Understanding UX
And approaches to measuring & testing UX

Selenium Conference, Bangalore 2016

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Understanding UX

3

UX = User Experience

- Dynamic, based on *using* the system

Accessibility   Findability

Credibility   *Holistic*   Usability

Desirability   Usefulness

Includes Perceptions

- Affected by expectations, mood, situation, etc

Digital & Analogue UX

Measuring UX

Measuring Digital UX

Click Through Rate (CTR)

Time...

Usage

Retention

Crashes

Usability including Task Completion

Measuring Analogue UX

- Interviews
- Recordings (explicit and implicit)
- User Initiated Feedback

- Surveys
- Net Promotor Score (NPS)
- In app feedback

4.4 -> 4.3 = ?

Cause & Effects

Tap on the colour you prefer to continue the game.

Tippen Sie auf die Farbe, die Sie bevorzugen, das Spiel fortzusetzen.

Appuyez sur la couleur que vous préférez pour continuer le jeu.

ඔබ ක්‍රීඩාව දිගටම කැමති වර්ණය මත තට්ටු කරන්න.
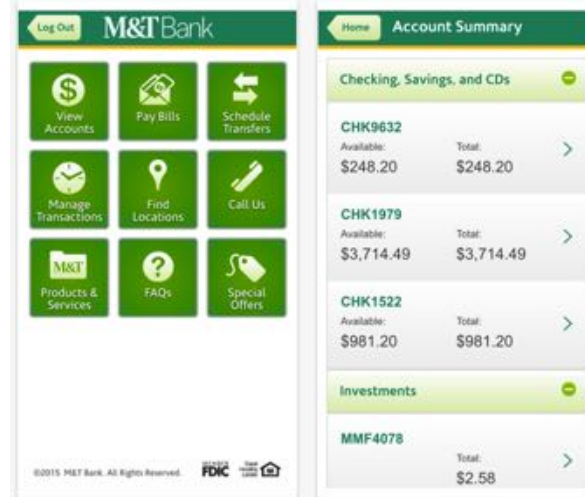
A banking example

Customer Ratings

Current Version:
★ 54 Ratings

All Versions:
★★ 754 Ratings

iPhone Screenshot

Customer Reviews

Touch ID login ★★★★
by Robert96Daniel

This app is awesome. It's easy to navigate and with its simple interface and beautiful integration of the banks color scheme it's a beauty to use for checking my balance. With that in mind, I gave this app only 4 stars because without the Touch ID login that some other financial apps utilize, logging in each time gets frustrating. Other than that, the app is a huge and amazing upgrade considering the app prior to this new release!
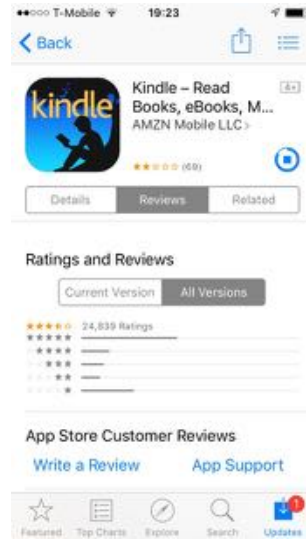
Needs Some Work ★★★
by Gdsyhvcduv

Does what I need it to do, when I can actually sign in. If I'm not on Wi-Fi I have to enter my password 3-5 times before it will let me sign in, and sometimes even then I still can't get in. I once even had to call to reset my password because of this as it locked me out. Also, as others have stated, touch id would be a very welcome addition. This is one of very few apps I've seen that requires a login that doesn't utilize touch id.

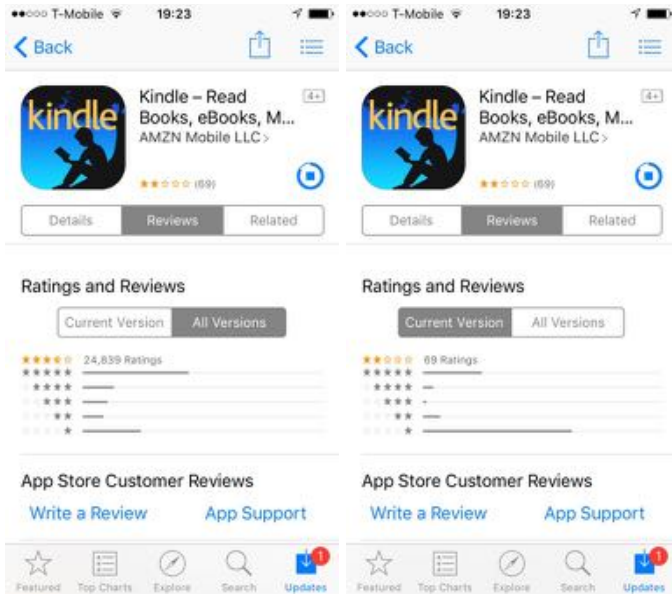The worse App in the App Store. ★
by Jamzxoxo

I love M&T as a financial institute but have to wonder. Are things well at M&T? The mobile app is the absolute worse. Once I break off of my home Wi-Fi the app does not work at all. It does not work when I need it the most. Mobile bank is not new technology. WHY can't you people fix this app so that it works right. Good luck with mobile check deposit. It's going to be a while before we see that. You have to completely rebuild the current app. I'm an embarrassed customer.

https://itunes.apple.com/us/app/m-t-mobile-banking/id397761931?mt=8

Kindle App for iOS

Kindle App for iOS

06 Apr 2016

03 May 2016

Use Analytics
& Heatmaps

Feedback Cycles
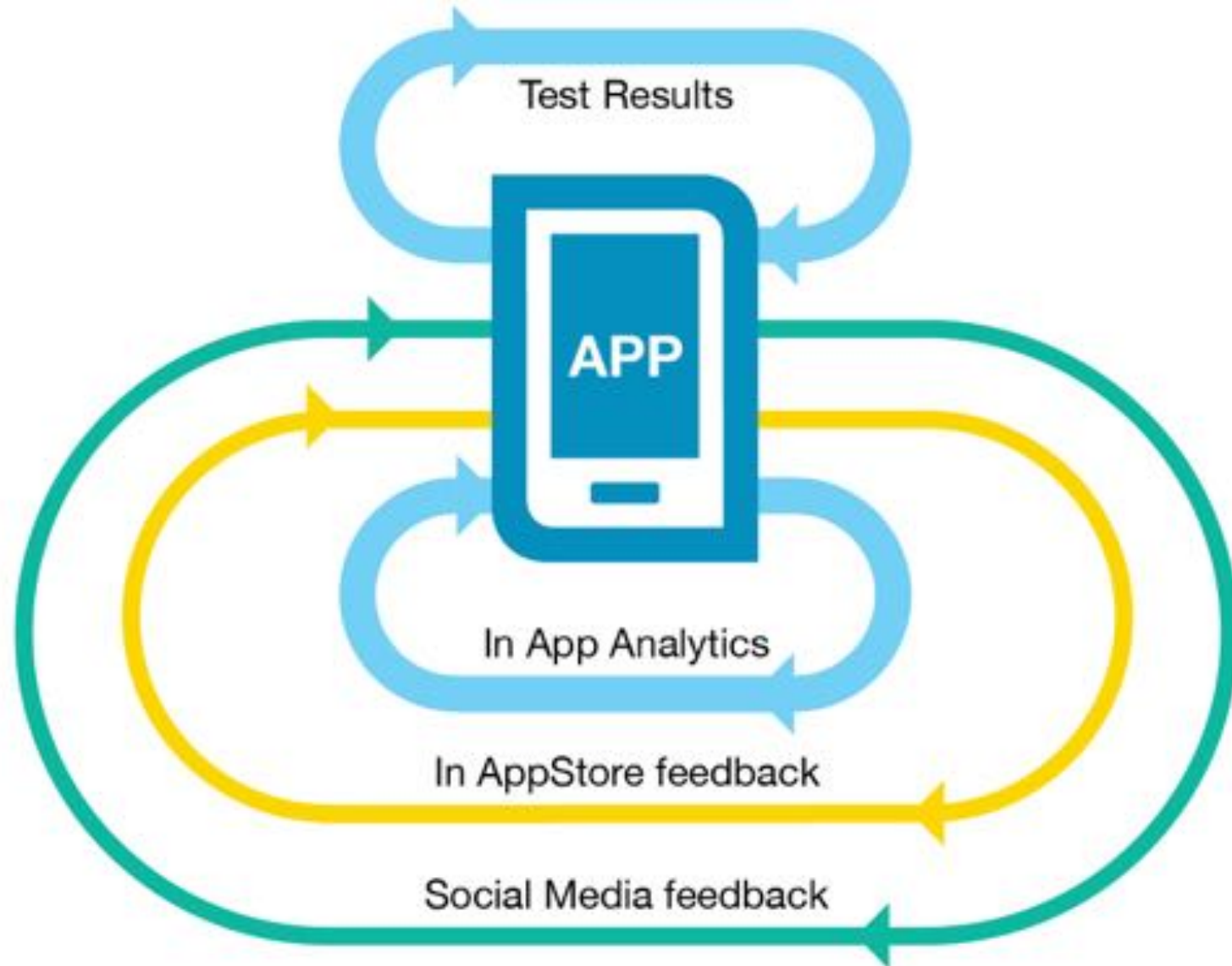
Some benefits of analytics data

