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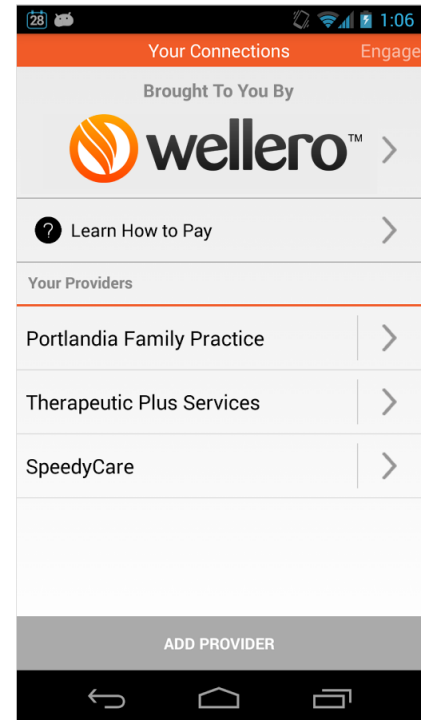
How Do I Get Started with Mobile Testing?

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Wellero, Inc. Confidential

Introduction about Welloro and Theodore



- <https://play.google.com/store/apps/details?id=com.welloro.pointofsale2>
- <https://itunes.apple.com/us/app/welloro/id646172842?mt=8>

Overview - Getting Started with Mobile Testing

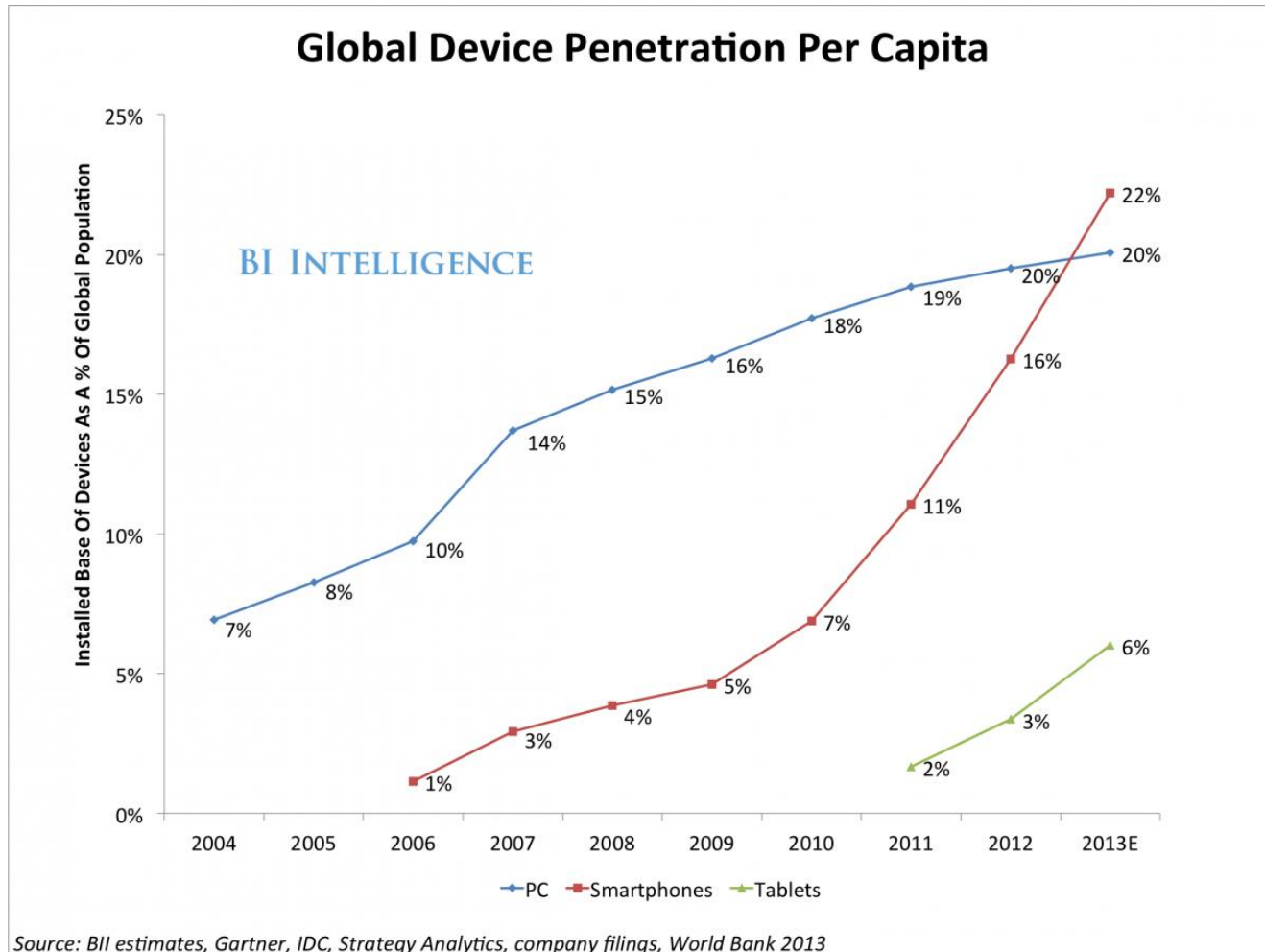
- Why Test Mobile?
- Mobile Testing Background
- Web App vs Mobile App
- Mobile Operating Systems
- Testing Considerations



