



SingTel Learning Fiesta

2011

App
Development
in Android
Platform

By Timothy Mo, wGrow
Technologies Pte Ltd

Agenda

- About Us;
- Android OS versions & Mile Stones;
- Comparison with Other Platforms;
- Apps & Solutions: What Apps should we built?
- Pickup Android Development:
 - Development Environment;
 - Main Challenge;
 - Hello World Demo;
 - Simple UI & Web Service Demo;

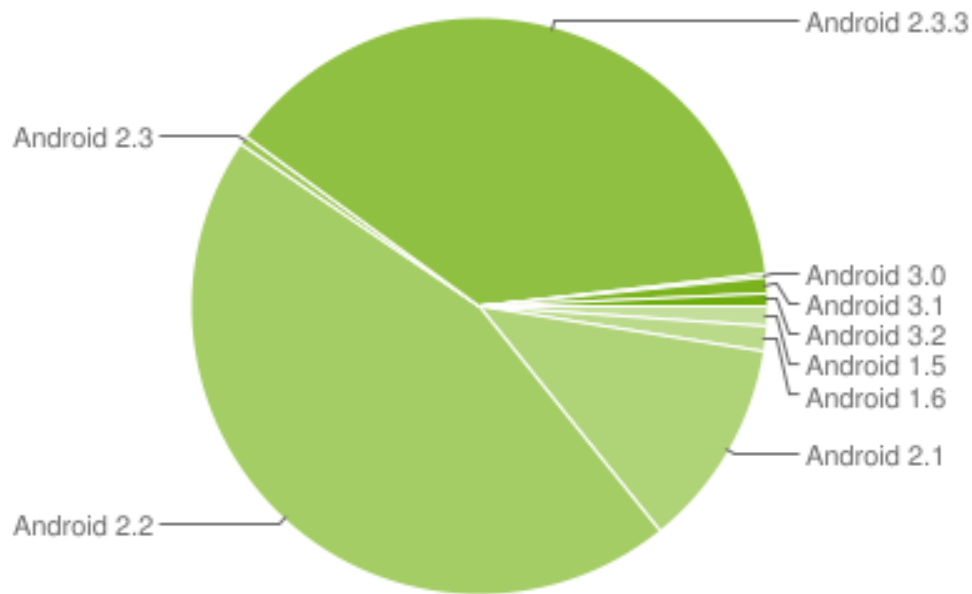
About Us

- Timothy Mo, graduated from SOC, NUS, 2002. Worked in NCS, Avanade. Involved in MediaCorp, Citibank & Singapore Tourism Board. Started wGrow in 2008. MCPD since 2007.
- wGrow Technologies Pte Ltd, focus on providing solution for SME. Provide corporate trainings: .NET, SPS, Android, iOS;

Android Versions (Oct 3, 2011)