- No longer limited to what "we" think "they" need/do/etc. Discover how the app behaves across virtually all the population

- Lower cost of operations

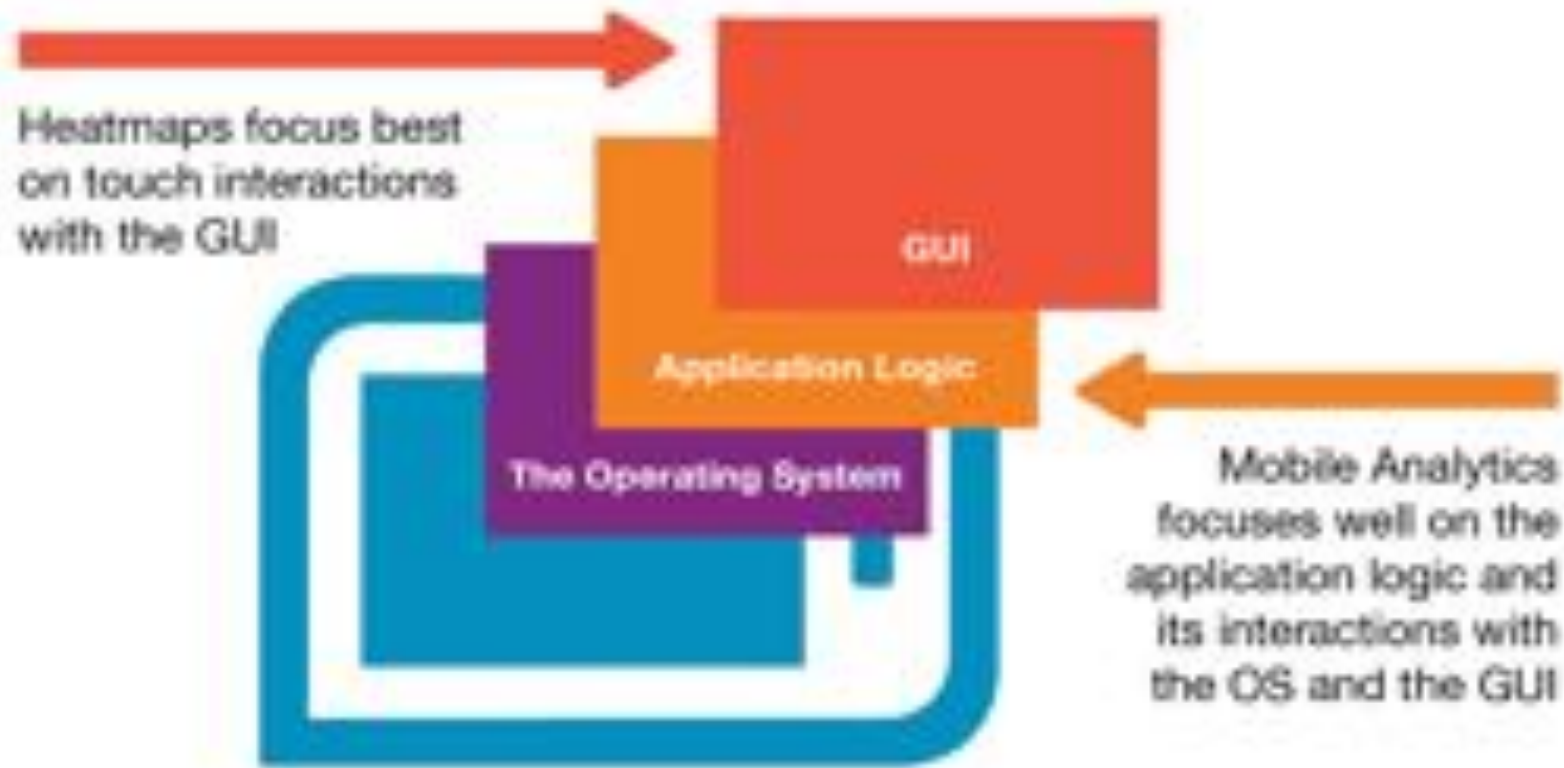- Real usage can help drive our testing and analysis; brings realism to our testing

Layers of an App

Heatmaps focus best on touch interactions with the GUI

GUI

Application Logic

The Operating System

Mobile Analytics focuses well on the application logic and its interactions with the OS and the GUI

Exploded view of the app running on the platform

Heatmaps

Problematic UI

Heatmap

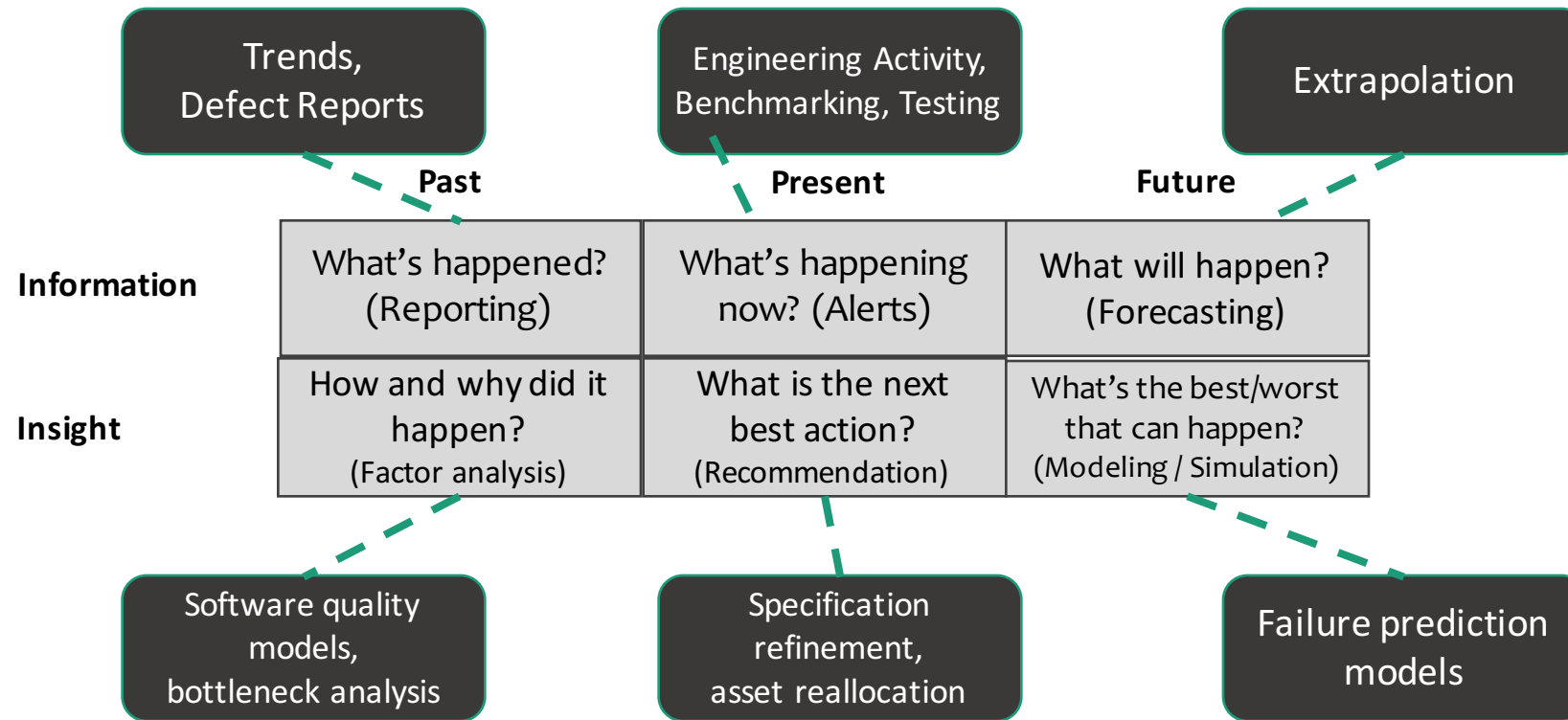"8 Heatmap Tests that reveal visitor behavior."

