Mobile Testing – That's Just a Smaller Screen, Right?

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Connecting People

Who am I?
Stephen Janaway

- 12 years experience in mobile software testing.
- Software testing and test management.
- Main focus on the mobile device and applications area.
- Have worked for companies such as Ericsson, Motorola and Nokia.
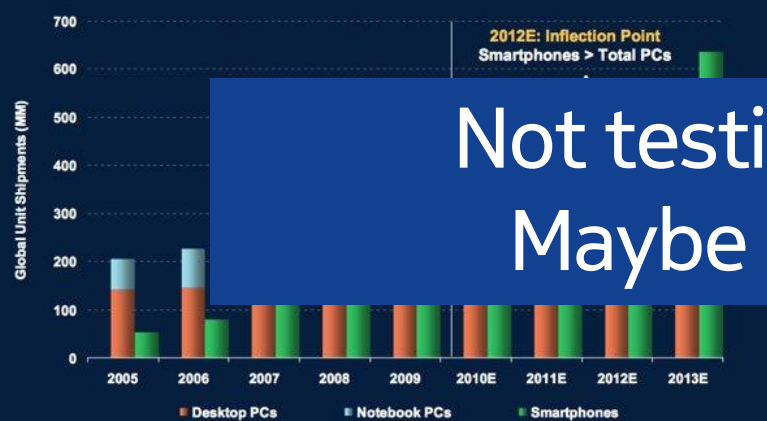
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This Presentation

- Why mobile testing?
- What is mobile testing?
- Hints, tips and techniques.
- Why get involved?

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Last year the number of smartphones sold passed the number of PCs sold for the first time.

Smartphone > PC Shipments Within 2 Years –
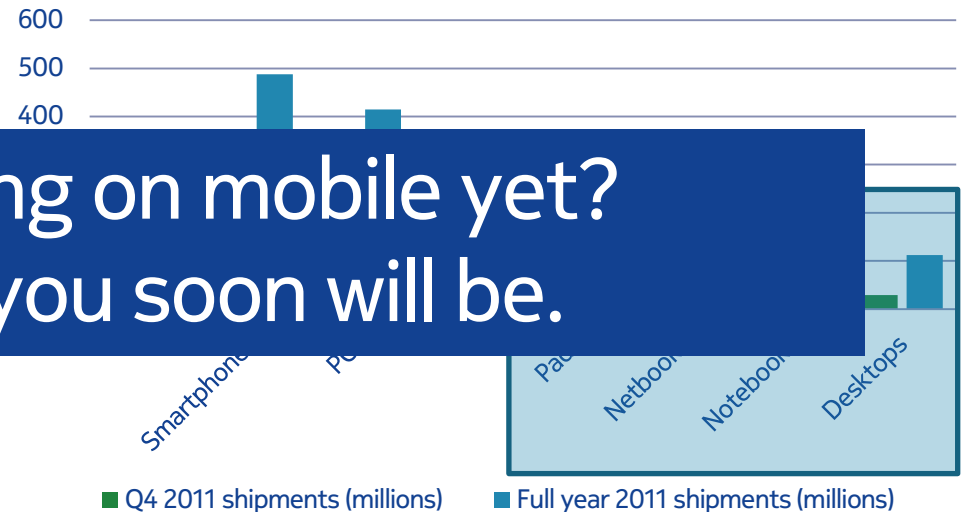Implies Very Rapid / Land Grab Evolution of Internet Access

Global Unit Shipments of Desktop PCs + Notebook PCs vs. Smartphones, 2005 – 2013E

2012E: Inflection Point
Smartphones > Total PCs

Global Unit Shipments (MM)

700 600 500 400 300 200 100 0

2005 2006 2007 2008 2009 2010E 2011E 2012E 2013E

■ Desktop PCs ■ Notebook PCs ■ Smartphones

Morgan Stanley

Note: Notebook PCs include Netbooks. Source: Katy Huberty, Ehud Gelblum, Morgan Stanley Research. Data and Estimates as of 11/10

10

Smartphone Sales vs PC Sales 2011

600
500
400

Smartphones   PCs   Pads   Netbooks   Notebooks   Desktops

■ Q4 2011 shipments (millions)   ■ Full year 2011 shipments (millions)

Not testing on mobile yet?
Maybe you soon will be.

