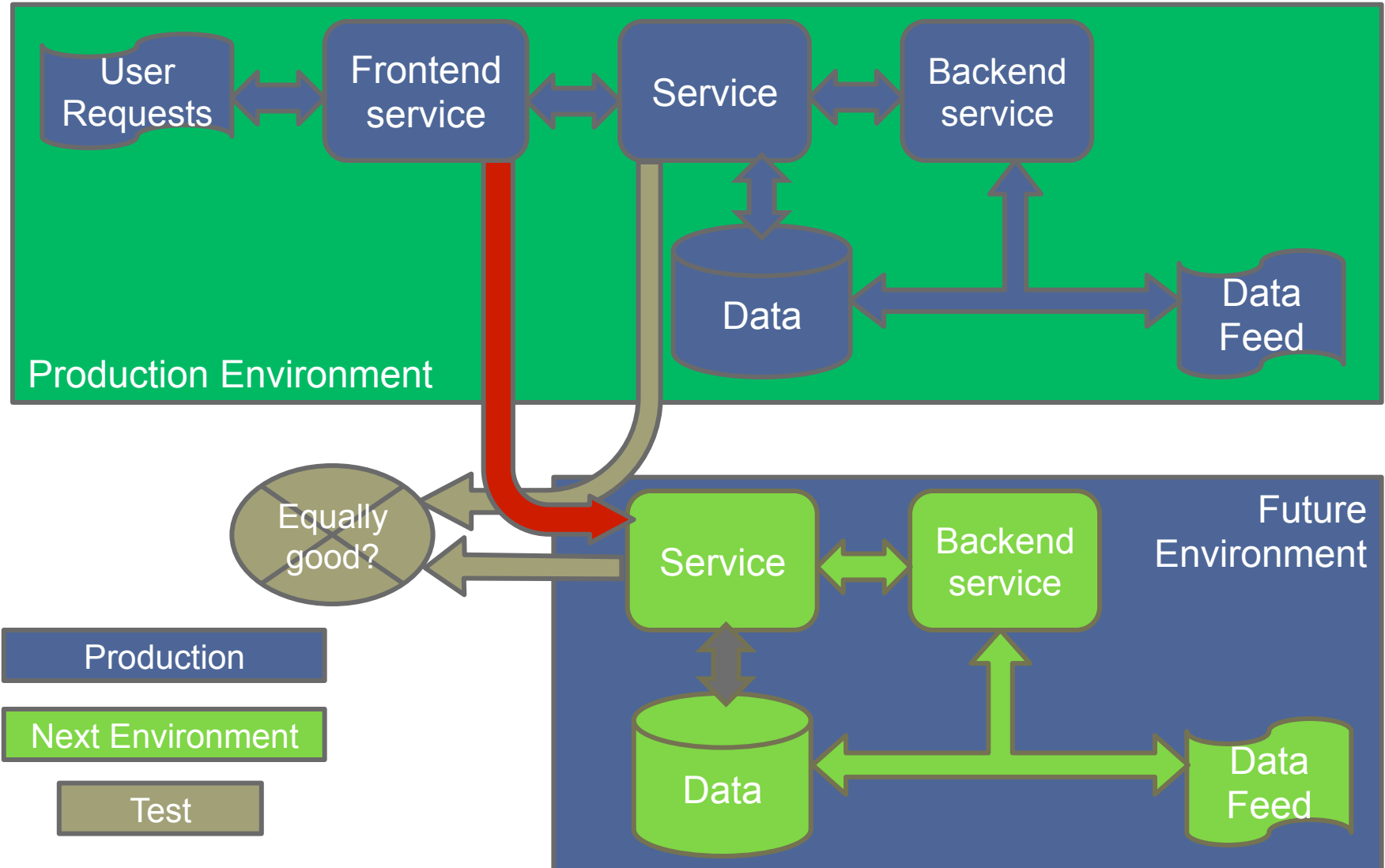
Tools opensourced <http://netflix.github.io/#repo>

IMPACT OF 'CLOUD' ON PRODUCTION SERVICES

- **Rollout of new versions**
 - How easy to deploy new services over old?
- **Easy & reliable rollback & roll forward**
 - Use of 'canaries'
 - 1% -> 5% -> 10%...
- **Trivial to run shadow systems in parallel**

SHADOWING (COMPARE RETURNS)