1. The Link Test – Are visitors clicking on dead ends?

2. The Distraction Test – Are irrelevant elements distracting visitors?

3. The Information Test – Is there missing information from your page?

4. The Device Test – Does your page work on different screen sizes?

5. The Depth Test – Is all your content easily reachable?

6. The Engagement Test – What are your site visitors really looking for?

7. The Fold Test – Does your page have what it takes to keep your visitors?

8. The Header Test – Is your page header helping or hurting your site?

Source: https://www.hotjar.com/heatmaps

Images source: Appsee.com

Analytics for Software Development

Trends, Defect Reports	Engineering Activity, Benchmarking, Testing	Extrapolation

	Past	Present	Future
Information	What's happened? (Reporting)	What's happening now? (Alerts)	What will happen? (Forecasting)
Insight	How and why did it happen? (Factor analysis)	What is the next best action? (Recommendation)	What's the best/worst that can happen? (Modeling / Simulation)

Software quality models, bottleneck analysis	Specification refinement, asset reallocation	Failure prediction models

http://research.microsoft.com/pubs/136974/foser-2010-buse.pdf

Gaining confidence

Fools rush in…
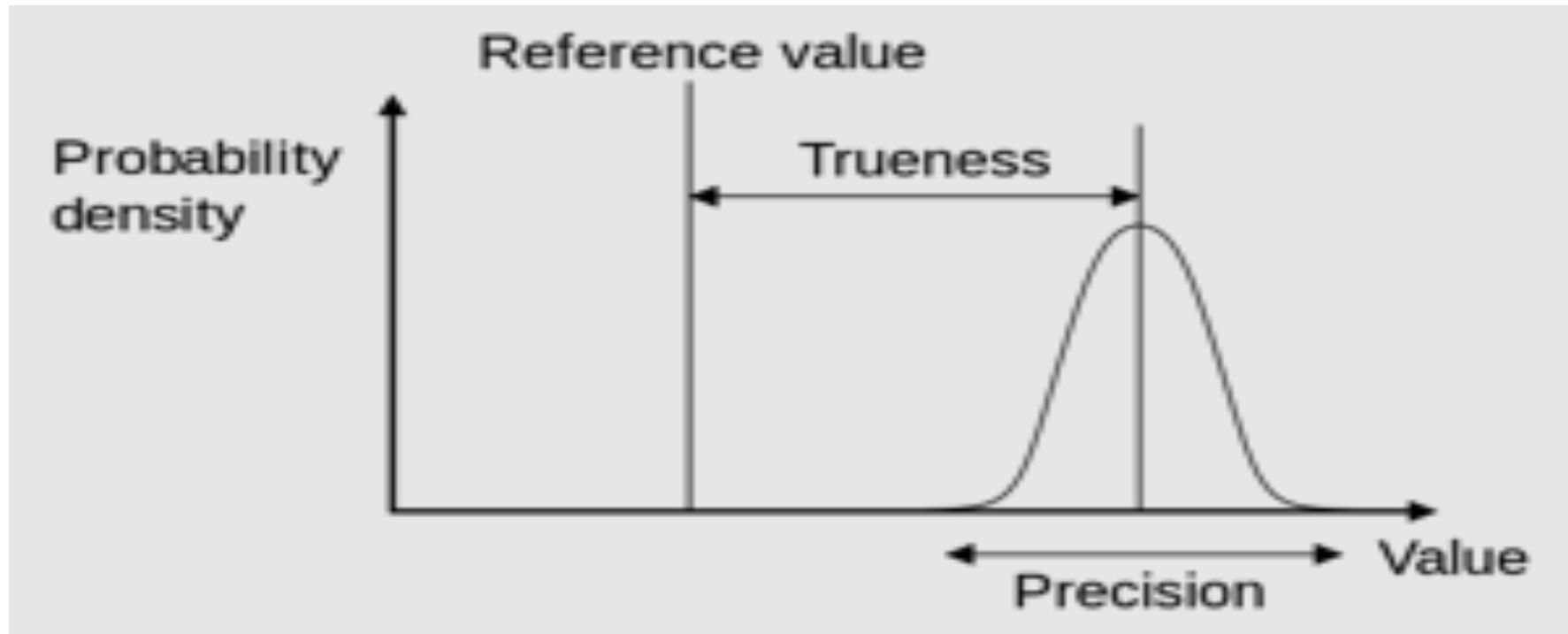
Precision & accuracy

Precision: repeatability

https://en.wikipedia.org/wiki/Accuracy_and_precision