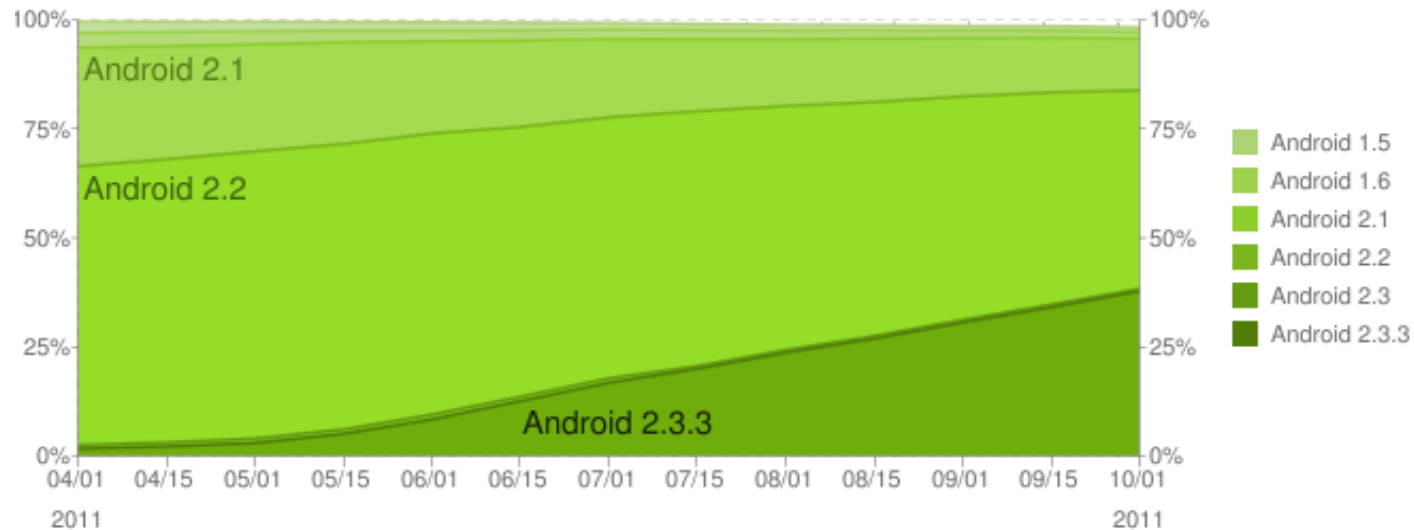
Platform	Codename	API Level	Distribution	Date
Android 1.5	Cupcake	3	1.1%	Apr 30, 2009
Android 1.6	Donut	4	1.4%	Sep 15, 2009
Android 2.1	Eclair	7	11.7%	Jan 12, 2010
Android 2.2	Froyo	8	45.3%	May 20, 2010
Android 2.3 - Android 2.3.2	Gingerbread	9	0.5%	Dec 6, 2010
Android 2.3.3 - Android 2.3.7		10	38.2%	
Android 3.0	Honeycomb	11	0.2%	Feb 22, 2011
Android 3.1		12	0.9%	May 10, 2011
Android 3.2		13	0.7%	Jul 15, 2011
Android 4.0	Ice Cream Sandwich	14	-	Oct 19, 2011

Android Versions (Oct 3, 2011)



- Ref: <http://developer.android.com/resources/dashboard/platform-versions.html>

Android Versions (Oct 3, 2011)



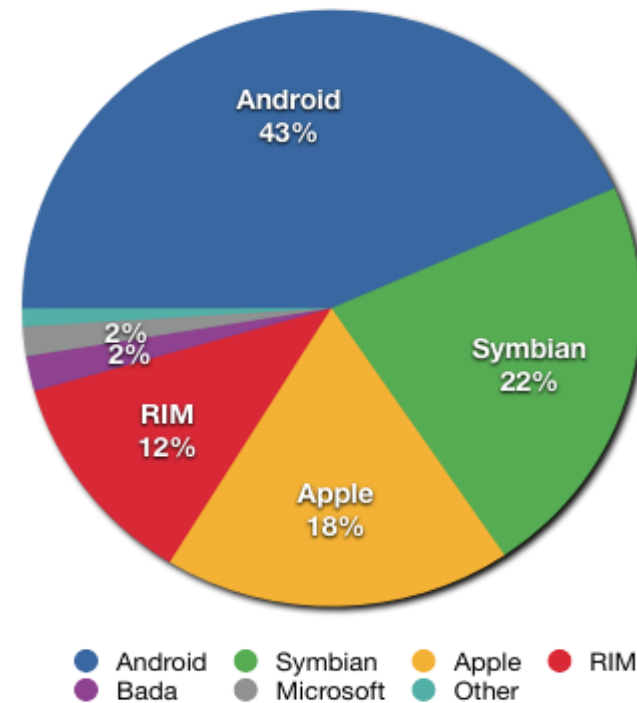
- Ref: <http://developer.android.com/resources/dashboard/platform-versions.html>

Android Major Milestones

- V1.5: Voice input; Widgets Framework; Support “normal screen size” & medium density (*mdpi*) only;
- V1.6: text-to-speech; Multi-screens support; Hardware control; VPN;
- V2.1: Multi-accts; Exchange;
- V2.2: Install into SD; tethering; Support for extra high PPI screens (320 ppi);
- V2.3: NFC;
- V3.0+: Design for Tablet; External keyboard;
- V3.2: New layout;
- V4.0: combination of Gingerbread and Honeycomb

