

# MOBILE APP DEVELOPMENT - INTRODUCTION

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Dr. Christelle Scharff

Pace University, New York, NY, USA

[cscharff@pace.edu](mailto:cscharff@pace.edu)

[scharffc@gmail.com](mailto:scharffc@gmail.com)

# AGENDA

- Introduction
- Git / GitHub
- Overview of Android
- Layouts
- Menus
- Material design
- Lists
- Maps
- SQLite
- Firebase
- Kotlin
- Project & Exam

WHAT DO YOU KNOW  
ABOUT MOBILE  
DEVELOPMENT?

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WHAT PHONE(S) / TABLETS  
/ WEARABLES DO YOU  
OWN?

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WHAT APPS DO YOU  
USE?

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# Mobile technologies



- SMS
- MMS
- Bluetooth
- QR codes
- NFC (Near Field Communication)
- Beacons
- Native applications (Java ME, Java for Android, Objective C, Silverlight, Python, C, C++...)
- Web applications (CSS, HTML, JavaScript, HTML5...)
- Mobile web sites (CSS, HTML, JavaScript, HTML5 ...)
  - See <http://m.pace.edu>
- IVR (Interactive Voice Response)
- USIM
- USSD (e.g., #123#)
- Mobile TV
- etc

So many of  
them!

## Mobile platforms

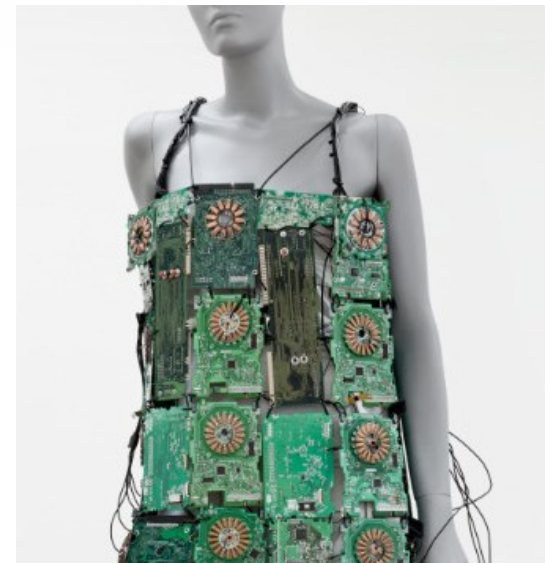
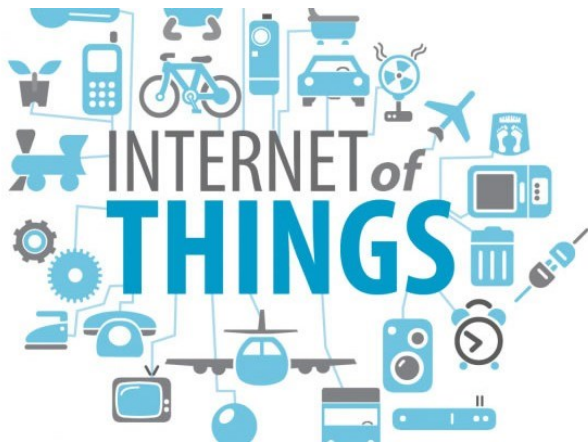
- Android

- ios



Only 2 left!

# The future





# QR code

- QR codes are codes that can stock 7089 numerical characters and 4296 alphanumeric characters
- QR codes store data, addresses and urls in magazines, signs, buses and business cards
- QR codes are common forms of mobile messaging in Asia
- Require phone equipped with the correct software
- QR code generator
  - <http://qrcode.kaywa.com/>