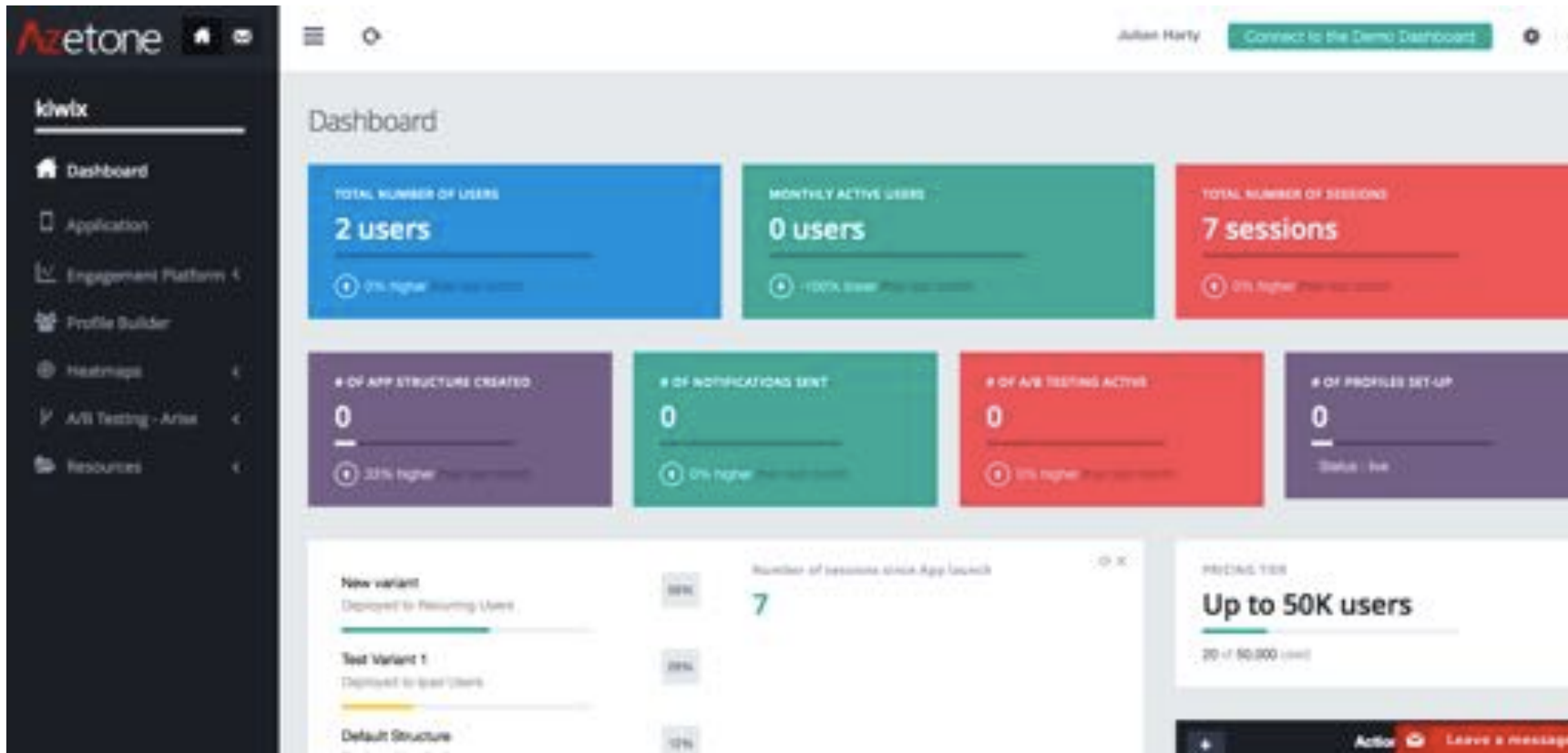

Accuracy: on target

Precision & accuracy
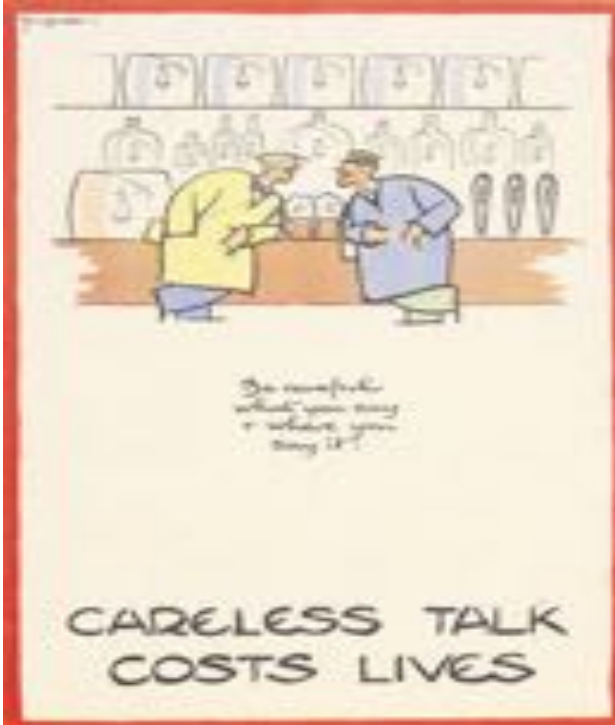
A system at rest?

Divergent answers increase doubt

    * A tale of ~~two~~ three mobile analytics libraries

    * (and what happens when bonuses are on the line…)

    * Who is Responsible (part 1)?

The Dark Side

Of using Mobile Analytics

Do no harm

CARELESS TALK
COSTS LIVES

THIS POPULAR FLASHLIGHT APP HAS BEEN SECRETLY SHARING YOUR LOCATION AND DEVICE ID

MORE THAN 50 MILLION USERS WERE LEFT IN THE DARK ABOUT HOW BRIGHTEST FLASHLIGHT SHARED THEIR LOCATION AND DEVICE INFORMATION WITH THIRD PARTIES.

sourcedna

Blog

iOS Apps Caught Using Private APIs
October 18, 2015

CHINESE TAOMIKE MONETIZATION LIBRARY STEALS SMS MESSAGES

Palo Alto Networks WildFire has captured over 18,000 Android apps that contain this library.
(October 21, 2015)

Who is Responsible (Part 2)?

SafeDK BETA
Marketplace

http://www.vam.ac.uk/users/node/1777

A Study of Third-Party Tracking by Mobile Apps in the Wild
ftp://ftp.cs.washington.edu/tr/2012/03/UW-CSE-12-03-01.PDF

https://sourcedna.com/blog/20151018/ios-apps-using-private-apis.html
http://researchcenter.paloaltonetworks.com/2015/10/chinese-taomike-monetization-library-steals-sms-messages/

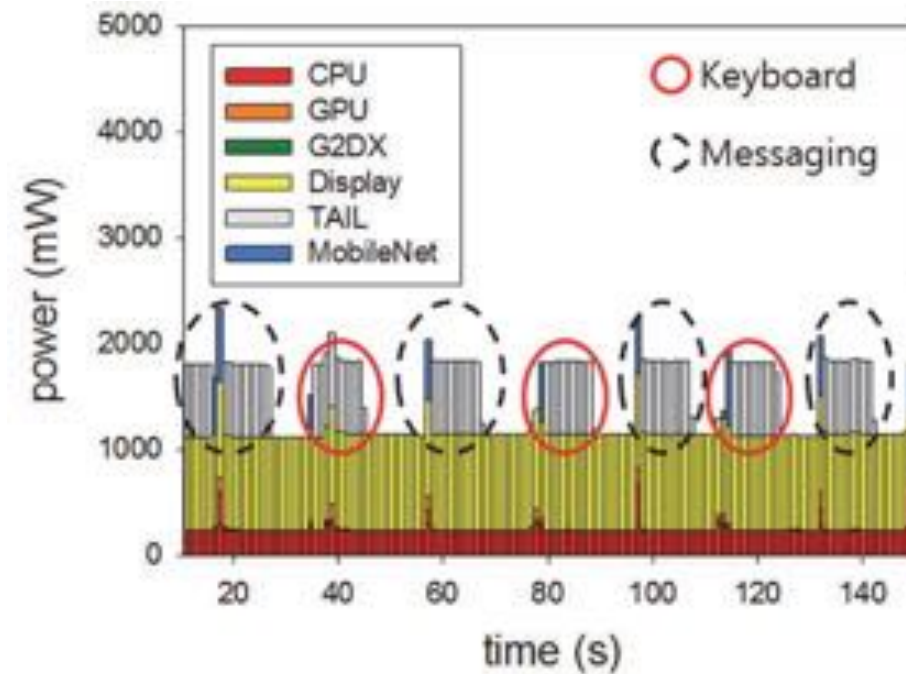# Reducing precision to protect privacy
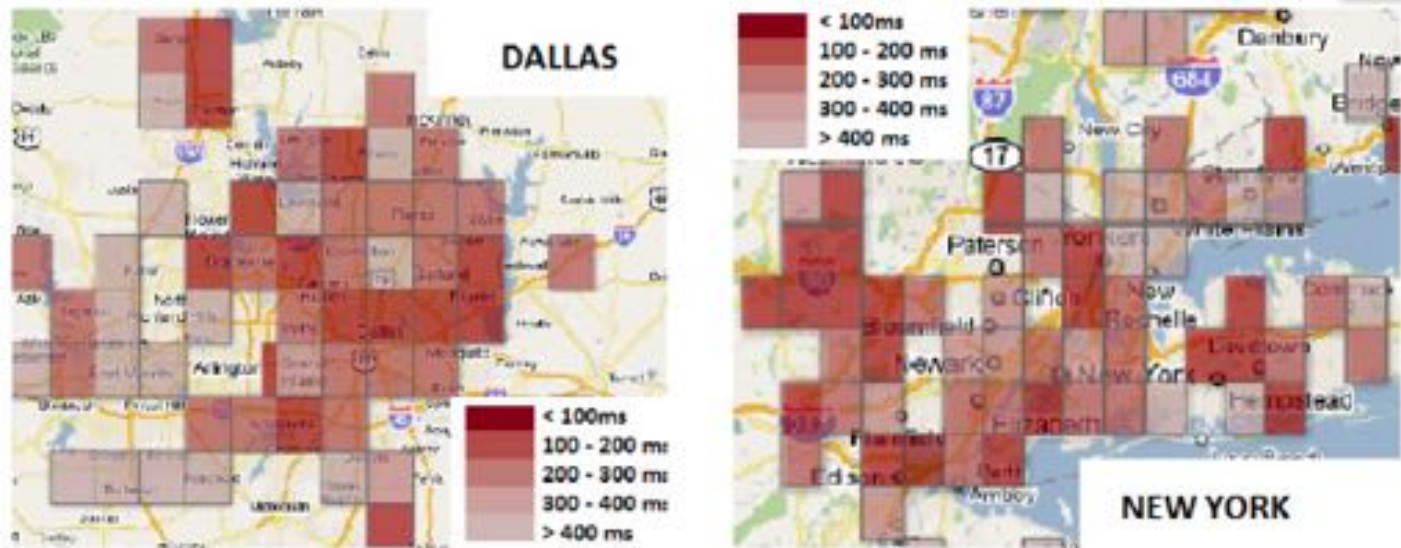
10km x 10km squares