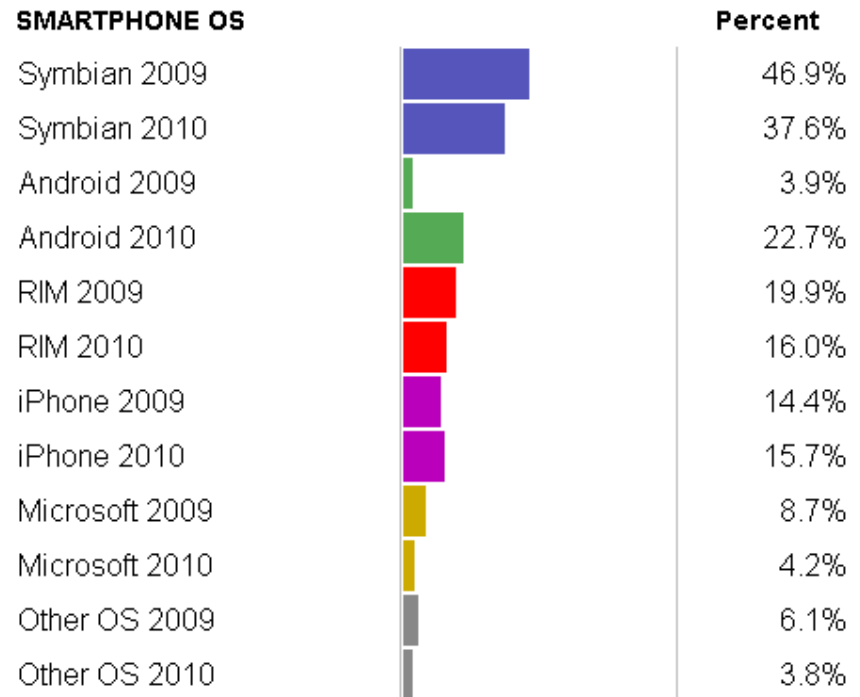
Android & Other platforms

- Smartphone market share;
- By Gartner's report, 2011 Q2;



Android & Other platforms

- By Gartner's report



Android & Others

Strength	Weakness
<ul style="list-style-type: none">• Open platform;• Able to program and deploy without much limitation;• Devices cost less;• One system most close to Windows;	<ul style="list-style-type: none">• Too many versions & too many devices;• Difficult to program for;• Vulnerable to malicious apps;• A bit unstable (due to apps & hardware);• Resource allocation;

Business Apps Development

- Why mobile platform:
 - Mobile & Portable;
 - Instant ON;
 - Location Based Service;
 - Long lasting battery (Tablets);
 - Compatible with most of existing systems;

Business Apps Development

- Normally Apps (not games) are not standalone apps: an extension (or additional client) for a system:
 - CRM;
 - ERP;
 - HRM;
 - POS;
 - Video streaming clients;
 - News readers;
 - Order clients/menu;
 - Lots more ...
- At least utilize one of the features mentioned earlier;

Android Mobile Application Development

Multimedia
applications



Utility
applications



Travel
applications



Web based
applications



Enterprise
applications



Entertainment
applications



Social
Networking
applications



Location-
based
applications



Games



Business Apps Development

- Simple cases:
 - CRM client for SingTel shops:
Pull out clients' details easily from database while talking to customers in the shop;
 - LBS Queue:
Customers join nearby queue using LBS feature; Get alerted when near serving time; Cut waiting space; Increase customer satisfaction;
 - Many more ... business needs driven.