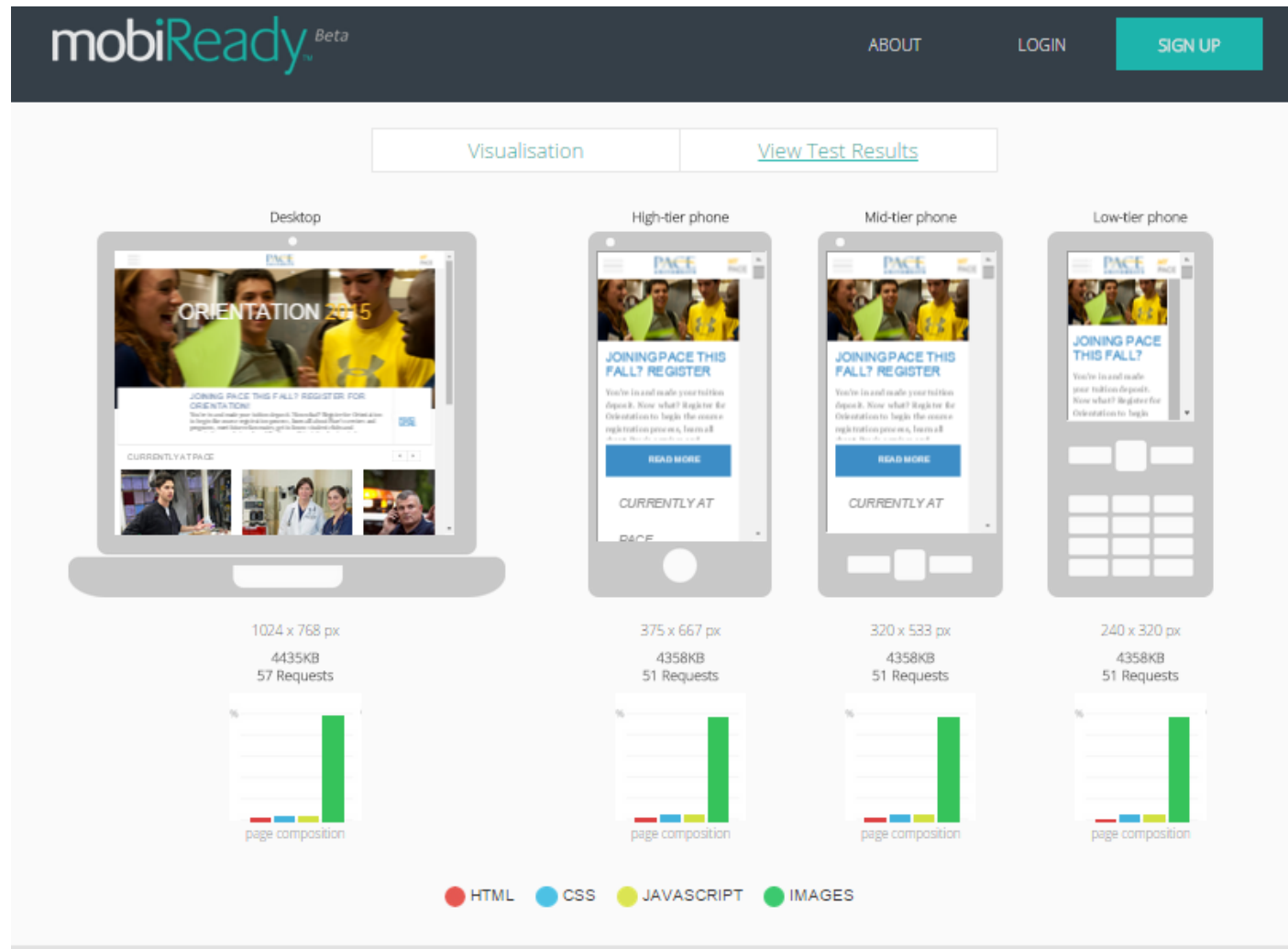


# NFC

- Near Field Communication
- Set of standards to establish radio communication with each other by touching them together or bringing them into proximity, usually no more than a few inches [wikipedia]