From: Capturing Mobile Experience in the Wild: A Tale of Two Apps
Figure © ACM

Necessary but not sufficient

Listening is a means to an end

Correlation? Causation? Appropriate?

From: User Interaction-based Profiling System for Android Application Tuning

Figure © ACM

Things that might help

Us to improve UX

Assess & Respond to Feedback

TABLE 3 — The most frequent and impactful complaint types.*

Complaint type	Most frequent		Most impactful	
	Rank	Median (%)	Rank	1:2 star ratio[†]
Functional Error	1	26.68	7	2.10
Feature Request	2	15.13	12	1.28
App Crashing	3	10.51	4	2.85
Network Problem	4	7.39	6	2.25
Interface Design	5	3.44	10	1.50
Feature Removal	6	2.73	3	4.23
Hidden Cost	7	1.54	2	5.83
Compatibility	8	1.39	5	2.44
Privacy and Ethics	9	1.19	1	8.56
Unresponsive App	10	0.73	11	1.40
Uninteresting Content	11	0.29	9	1.50
Resource Heavy	12	0.28	8	2.00
Not Specific	—	13.28	—	3.80

* All results are at the 95 percent confidence level.

† This column indicates the ratio of one- to two-star ratings across all apps.

Khalid, H., Shihab, E., Nagappan, M., & Hassan, A. E. (2015). What do mobile app users complain about?. *Software, IEEE, 32*(3), 70-77.

feedback

Two-Star feedback is the most serious and actionable.