Overview - Getting Started with Mobile Testing

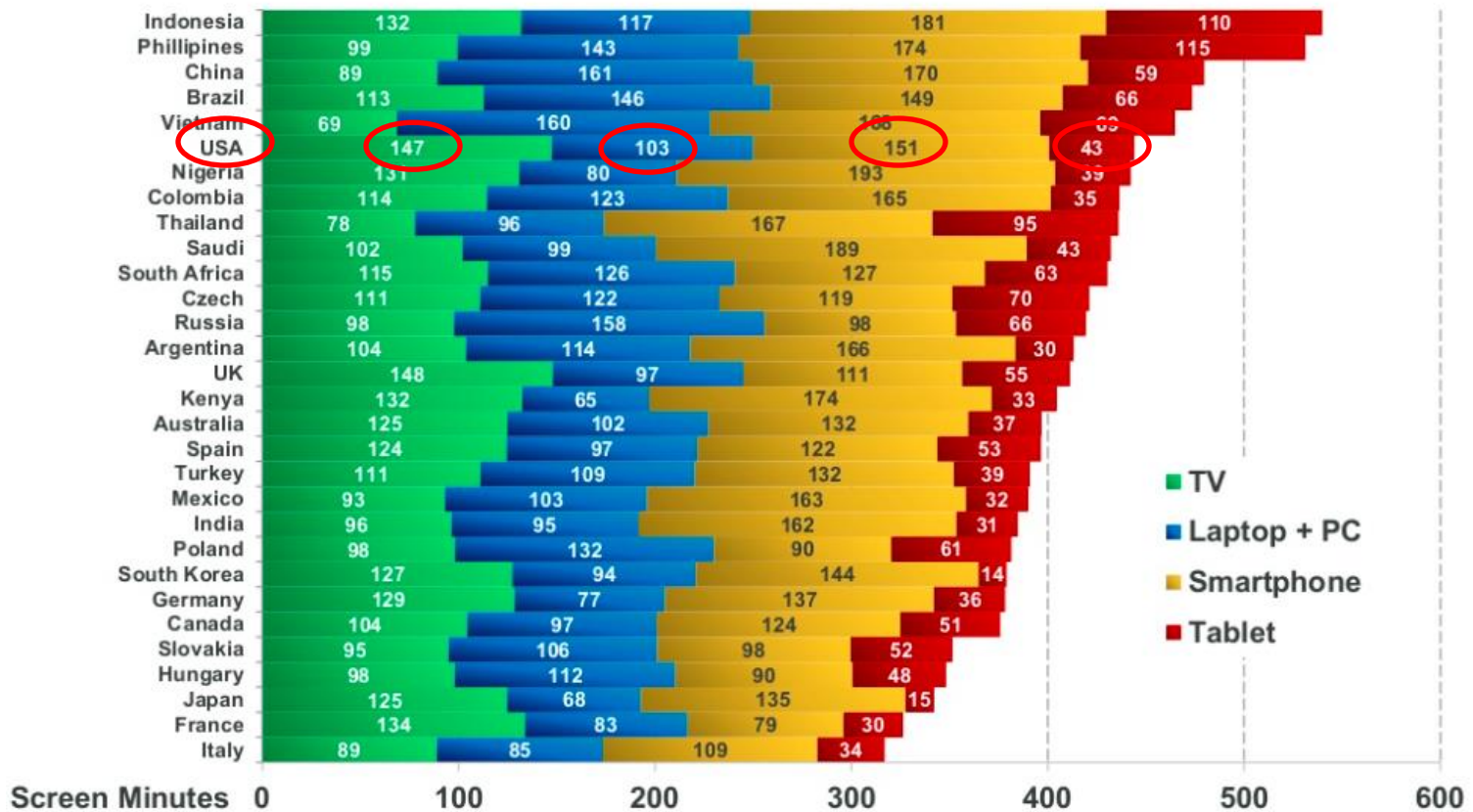
- Emulation vs Physical Device
- Hardware Testing
- Beginning Mobile Test Automation

Why Test Mobile



Why Test Mobile

Daily Distribution of Screen Minutes Across Countries (Mins)



Source: Milward Brown AdReaction, 2014.
 Note: Survey asked respondents "Roughly how long did you spend yesterday watching television (not online) / using the internet on a laptop or PC / on a smartphone or tablet?" Survey respondents were age 16-44 across 30 countries who owned or had access to a TV and a smartphone and/or tablet. The population of the 30 countries surveyed in the study collectively represent ~70% of the world population.