Diagram courtesy
of Keith Stobie

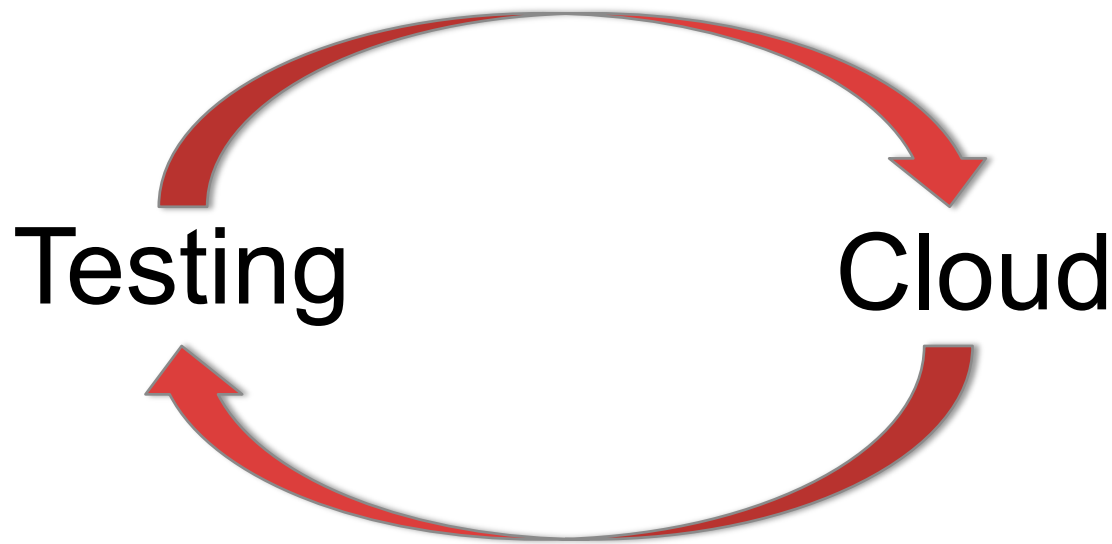


TESTING IN THE CLOUD

The latest business model of tool and service vendors

- Performance testing
- Production monitoring
- Remote mobile device testing
- Test automation in parallel
 - Web
 - Mobile

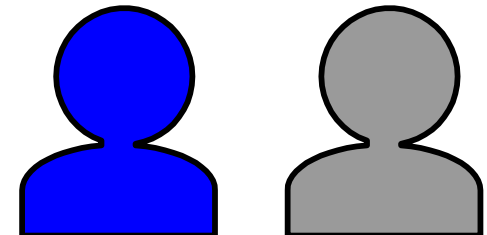




Cloud infrastructure, and our use of it, needs adequate testing

We can use the cloud to host and scale our tests for:

- Mobile
- Web
- Performance
- And use it for data analysis...



SYMBIOTIC TESTING

OPENSOURCE

OPENSOURCE (AND FREE)

A common theme is opensource, across many domains and disciplines in software development and testing

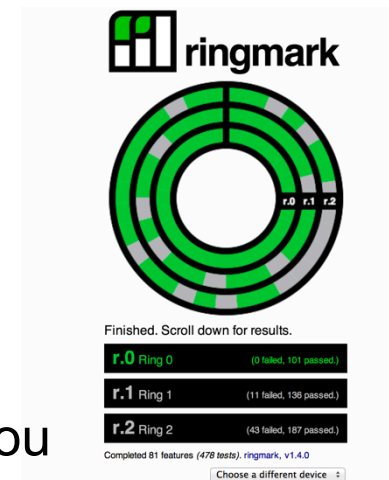
Opensource test automation tools for:

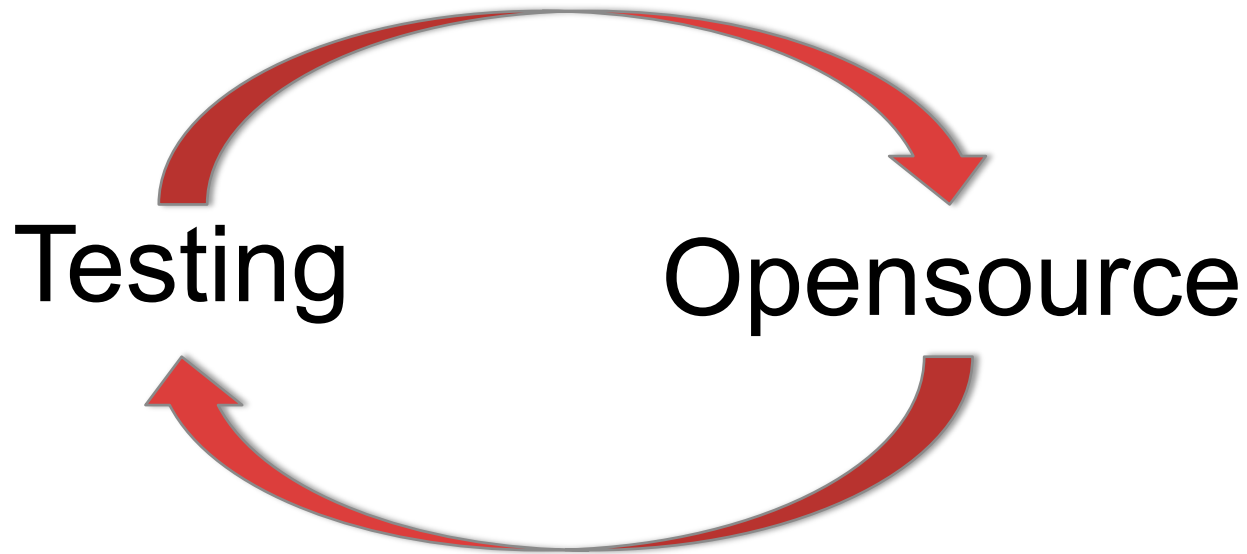
- Web (Selenium, WebDriver, WATIR,...)
- Mobile (Calabash, Robotium, MonkeyTalk, Android tools, ...)
- Mobile Web <http://rng.io> (from Facebook)