96% of companies don't respond to feedback on App Stores

Colourful Thinking

Alfred Hitchcock

Blue Script: facts

Green Script: emotions

Six Thinking Hats
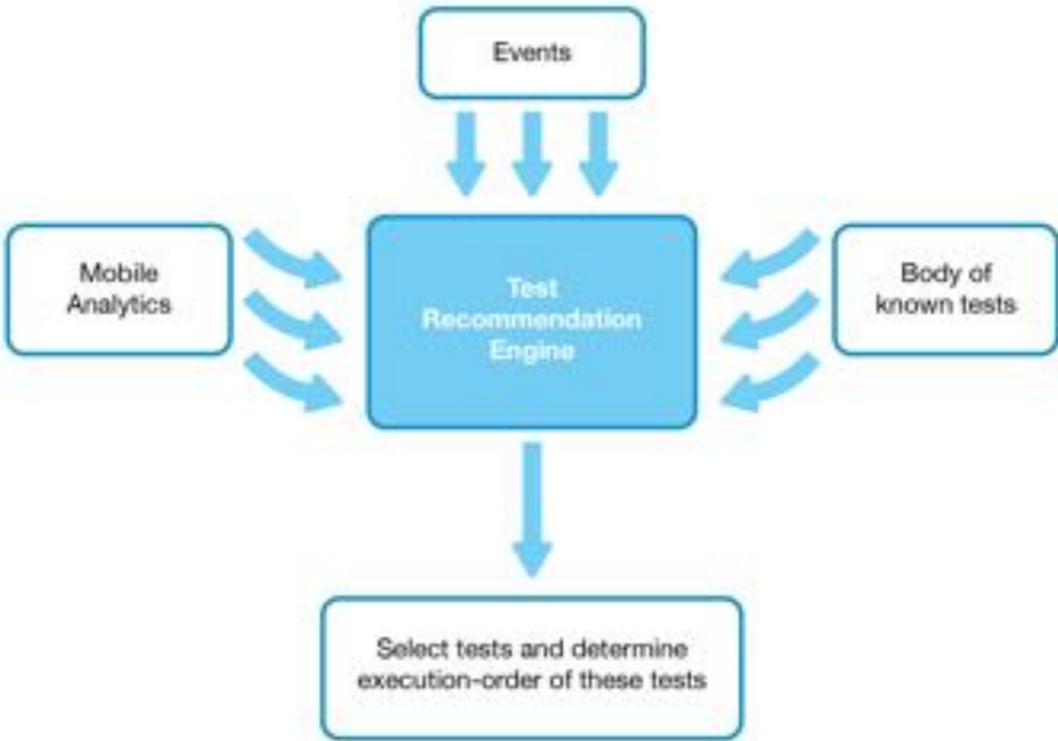

https://www.youtube.com/watch?v=DasTbFUcmtI

http://uk.businessinsider.com/facebook-2g-tuesdays-to-slow-employee-internet-speeds-down-2015-10
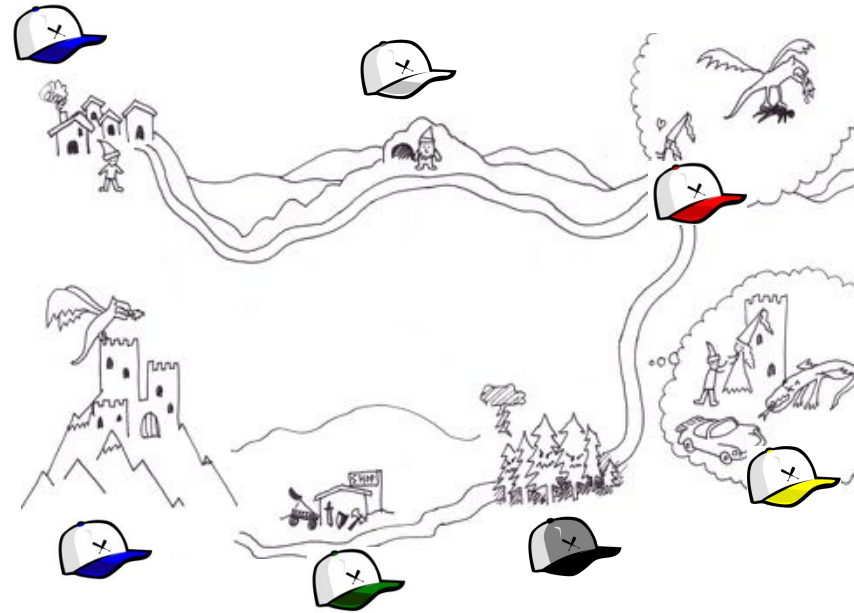
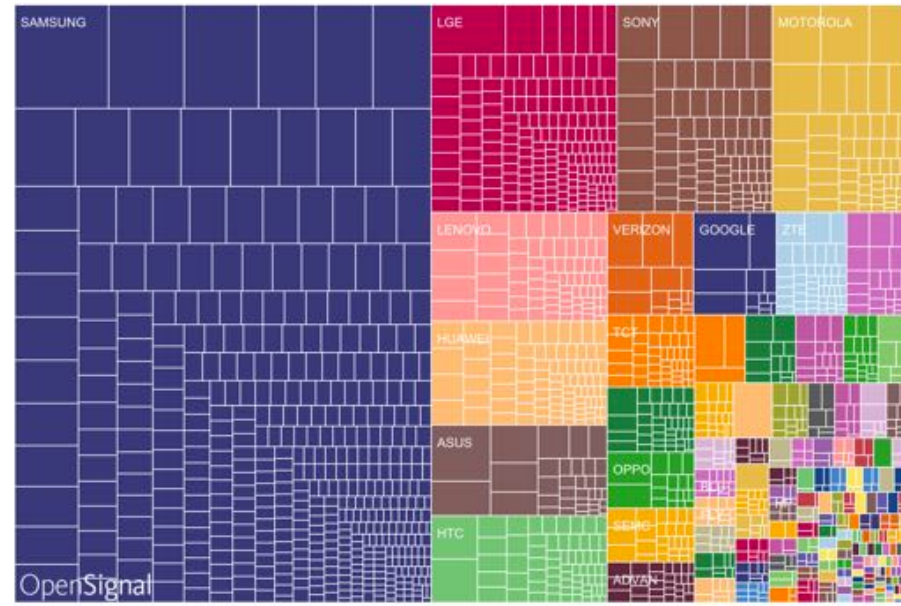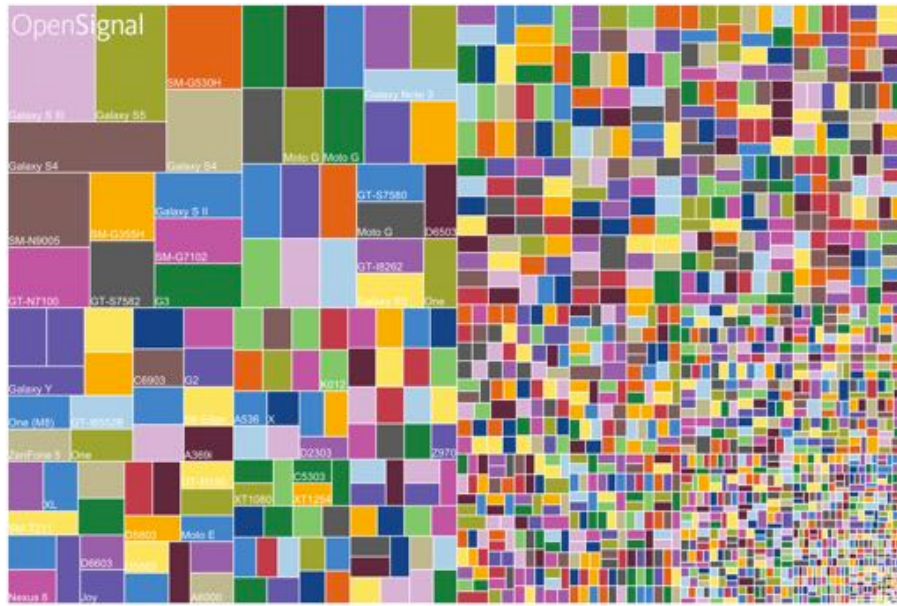# Use similar devices to your users

wired.com/2015/10/facebook-workers-ditch-iphones-in-push-for-world-conquest/
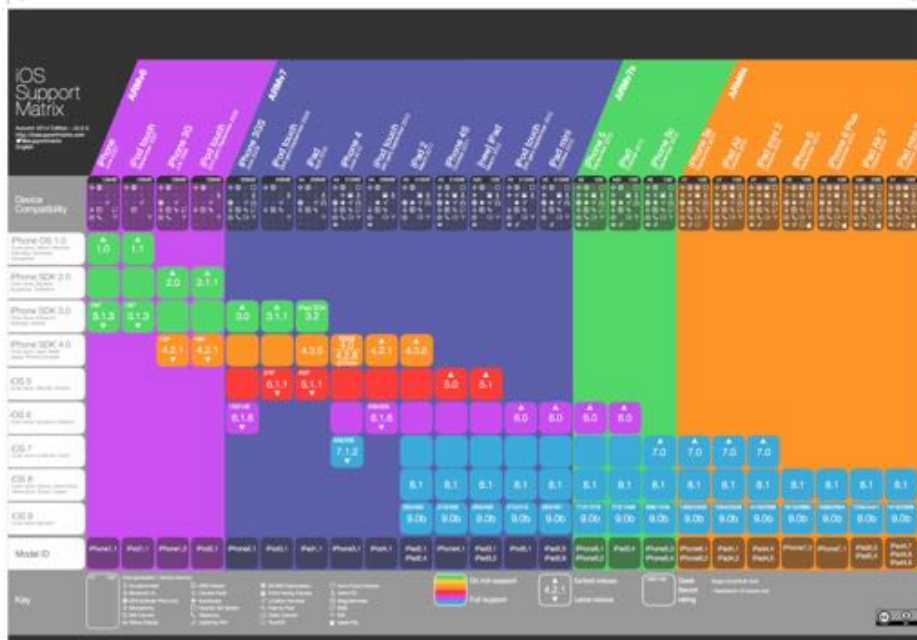
Test Recommendation Engine

How many devices are enough?

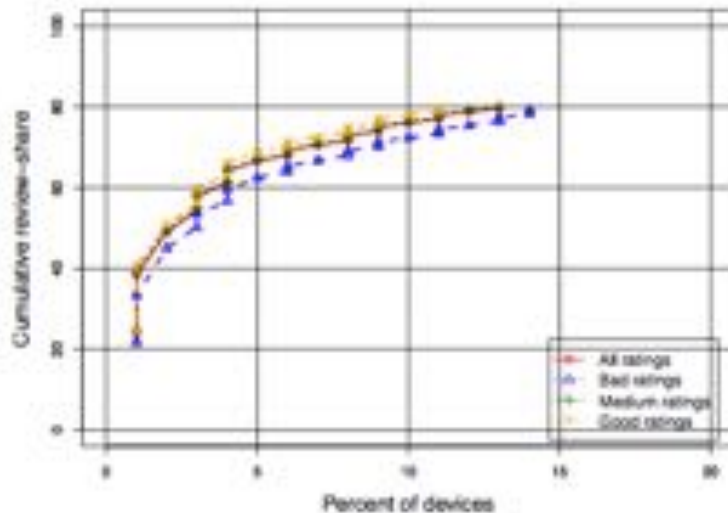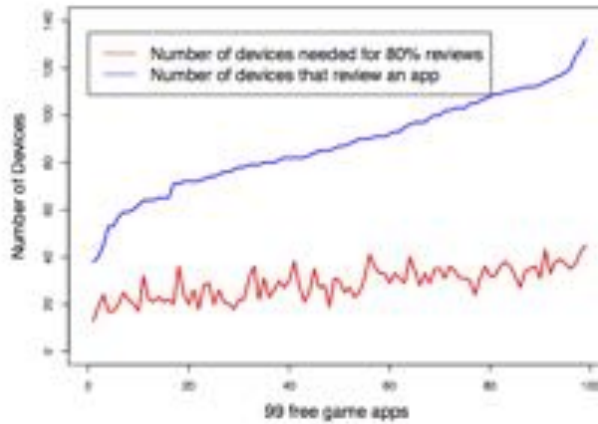Perennial Question

Android Images used with permission
from OpenSignal.com

Devices Matrices

https://iossupportmatrix.com/

Enough for 80% of reviews

"Prioritizing the devices to test your app on : A case study of android game apps"

<= Free

Paid=>

Enough for 80% of …

- Bugs?