# Mobile web sites - <http://ready.mobi>



■ Mobile Penetration Rates 70% and above  
 ■ Mobile Penetration Rates Under 70%

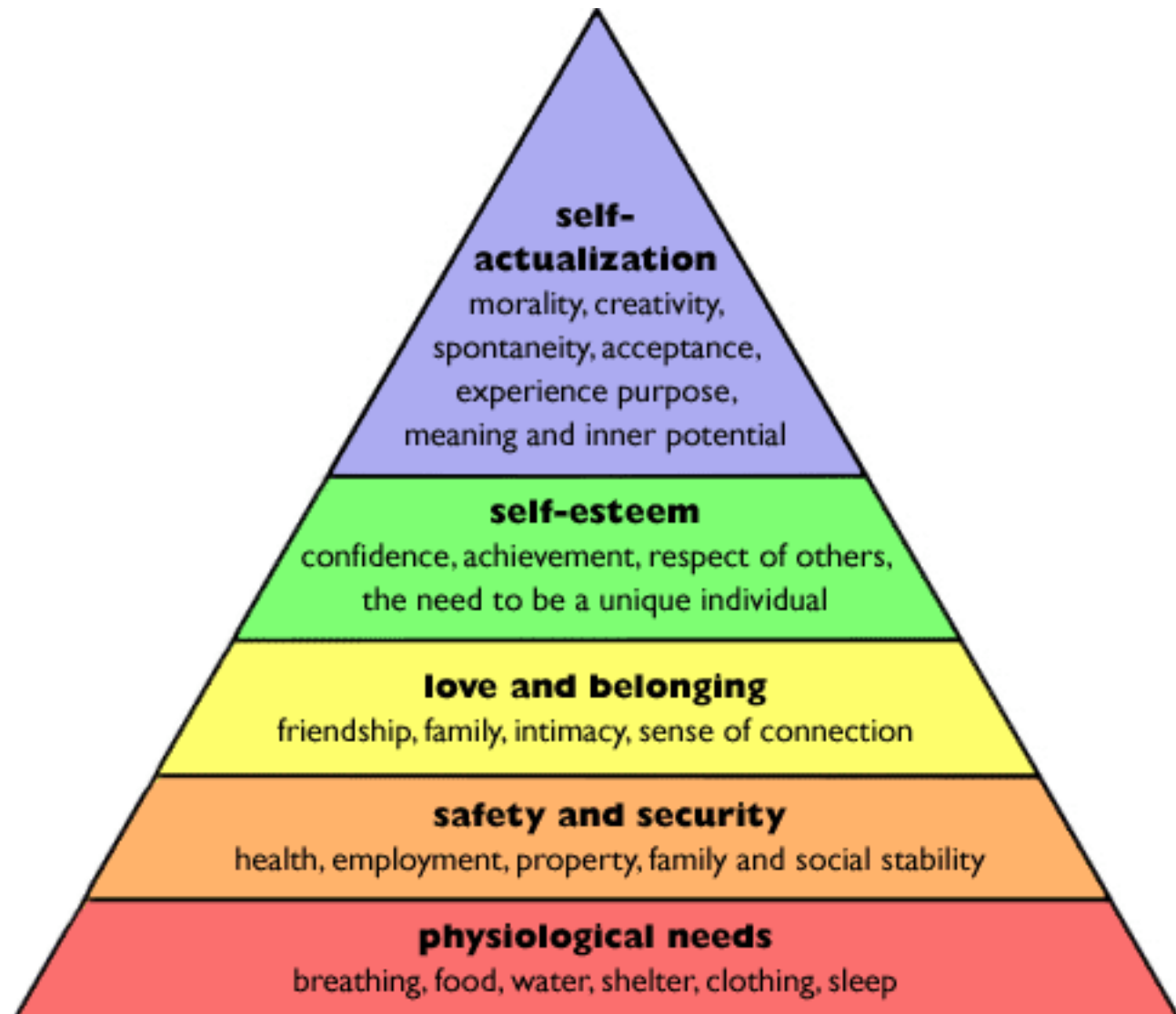
TECH

# Why the Vast Majority of Women in India Will Never Own a Smartphone

Technology, promoted as a social equalizer, is having the opposite effect in one of the world's largest markets



<https://www.wsj.com/articles/why-the-vast-majority-of-women-in-india-will-never-own-a-smartphone-1476351001>