Development Environment



Development Environment

- Android ADT:
<http://developer.android.com/sdk/eclipse-e-adt.html>
- Eclipse Classic:
<http://www.eclipse.org/downloads>

App Development Process

Setup Development Environment

Create Android Emulator

Create Project

Create Attributes, UI, Codes

Compile release mode

Sign with private key

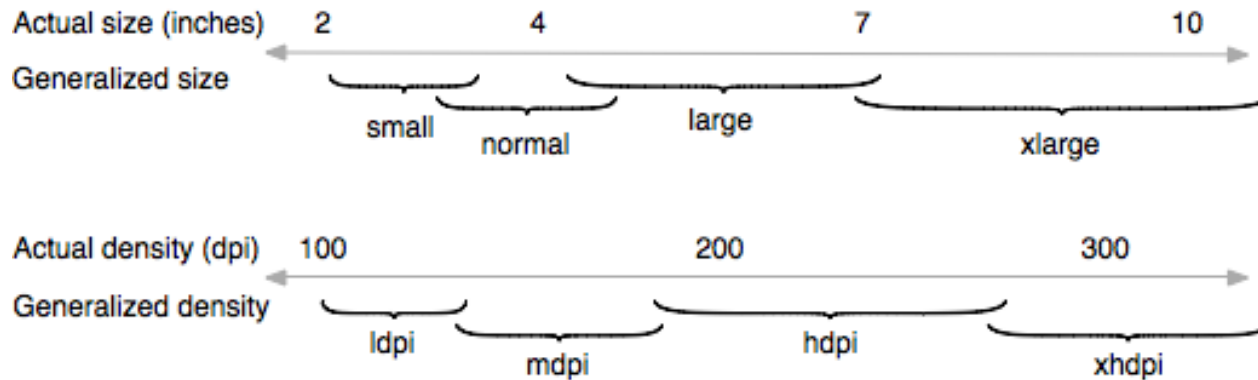
Upload to market place

Or upload to file server for download

Screen size & PPI

- Starting with Android 1.6 (API Level 4), Android provides support for multiple screen sizes and densities;
- Differences between: V1.5; V1.6; V3.2;
- Very important to understand Android Strategy for multi-screen sizes and PPI (Pixel density);
- Four sizes: small, normal, large, xlarge;
- Four densities: ldpi (low), mdpi (medium), hdpi (high), and xhdpi (extra high)

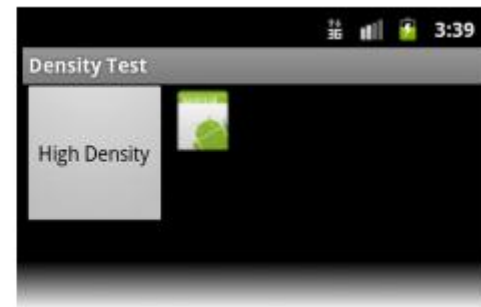
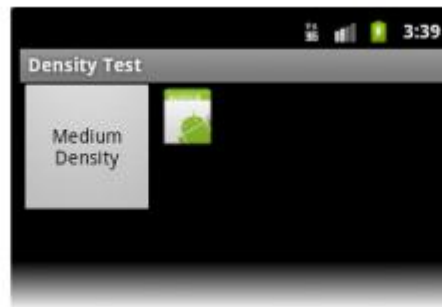
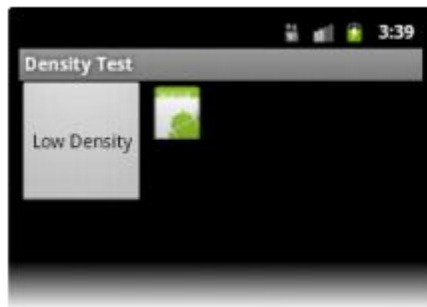
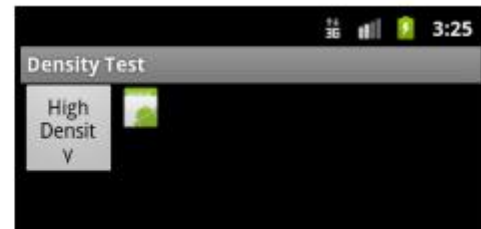
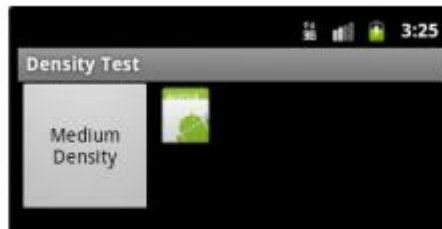
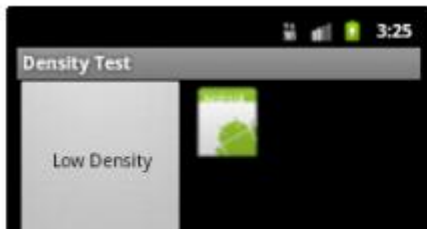
Screen size & PPI