- Usage?

- Locales & Languages?

- Network Conditions?

- …?

Beyond UX

Customer Experience (CX)
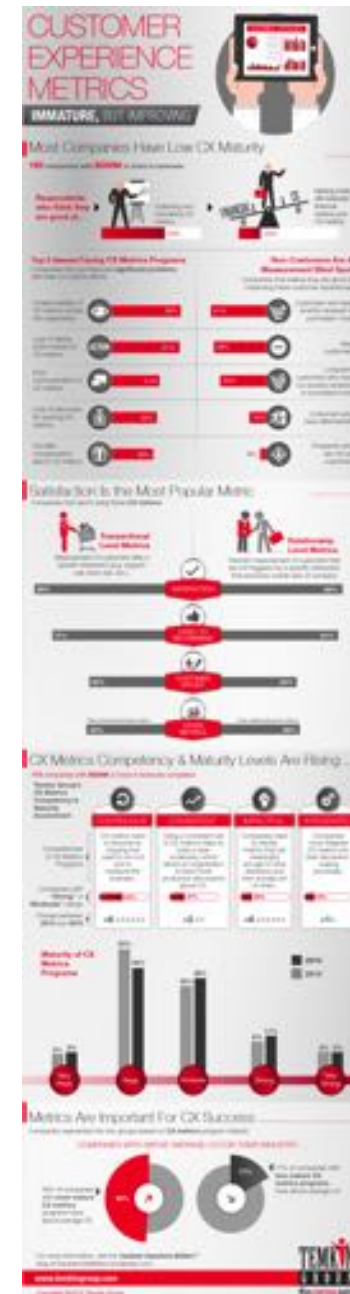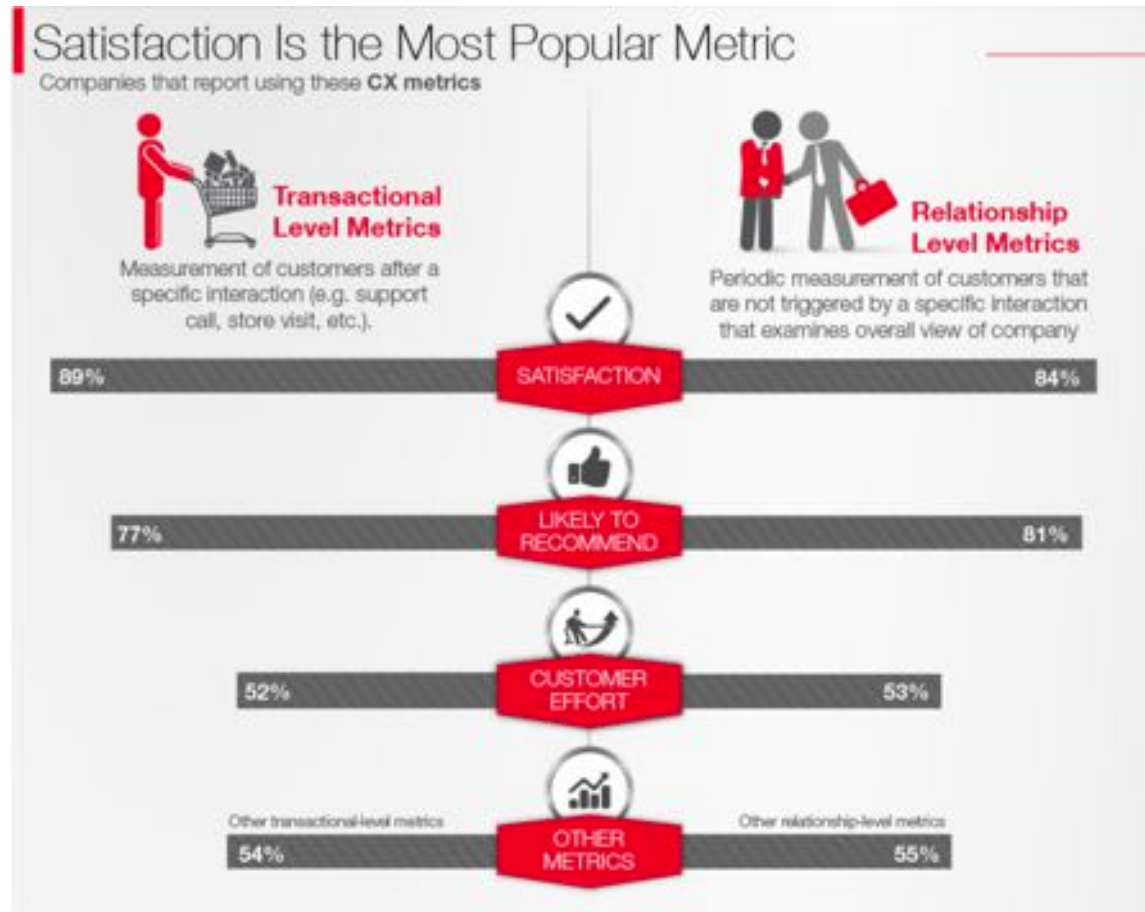
Good UX

Is good for business

**"You have to start with the customer experience
and work backwards to the technology"**
Steve Jobs (1997)

Apple: The World's most valuable company (2016)

Using social networks

Julian Harty @julianharty · Mar 21
@TomTom What can I spend my £8 on - your website won't let me pay for a voice with the discount code :(I just registered a new device, etc.
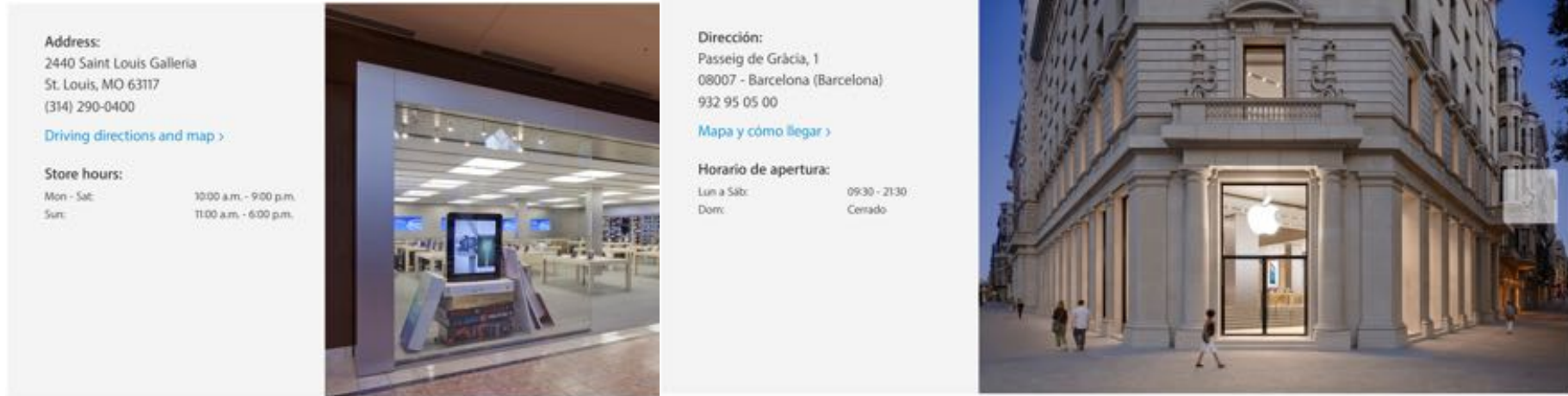
TomTom ✔ @TomTom
Following

@julianharty Hi Julian, please give our CS a quick call on: 02079 490 132

Tweets with replies by Delta Assist (@DeltaAssist) | Twitter
https://twitter.com/DeltaAssist/with_replies ▾
The latest Tweets and replies from Delta Assist (@DeltaAssist). We're listening around the clock, 7 days a week. We try to answer all tweets but if you require a ...