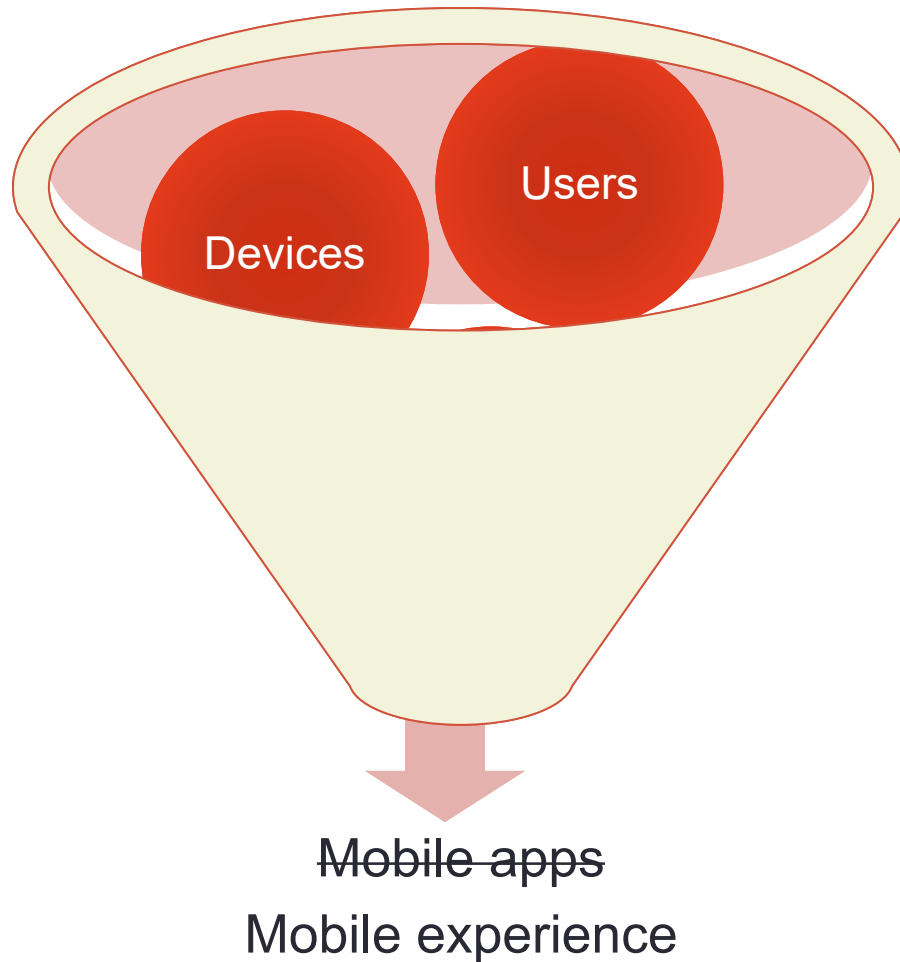


# African mobile market

> 650 million of subscribers



# Mobile development



Business models



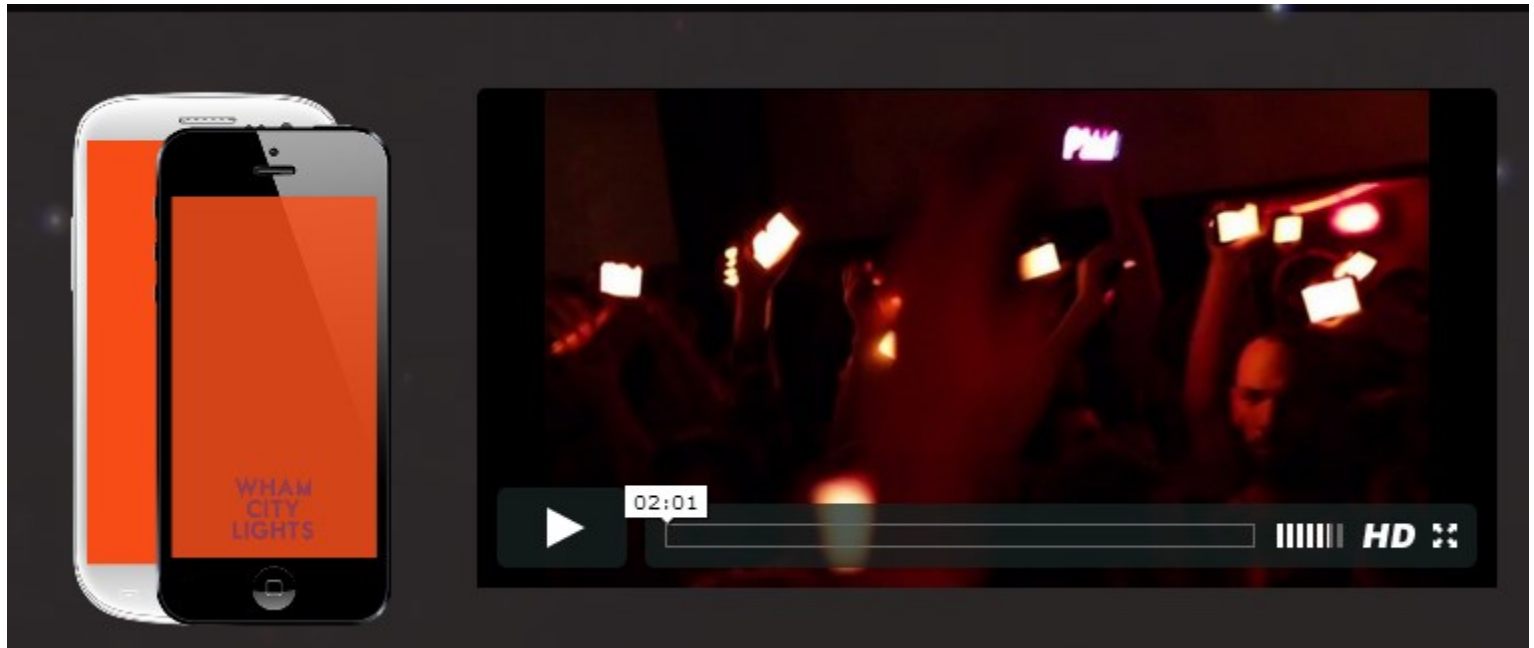
# iButterfly

- <http://youtu.be/vEE6M0iW-Nw>



# Wham City Lights

- <http://whamcitylights.com/>



# Angry Birds





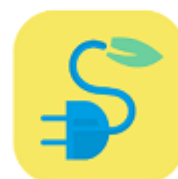
## 2014 Senegalese Apps Selection



## 2015 Senegalese Apps Selection



# Sélection des projets mobiles du Sénégal pour le World Summit Award Mobile 2016



**Jokko\$anté** Musik **Bi**

## Concours WSA pour le Sénégal Sélection 2017



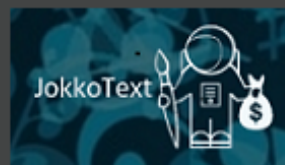
Business - Weebi

Environnement - Andando

Culture - JokkoText

Santé - Walùjigéen

Education - WoboT MWG





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**MOBILE4**  
SENEAL

Compétition Mobile mYouth 2.0

# Résultats

1



2



3



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**MOBILE4**  
SENEAL

Compétition Mobile mYouth 2.0

**MON  
MENU**



**SAMA-DOCTEUR**  
VOTRE MEDECIN A VOTRE PORTEE



# WHAT IS A SUCCESSFUL APP?

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# MOBILE DEVELOPMENT: HOW IS IT DIFFERENT? IS IT REALLY DIFFERENT?

- 
- Ecosystem
  - People
  - Devices
  - Platforms
  - Process
  - Usage
  - UI / UX
  - etc



## Android OS - The First 100 Devices



Acer E110 320x480, 3 mega pixels, 118g **Cer** E400 320x480, 3 mega pixels, 125g **Acer** S100 480x800, 5 mega pixels, 135g **Alcatel** OT-980 240x320, 2 mega pixels 155g **Apad** P7901a 800x480, Non-phone, 388g **Arcos** 51167 800x480, 182g **Arcos** 7 800x480, Non-phone, 388g **Barnes&Noble** Nook 600x800, Non-phone, 353g **Cincinnati Bell** Blaze 320x480, 5 mega pixels, 113g **Cydlie** M7 480x800, 480g