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Mobile devices are:

- Smart Phones
- Feature Phones
- Tablets
- Big screens, small screens, touch screens, keypads.

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Mobile devices are:

- Alarm Clocks
- Maps
- Link to loved ones
- Hand held shops
- Tickets
- Music Players
- Books
- Games Players
- Cameras
- ......

- These are key experiences. Imagine if they did not work?

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Imagine if something doesn't work

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The mobile market is huge

Top five mobile phone manufacturers, by 2011 global sales according to IDC

Vendor	Shipments 2011 (millions)	Market share 2011	Shipments 2010 (millions)	Market share 2010	Annual growth
Nokia	417.1	27.0%	453.0	32.6%	-7.9%
Samsung	329.4	21.3%	280.2	20.1%	17.6%
Apple	93.2	6.0%	47.5	3.4%	96.2%
LG Electronics	88.1	5.7%	116.7	8.4%	-24.5%
ZTE	66.1	4.3%	50.5	3.6%	30.9%
Others	552.1	35.7%	443.6	31.9%	24.5%
Total	1,546	100%	1,391.5	100%	11.1%

Source: IDC (Feb 2012)

Worldwide smartphone market, by operating system, by 2011 global sales according to Canalys

Operating System	Shipments 2011 (millions)	Market share 2011	Annual growth
Android	237.7	48.8%	244%
iOS	93.1	19.1%	96%
Symbian	80.1	16.4%	-29.1%
BlackBerry	51.4	10.5%	5.0%
Bada	13.2	2.7%	183.1%
Windows Phone	6.8	1.4%	-43.3%
Others	5.4	1.1%	14.4%
Total	487.7	100%	62.7%

**Source: Canalys (Feb 2011)** | | | **via: mobiThinking**

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Quality is not currently great

- Many applications are un-tested.
- Many phones launch with serious issues (e.g. the iPhone death grip).
- Android has stability issues.

- Users tolerate this….but for how long?

- How can we improve this?

Different Sorts of Testing

- Hardware level:
  - Testing at the device driver layer.
  - Testing the hardware itself.
  - Highly specialised area.

- Protocol/ Air Interface:
  - Sometimes called protocol stack testing.
  - Testing against various universally agreed specifications (an example would be 3GPP).
  - Use some pretty cool and pretty expensive pieces of equipment.

- Applications
  - Probably the easiest area to get into if you have a background in software testing in another field.
  - Applications can be embedded in the phones firmware or downloaded from app stores.

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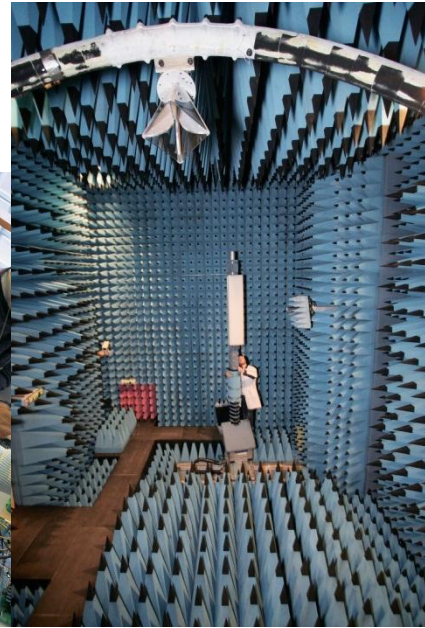
Applications are hot

- What's the same as desktop?
- What's different?

- Some software testing skills are similar.

- The software that you test could be in the hands of millions of people once you have finished.
- Releasing a phone with bugs in it loses a company a huge amount of money.
- The mobile world is a low margin, high volume game.

Native or Web?

- Native app:
  - Specifically designed to run on a device.
  - Runs on device OS.
  - Testing needs to include download/ upgrade/ uninstall.
  - Typically needs to be adapted for different devices.