Mobile Testing Background

- Context of Mobile Testing
- Mobile Device
 - Personalized – your phone, your apps
 - Always within arms reach
 - Checked Regularly

Mobile Testing Background

- How many times per day does the average smartphone user check their device?

Mobile Testing Background

- How many times per day does the average smartphone user check their device?
- 10
- 25
- 50
- 100
- 150
- ** 221 **

Web App vs Mobile App Testing

	Web App Testing	Mobile App Testing	
Categories		Android	iOS
OS	Windows, Mac, Linux, Unix, others	Custom overlays on top of AOSP Samsung, LG, Sony, Motorola etc.	iOS
Users Updates to OS		Varies by Manufacturer and Carrier	typically 3 months to latest version
Device	Typically x86, x64 processors	Varies by Manufacturer	Apple iPhone, iPad, iPad Mini, iPod Touch
Inputs	Keyboard, Mouse, webcam, microphone, fingerprint scanner	touchscreen, soft buttons – (home, back, menu), soft keyboard, front facing camera, back facing camera	touchscreen, soft buttons, soft keyboard, front facing camera, back facing camera
Outputs	screen, speaker	screen, speakerphone, headphone jack, haptic feedback	screen, speakerphone, headphone jack, haptic feedback
Buttons		power button, volume up/down	power button, volume up/down, home button
Sensors		light sensor, Accelerometer, Gyroscope, Pedometer, Compass, Hall, Fingerprint ID, Gesture, Barometer, Step detector, Step counter	Three-axis gyro, Accelerometer, Proximity sensor, Ambient light sensor, Fingerprint identity sensor, Home/Touch ID sensor, Backside illumination sensor
Location	from network/ip address	GPS, A-GPS, Glonass	Assisted GPS and GLONASS, Digital compass, Wi-Fi, Cellular
Connectivity	Wi-Fi or LAN, Bluetooth	Wi-Fi, Cellular, Bluetooth	Wi-Fi, Cellular, Bluetooth
Network Consistency	consistent	can be intermittent	can be intermittent
Screen Size	varies	varies	varies
Screen Resolution	Varies	Varies	Varies
Battery		varies 10 to 20 hours	varies 10 to 20 hours

Operating Systems

- Frequent Updates
- Changes in API's and possible deprecation of previously used API's
- New Hardware
- Updates to Hardware

Testing Considerations - Android

- Manufacturer Overlays

Manufacturer	Launcher/Overlay
Samsung	TouchWiz
HTC	Sense
Sony	Xperia
LG	Optimus UI

- API Level Targeting



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Testing Considerations - Android

- Physical Device Considerations
 - Older devices
 - Small and large screen sizes
 - Older Operating systems
 - Physical keyboards
 - Hardware specific accessories



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Testing Considerations - Android



Testing Considerations - iOS

- Differing Screen Sizes – 4S, 5, 5C, 5S, 6, 6+
- UI / Layout
- Multiple resolutions of images
- Universal / iPhone / iPad



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Brian DePalo

Emulation vs Physical Device

- Emulation
 - Test logic and functionality as much as possible
- Physical Devices – sensors and inputs
 - Location
 - Camera
 - Microphone
 - Other input sensors

Hardware Testing

- Geo-fencing and Location Testing
- Push Notifications
- Data Connections
- Device Level Interrupts
- Multiple Apps Running



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Beginning Mobile Test Automation



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Beginning Mobile Test Automation

- Objectives of Mobile Test Automation
- Evaluate Test Strategy, tools and frameworks
- Who will be writing tests?
- Who will be maintaining tests?
- Will tests need to be run by any non-technical stakeholders?
- Try Proof of Concept

Beginning Mobile Test Automation

- **Android**
- Robotium
- Espresso
- UiAutomation
- **iOS**
- UI Automator
- KIF
- Frank
- iOS Driver
- **Both Android and iOS**
- Appium
- Calabash
- Monkey Talk

Beginning Mobile Test Automation

- Write simple login test
- Add functionality for CRUD
- Start adding additional features and hooks / helpers for your testing framework
- Refactor Tests
- Re-Evaluate Tools Periodically

Contact Information

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Q&A

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