**Dell Aero** 360x640, 5 mega pixels, 105g **ell Mini** 5 480x854, Non-phone, 220g **Eken M001** 800x480, Non-phone, 350g **Eken M003** 600x800, 590g **Garmin A10** 320x480, 5 mega pixels, 130g **Garmin A50** 320x480, 3 mega pixels, 0g **General Mobile DSTL1** 240x400, 5 mega pixels, 135g **Haipad M701** 800x480, 350g **HTC Aria** 320x480, 5 mega pixels, 115g **HTC Desire** 480x800, 5 mega pixels, 130g



HTC Desire HD 480x800, 8 mega pixels, 164g HTC Droid Eris 320x480, 5 mega pixels, 120g HTC Espresso 320x480, 5 mega pixels, 167g HTC EVO 4G 480x800, 8 mega pixels, 170g HTC G1 320x480, 3 mega pixels, 159g HTC G2 320x480, 3 mega pixels, 118g HTC G2 Touch 320x480, 5 mega pixels, 135g HTC Incredible 480x800, 8 mega pixels, 130g HTC Legend 320x480, 5 mega pixels, 126g HTC Liberty 320x480, 5 mega pixels, 113g



HTC Nexus One 480x800, 5 mega pixels, 130g HTC Tattoo 320x480, 3 mega pixls, 113g HTC Wildfire 240x320, 5 mega pixels, 130g Huawei U7510 240x320, 2 mega pixels, 105g Huawei U8100 240x320, 3 mega pixels, 104g Huawei U8110 240x320, 3 mega pixels, 110g Huawei U8220 320x480, 3 mega pixels, 130g Huawei U8230 320x480, 3 mega pixels, 130g Huawei VB45 240x320, 3 mega pixels, 115g i-mobile 6010 240x400, 3 mega pixels, 106g



i-mobile i858 480x800, 5 mega pixels, 164g **Kyocera M6000** 480x800, 3 mega pixels, 109g **Kyocera Zio** 480x800, 3 mega pixels, 105g **LG Ally** 480x800, 3 mega pixels, 159g **LG GT540** 240x400, 3 mega pixels, 115g **LG GW820** 320x480, 5 mega pixels, 139g **LG KH520** 320x480, 2 mega pixels, 139g **LG LU2300** 480x800, 5 mega pixels, 128g **LG SU950** 480x640, 5 mega pixels, 135g **Motorola CLIQ XT** 320x480, 5 mega pixels, 131g