- Mobile website:
  - All or some parts of the software are downloaded from the Web each time it is run.
  - Usually be accessed from all Web-capable mobile devices.
  - HTML5 makes it increasingly difficult to separate web apps from native apps.
  - Testing needs to include different mobile browsers.

- Widget/ Web App:
  - Small website installed on the device.

Interactions

- Mobile devices used to be simple. No longer.
- While your application runs, the phone is:
    - Talking to the network
    - Working out where you are
    - Maybe receiving calls, texts, Facebook and Twitter updates.

- There are a lot of interactions going on that you don't see.
- Understanding the OS of the device you are testing is important.

- You don't need to be an expert but you do need to be able to design tests that focus on these interactions.
- What happens when you have your application running, and then get a call, and a text, whilst uploading video to YouTube? Test for it and find out.
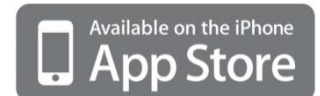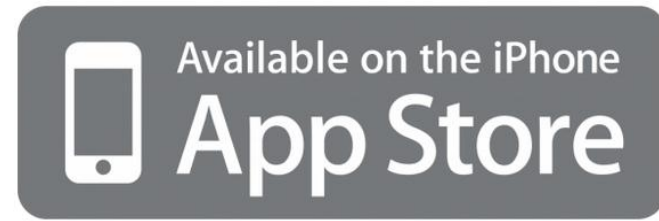
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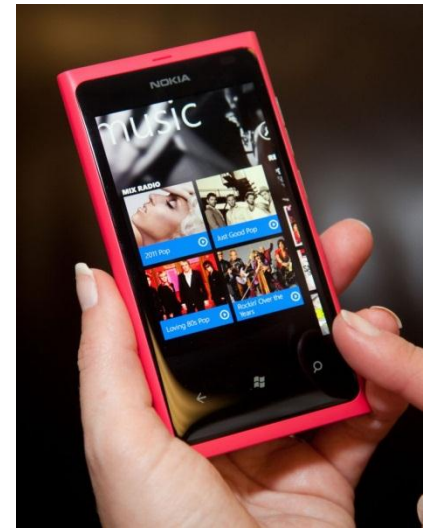
Performance

- Mobile devices have limited memory and limited processing capacity.

- It's important to test how the devices work when stressed.

- Test for memory leaks and general performance of the operating system and applications.

- Think of battery life!!!

- Think of how the application works when network performance is poor or on different speeds (2G/ 3G/ LTE/ Wifi).

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Third Party Compliance

- You may need to test for certification compliance; all phones are certified to certain standards.

  - 3rd party software runtimes (e.g. Java ME or BREW).
  - Network operator technical acceptance tests.
  - Mobile applications stores submission criteria.