Other tools are free to use:

- PICT, LogParser
- Apple Instruments and UI Automation

Business models move to services & accelerators to get you up-and-running fast





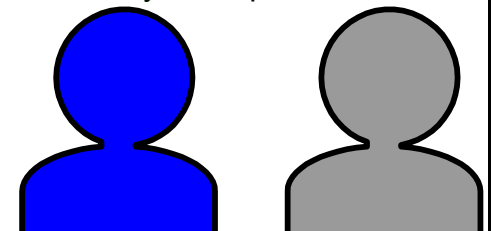
Opensource software needs testing too

- The 'Test Lab' <http://www.thesoftwaretestlab.org/>
- Code Quality for opensource projects <https://analysis.apache.org/>

Learn how to work effectively with opensource

Consider opensourcing some of your testing

<http://lets-test.com/wp-content/uploads/2012/05/Open-Sourcing-Testing-for-Lets-Test-Final-Final-09-May-2012.pdf>



ASOCIAL, IMMOBILE, PRE-ANALYTICS, HARDWARE-BOUND TESTING

- Testing in isolation, Arrogant testing?
- Still-life, motionless testing?
- Not using data to improve our apps and our testing?
- €500,000 equipment & 6 month lead time for a test environment?

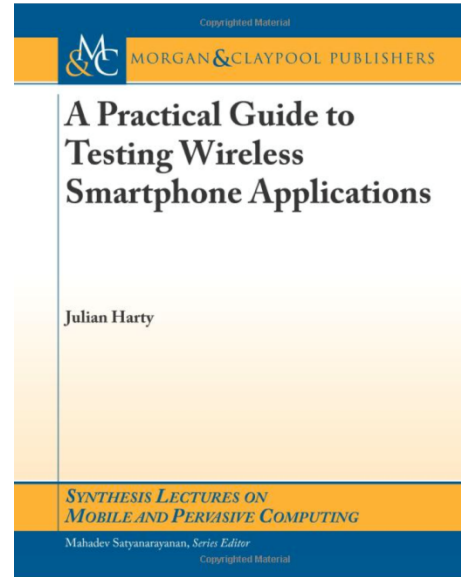
SOME FURTHER READINGS



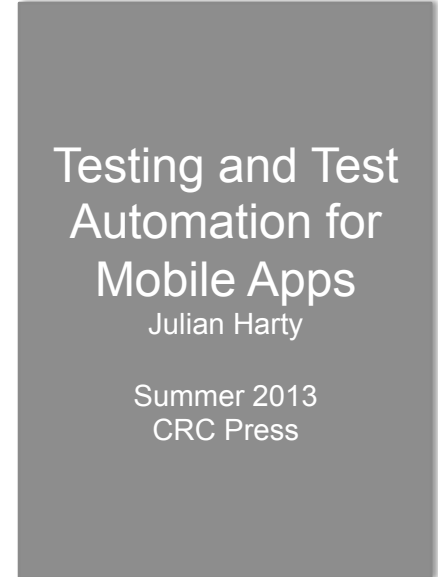
Development



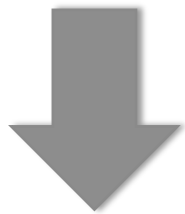
Marketing



Testing(2009)



Testing(2013)



http://www.wipconnector.com/download/GuideToTheParallelUniverse_3rdEdition.pdf

http://www.enough.de/fileadmin/uploads/dev_guide_pdfs/Guide_12thEdition_WEB.pdf

WANT TO KNOW EVEN MORE ABOUT TESTING MOBILE APPS? 😊

Draft book available for review & feedback

Email me **julianharty@gmail.com**

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Comment to get the next available draft

Q & A ?