Motorola Dевeur 320x480, 3 mega pixels, 180g Motorola Droid 480x854, 5 mega pixels, 169g Motorola Droid X 480x854, 8 mega pixels, 140g Motorola Droid 2 480x854, 5 mega pixels, 169g Motorola Ii 320x480, 5 mega pixels, 131g Motorola MB200 320x480, 5 mega pixels, 165g Motorola MB300 320x480, 5 mega pixels, 165g Motorola MB502 320x240, 3 mega pixels, 110g Motorola MB511 320x240, 3 mega pixels, 120g Motorola XT502 320x480, 5 mega pixels, 113g



Motorola XT701 480x854, 8 mega pixels, 140g Motorola XT720 480x854, 8 mega pixels, 140g Motorola XT800 480x854, 5 mega pixels, 120g Motorola XT806 480x854, 5 mega pixels, 165g Nexian A690 , 5 mega pixels, 9g Orange Boston 320x480, 5 mega pixels, 118g Pantech 630 480x800, 5 mega pixels, 126g Pantech IM-A600 480x800, 5 mega pixels, 128g Pantech IM-A6505 480x800, 5 mega pixels, 114g Samsung Behold 2 320x480, 5 mega pixels, 119g



Samsung Galaxy S 480x800, 5 mega pixels, 120g Samsung Galaxy Tab 1024x600, Non-phone, 3 mega pixels, 380g Samsung Galaxy U 480x800, 5 mega pixels, 131g Samsung GT-I5500 240x320, 2 mega pixels, 102g Samsung GT-I5503 240x480, 2 mega pixels, 102g Samsung GT-I5700 320x480, 3 mega pixels, 120g Samsung GT-I5800 240x480, 3 mega pixels, 110g Samsung GT-I8520 480x800, 8 mega pixels, 156g Samsung I7500 320x480, 5 mega pixels, 114g Samsung M1000 480x800, 5 mega pixels, 128g



Samsung R880 320x480, 5 mega pixels, 140g Samsung SGH-I896 480x800, 5 mega pixels, 128g Samsung SHW-M110S 480x800, 5 mega pixels, 121g Samsung SPH-D700 480x800, 5 mega pixels, 155g Samsung SPH-M900 480x854, 5 mega pixels, 166g Samsung SPH-M910 240x400, 3 mega pixels, 138g Sharp IS01 960x480, 8g Sharp SH-I0B 960x480, 5 mega pixels, 230g SMTI DM-560 800x800, Non-phone, 388g SonyEricsson X10 480x854, 8 mega pixels, 135g