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Apps Stores

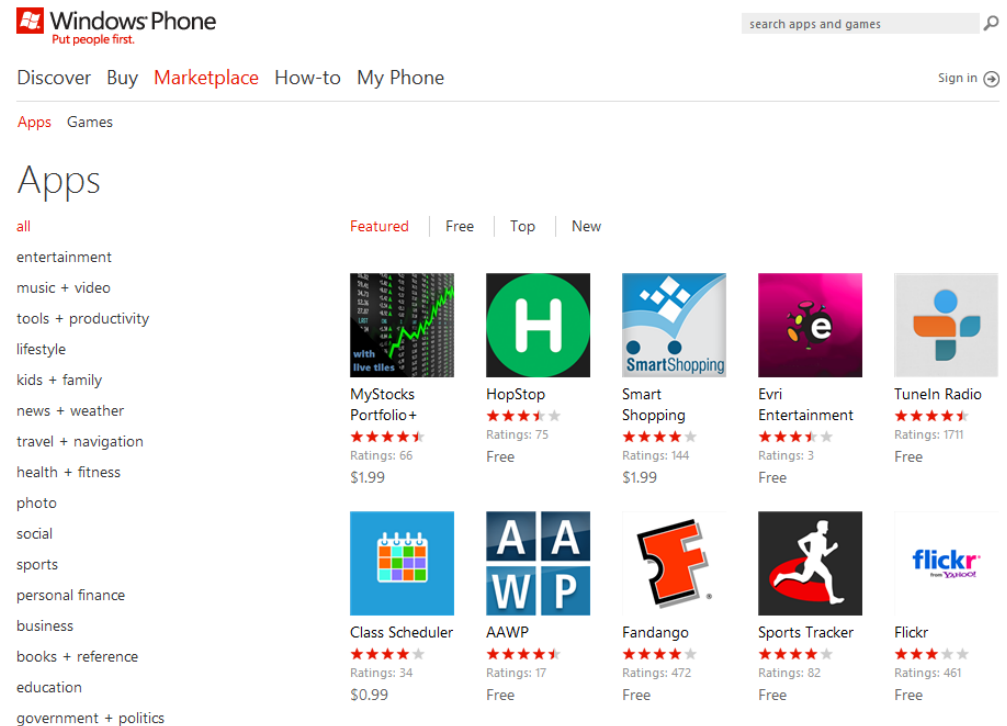Available on the iPhone App Store

- One estimate is that 70% of applications are submitted to apps stores without any formal testing have been conducted.

- Not good for brand.
- Not good for the user.

Windows Phone — Put people first.

Discover   Buy   **Marketplace**   How-to   My Phone   Sign in

Apps   Games

Apps

all
entertainment
music + video
tools + productivity
lifestyle
kids + family
news + weather
travel + navigation
health + fitness
photo
social
sports
personal finance
business
books + reference
education
government + politics

Featured | Free | Top | New

MyStocks Portfolio+
★★★★½
Ratings: 66
$1.99

HopStop
★★★½☆
Ratings: 75
Free

Smart Shopping
★★★★☆
Ratings: 144
$1.99

Evri Entertainment
★★★½☆
Ratings: 3
Free

TuneIn Radio
★★★★½
Ratings: 1711
Free

Class Scheduler
★★★★☆
Ratings: 34
$0.99

AAWP
★★★★½
Ratings: 17
Free

Fandango
★★★★☆
Ratings: 472
Free

Sports Tracker
★★★★☆
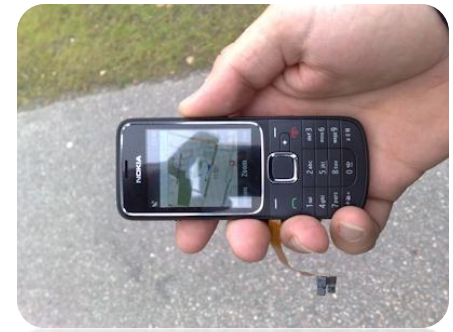Ratings: 82
Free

Flickr
★★★☆☆
Ratings: 461
Free

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Security

- Only a fraction of smartphones and tablets are protected by security software
- Big recent rise in the amount of malware targeted at mobile devices.

- Test for security issues.
- Check browser security, cookies, etc.
- Check application permissions.

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Usability Matters

- You should test for usability.

- Usability means testing it on a panel of real users.

- Usability is more important in the mobile world:
    - Smaller screen.
    - More difficult to interact with and typically used one handed.

- Typical areas to focus upon are:
    - How easy is it to use the application? Do user 'just get it'?
    - How is the look and feel?
    - Does the application or device feel fast?

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Automation – the answer?

- Yes and No.
- More difficult on mobile devices.
- No silver bullet.

- Many options:
  - Robotium
  - Gorilla Logic (Fone Monkey, Monkey Talk)
  - Touch Test
  - Native Driver
  - Squish
  - Bespoke solutions….

Where do I get all the devices from?

- OS fragmentation is happening.

- Test strategy:
  - Don't use them at all – simulators.
  - Buy them.
  - Rent them.
  - Use a cloud based service (Perfecto Mobile, DeviceAnywhere).

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So......why get involved?

- It's an exciting area.

- You get to play with new technology.

- Working in the mobile applications and mobile phone testing world can be really varied work.

- The work is fast paced, and you can quickly see the results of what you do.

To sum up

- Mobile usage is mushrooming.
- Users are more emotionally attached to their phones than they are to their PCs.
- Testing applications is the easiest route into the industry.
- A mobile test strategy should not merely be a copy of a desktop test strategy.

- "Be proud, your work will soon be in the hands of millions".

Questions?

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