Delta shows how to use Twitter in a crisis - Tnooz
https://www.tnooz.com/article/delta-shows-how-to-use-twitter-in-a-crisis/ ▾
To this end, Twitter seems to have been a solid case of how this can work. ... The Delta Assist Tweet Team – yes, we can identify the nine team members: ...

In the news

Delta changes way it uses Twitter to assist customers - Atlanta Business Chronicle
Atlanta Business Chronicle - 5 hours ago
Delta Air Lines Inc. (NYSE: DAL) is changing the way it uses Twitter to help customers.

More news for delta uses twitter

Delta Uses Twitter to Rebook Flights - Zendesk
https://www.zendesk.com/blog/deltas-team-twitter/ ▾ Zendesk ▾
Jan 11, 2011 - As we noted here before, Delta emerged from the recent East Coast blizzards as something of a "Twitteneer," a word we just coined (we think), ...

- Immediate
- Low cost to use
- An understood, accepted protocol

versus

- In-house projects
- Expensive, time-consuming
- (Yet) another app…

"The 'package' is much the same, it's all about the service we [the crew] provide"

https://en.wikipedia.org/wiki/Virgin_Atlantic#/media/File:Virgin_Atlantic_A340-300_G-VHOL_LHR_2003-6-12.png

The Den
Calling all gamers and film buffs, the Den is the place for you. Have a pool contest or try your hand at the latest games on the retro video games consoles. Our state of the art multiscreen shows the cream of the crop of TV and film as well as the latest news and sport.

The Lodge and Viewing Deck
Passengers looking to unwind can visit The Lodge with its après-ski vibe. Or if you're looking for peace and quiet, our specially designed Viewing Deck offers great views of the runway and the setting sun, with comfortable seats making it the perfect place for a preflight snooze.

The Loft
For the ultimate preflight indulgence, climb the white marble stairway that leads through the 'clouds' of the ceiling to the pièce-de-résistance of the Clubhouse - The Loft. Watch the planes takes off through full-width sloping windows underneath a dramatic skylight.
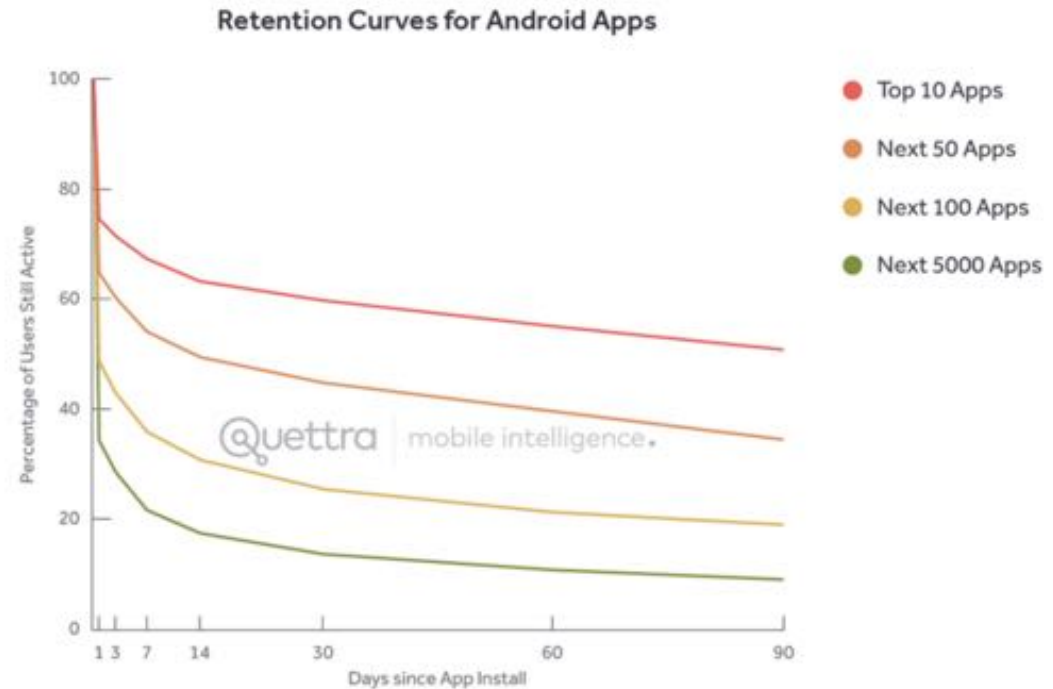

Stretch out, sleep sound

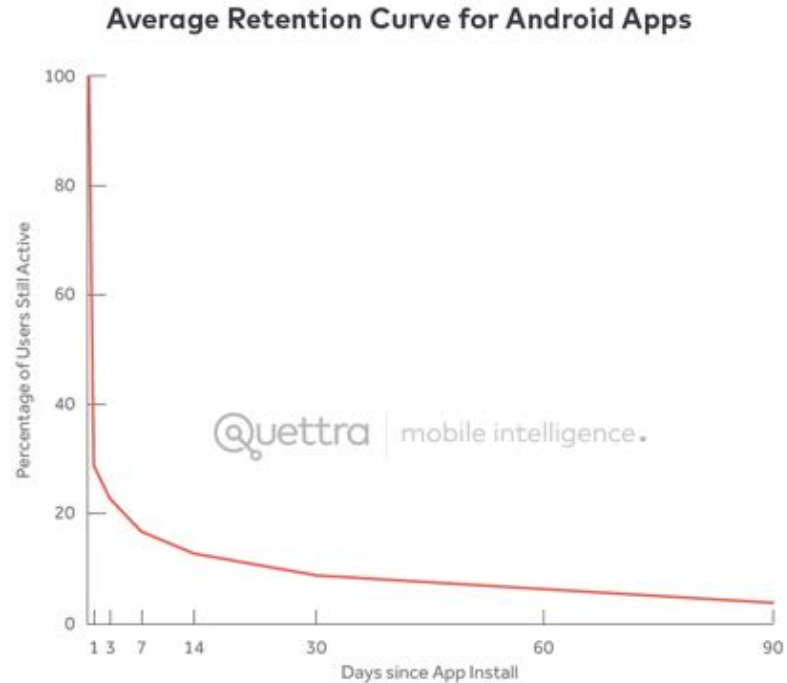Our 33in wide, fully flat beds are super-comfy, even if you're a light sleeper. And if you'd rather stay awake there's lots to keep you entertained.

> **Explore the Upper Class Suite**

http://www.virgin-atlantic.com/us/en/the-virgin-experience/upperclass.html

45

Engaging users

http://andrewchen.co/new-data-shows-why-losing-80-of-your-mobile-users-is-normal-and-that-the-best-apps-do-much-better/

Other Drivers

What else do we need to consider?

Seismic Disruptions

- Banking
  - FinTech: eats into profitable segments
  - Freedom and ease to switch
    https://www.simplerworld.co.uk/
- Pensions
  - "Freedom and choice" legislation in 2014
    http://www.pensionsadvisoryservice.org.uk/
- Transportation
  - E.g. Uber, Google Maps
- The Web
- Mobile apps

Conclusions

We need to innovate to survive & thrive

Digital is a key driver, yet we need to keep analogue in mind

We care enough about our users to change what we do

http://paulgraham.com/siliconvalley.html

Image: https://en.wikipedia.org/wiki/History_of_Buffalo,_New_York

READ THIS BOOK ☺

The Mobile
Analytics Playbook:
A practical guide to better testing

Julian Harty   Antoine Aymer

http://themobileanalyticsplaybook.com/

Questions now?

Questions later…
julianharty@gmail.com