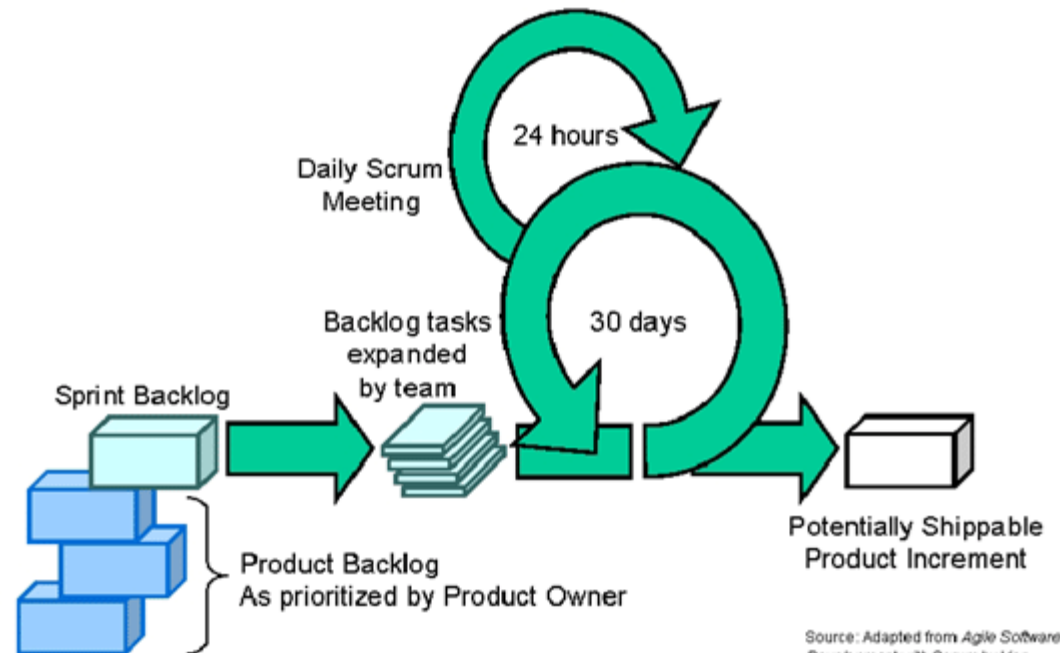
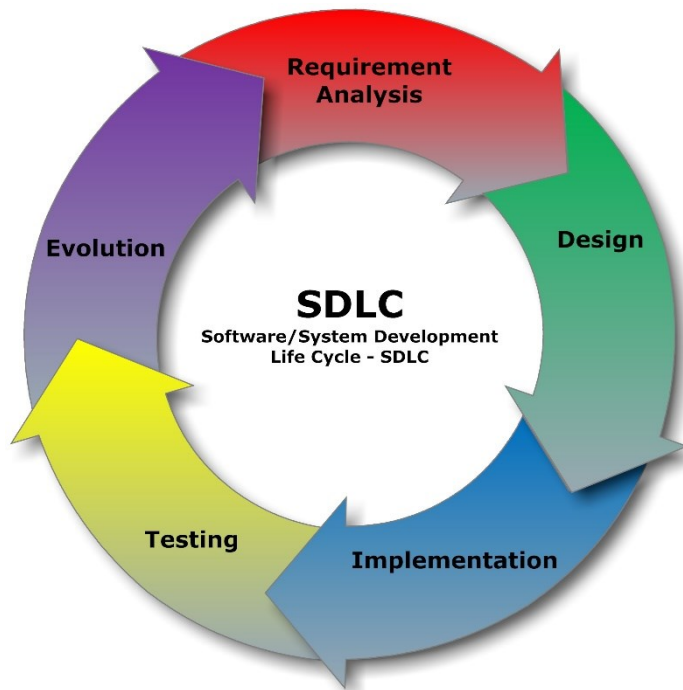


SonyEricsson X10 mini 240x320, 5 mega pixels, 120g SonyEricsson X10 mini pro 240x320, 5 mega pixels, 120g SonyEricsson X8 320x480, 3 mega pixels, 104g Spice M300 320x480, 5 mega pixels, 90g Vibo A688 320x480, 5 mega pixels, 90g Videocin V7500 320x480, 5 mega pixels, 114g Wellcom A600 480x800, Non-phone, 3 mega pixels, 90g Wellcom A68 320x480, 5 mega pixels, 114g Witstec AB1-E 800x480, Non-phone, 380g ZTE H850 240x320, 3 mega pixels, 100g