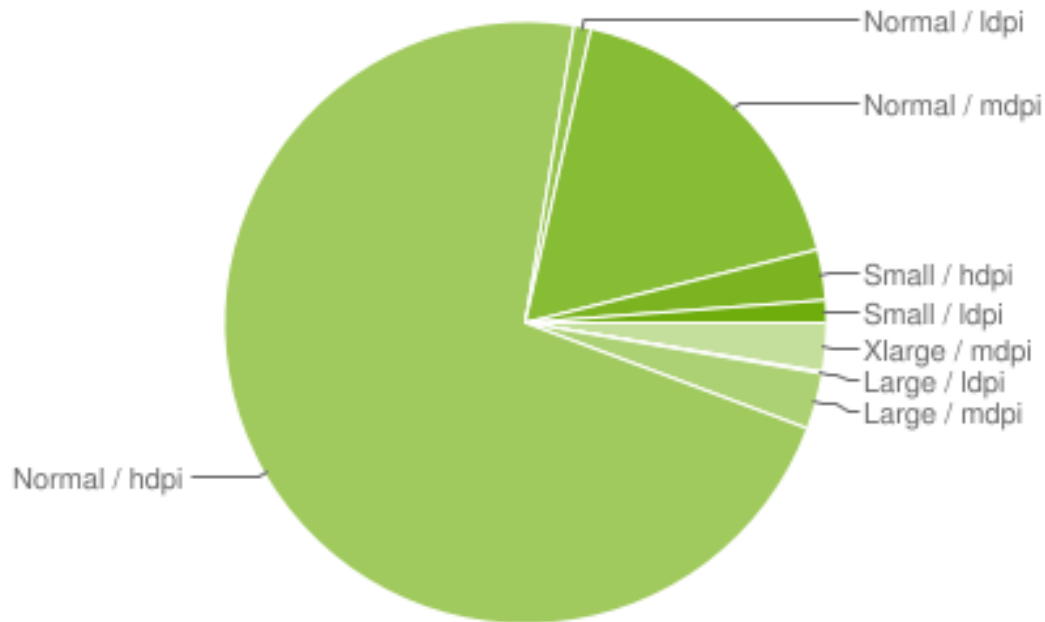
- xlarge screens are at least 960dp x 720dp
- large screens are at least 640dp x 480dp
- normal screens are at least 470dp x 320dp
- small screens are at least 426dp x 320dp

Screen size & PPI

- Declare in the manifest for supported screen sizes;
- Diff layouts for diff sizes & Diff bitmap images for diff densities;
- Density independence;



Screen size & PPI (October 3, 2011)



- Ref: <http://developer.android.com/resources/dashboard/screens.html>

Screen size & PPI (October 3, 2011)

	ldpi	mdpi	hdpi	xhdpi
small	1.2%		2.7%	
normal	0.9%	17.6%	71.9%	
large	0.1%	3.0%		
xlarge		2.6%		

Android components

- **Activities:**
An *activity* represents a single screen with a user interface;
- **Services:**
A *service* is a component that runs in the background;
- **Content providers:**
A *content provider* manages a shared set of application data;
- **Broadcast receivers:**
A component that responds to system-wide broadcast announcements;
- **Manifest File:**
AndroidManifest.xml, app setting file;

Development DEMO

- Hello World, in various ways
- Web Service (JSON) Consumption and Image Slide Show

About Our Training

- 3 Days;
- Target developers with experiences in Java or C#;
- Hands-on training by working various sample codes, covering major Android features: Interface & view; Inter process communication; SQLite; Threading; Services; Networking; LBS & Sensors; Testing & Publishing;
- Please contact SingTel Learning Centre for details;

Q & A

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