# Software development process

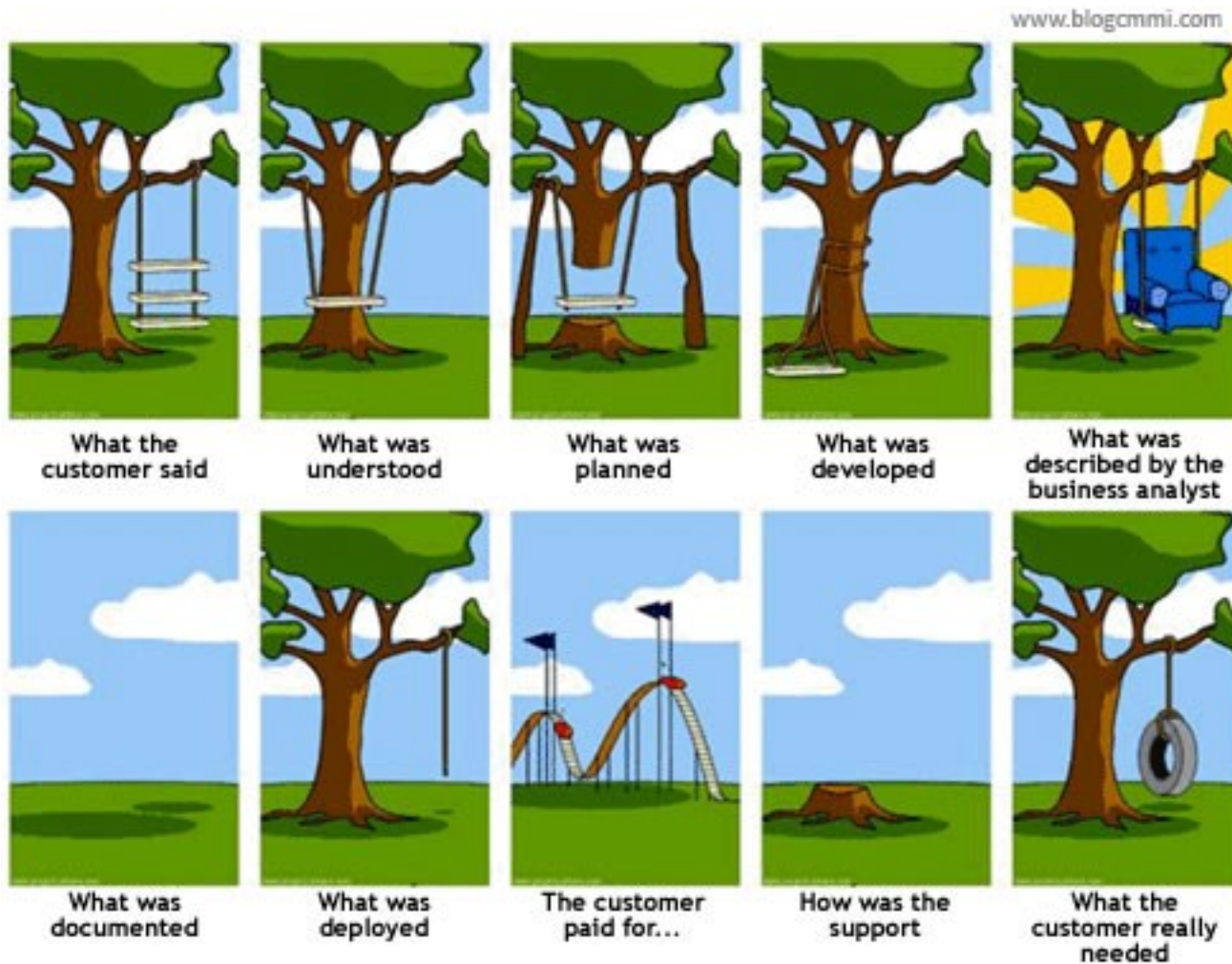
SDLC

Scrum



Source: Adapted from Agile Software Development with Scrum by Ken Schwaber and Mike Beedle.

# Communication is key!



# Testing and QA

- <https://code.facebook.com/posts/485459238254631/improving-facebook-on-android/>

**facebook code**

BLOGOPEN SOURCEEVENTSVIDEOSPUBLICATIONS

MobileWebDataInfraCulture

# Engineering Blog



Alex Sourov  
Engineering

## Improving Facebook on Android

POSTED ABOUT 3 MONTHS AGO  
MOBILE · ANDROID · INFRA · SEATTLE · LONDON

In an effort to connect the next five billion, Facebook began to shift to a mobile-first company about two years ago. We trained hundreds of employees on mobile development, restructured internal teams to build for all platforms, and moved to a fast-paced release cycle.

However, our mission extends far beyond building and delivering the best experience on high-end smartphones and LTE networks. We want Facebook to work for everyone – no matter the region, network condition, or mobile device.

To help accomplish this goal, a team of product managers and engineers traveled to Africa in 2013 to examine mobile performance in developing countries. We purchased several different Android handsets to test the latest version of the Facebook app – and the testing process proved to be difficult. The combination of an intermittent, low-bandwidth network connection and a lack of memory space on the devices resulted in slow load times and constant crashes. We even burned through our monthly data plans in 40 minutes.

# NATIVE VERSUS WEB

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# Native versus Web mobile development

- Native development
  - Develop using languages such as Java, Objective C etc that target a specific platform
  - Broader access to hardware features
  - Faster, more powerful, more integration hardware/platform
  - More attractive (native look and feel)
  - Latest innovations
  - Apps are installed on phones and released on the market
- Web development
  - Based on web technologies (HTML, CSS, and JavaScript)
  - Permits multi-platform development
  - Based on standards
  - Apps need to be packaged to be installed on a phone (e.g., PhoneGap) and released on the market
- Differences of capabilities between native and web apps is decreasing rapidly

The  
debate of  
the purists

# Native versus Web mobile development

	<b>User experience</b>	<b>Mobile intervention</b>	<b>Cost / time</b>
<b>Native</b>	+++	+++	-
<b>Web</b>	++	++	+++