Mobile Cloud

Speakers

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Overview

- Brief introduction about mobile evolution
- The cloud and the "mobile world"
- Major mobile platforms and their cloud services
- Developing for the cloud
- Android platform
- Android Workshop (yes we build an app!)

Mobile (r)evolution!

- Mobile devices are no longer "simple telephone". They are SMART!
- Almost all new smartphones have wifi, geolocalization system (GPS), browser, camera, multimedia readers, etc...

Major mobile platforms:

- iOS (Apple)
- Windows Phone (Microsoft)
- Bada (Samsung), Symbian (Nokia), etc ..
- Android (Google)

The cloud in the mobile world

- The cloud offers an invisible infrastructure capable to deliver some services (SaaS)
- Some services you are using on a smartphone, are based on a cloud service (ex: email, storaging, etc...)
- If the cloud handle user data, all his information can be accessed everywhere and every time
- Documents, emails, images and many other data types, can be accessed even if mobile devices get broken or get lost

The cloud in the mobile world

- The cloud offers high computational power so it can deliver some special services not usable in other way

- You can use cloud map application to calculate quickly the shortest path from place A to place B

- A device can records someone speaking in a different language and then send all raw data to a cloud service that takes care of translation (online translation is still in beta...but not for a awhile)

- Cloud companies ensure availability, integrity, confidence and backup operation; the "only" problem is that you must trust them (warning: Linkedin)

iOS platform

- All apps are developed with Objective-C language
- To develop an apps, you should use an SDK that is available only on Mac OSX system, so you should buy an Apple Mac
- You can download a free copy of Xcode (IDE) to develop your apps...
- ...but to distribute or **test** your apps on a real device, you need to pay $99 as fees per developer license each year (Apple Developer Program)
- For paid apps submitted in the AppStore, Apple will take 30% of the revenue
- Apple will do many controls on your app before publish it in order to "approve" your app

iOS and iCloud

- iCloud is the Apple cloud solution connected to your Apple devices (Mac, iPhone and iPad)
- Storaging for all of your documents, videos, images and music
- Extended services like file versioning (documents) and content delivery (images and videos push in all of your devices)
- Integrated backup system in iOS so every device backup will be push to iCloud storage
- Some other services like "Find my Phone / Mac" so you can retrieve your device if it get lost

Windows Phone

- Based on Microsoft platform
- Successor of Windows Mobile with intention to integrate the mobile environment with desktop environment (Windows 8)
- Developement tool (free) Visual Studio .NET + Expression blend
- You will reuse your .NET / Silverligth / C# skills
- Market: "App Hub" $99 per year fee to sell apps, or 100 free apps upload with any cost or ... ehm.. the FAQ are quite complex ;)

Windows Phone and Microsoft Cloud

- Storaging cloud service for all documents, images, music and videos (SkyDrive)
- Documents creation and editing with Microsoft Office 365 cloud service that is available also for mobile devices (Microsoft Office Web Apps)
- Capability to develop application that can be deployed to Microsoft Windows Azure cloud platform; our personal application can run in a cloud environment so every smartphone can use it
- Microsoft Dynamics let you to use a Customer Relationship Management software (CRM) with mobile devices

Android

- The entire operative system and all built-in and third party apps are built with Java language
- Eclipse is the most supported IDE thanks to a plugin with an SDK and virtual devices managers
- The SDK is open source and is available for every main operative systems
- No license fees, no certification or registration required to develop your apps
- More details later ...

Android and Google Cloud

- Google Drive, also, offers an online data storaging and documents creation; you can create documents, spreadsheets, presentations and other things with advanced collaborative features (this presentation resides in Google Drive)

- Device and application backup can be pushed on Google Cloud to restore all configuration in other Android devices (ex: Android tablets)

- It integrates your mobile devices with Google Maps service enabling an online navigation system

- With Google App Engine, you can build powerful application using Java, JVM-compatibles (Groovy, Scala) or Python languages; you can even use Google BigTable data structures

Into the cloud: Google Goggles

- It's a powerful "visual search"
- You can take a picture of somethings like a books, landscapes, pictures and Google will tell you "what's this" and some other useful information
- A great feature is that you can take a picture of some text written in a different language and translate it to your mother language
- All these features are only available if you can use a huge and powerful cloud infrastructure; without a cloud and integrated services like search engine and translator, it's not possible to make things work!

Developing for the cloud

- A developer can build applications using only hardware and data resources offered by a single device... it can be a huge limit!
- Some services cannot exists without an infrastructure that collect and share data to everyone who is "connected" (ex: FourSquare or Twitter)
- Cloud companies offer their infrastructure or platform as a service (ex: Amazon, Google App Engine, Red Hat OpenShift etc...)
- Sometimes, we should build apps that use data or computational power offered by a cloud (ex: Google Maps)
- We can build advanced mobile application that use the power of the cloud!

Why develop in a mobile platform?

- The number of activated devices is around a billion and is still growing...
- It is estimated that many people will prefer to use a smartphone rather than a desktop or notebook computer to do some tasks (ex: check email, social activity etc...)
- The idea of telephone is drastically changed when they started to change people behaviour (ex: social activities)
- Market?

Why develop in an Android platform?

- It's a powerful mobile framework
- Open source SDK
- Good documentation both technical and generic
- Growing community
- If we want to distribute our application in Google Play Store (Android Market), we need to make just one payment of 25$ for an unlimited number of application
- There are no complex system for app validation: most of "work" is delegated to the community

WAIT! It is possible to use Google API in order to integrate some Google services like Maps, Locale and many others!

What is Android?

- It's based on kernel Linux 2.6 and on 3.x from Ice Cream Sandwich version (Android > 4.0)
- API used to build the Android system are the same that are used by developer
- almost all of basic components can be replaced with your or 3rd party application (ex: Skype, Viber, WhatsApp, etc..). There are some exception to avoid security issues.
- the code is open source released as Apache License 2.0 so telephone vendor doesn't need to pay royalties in order to use this operative system in their devices

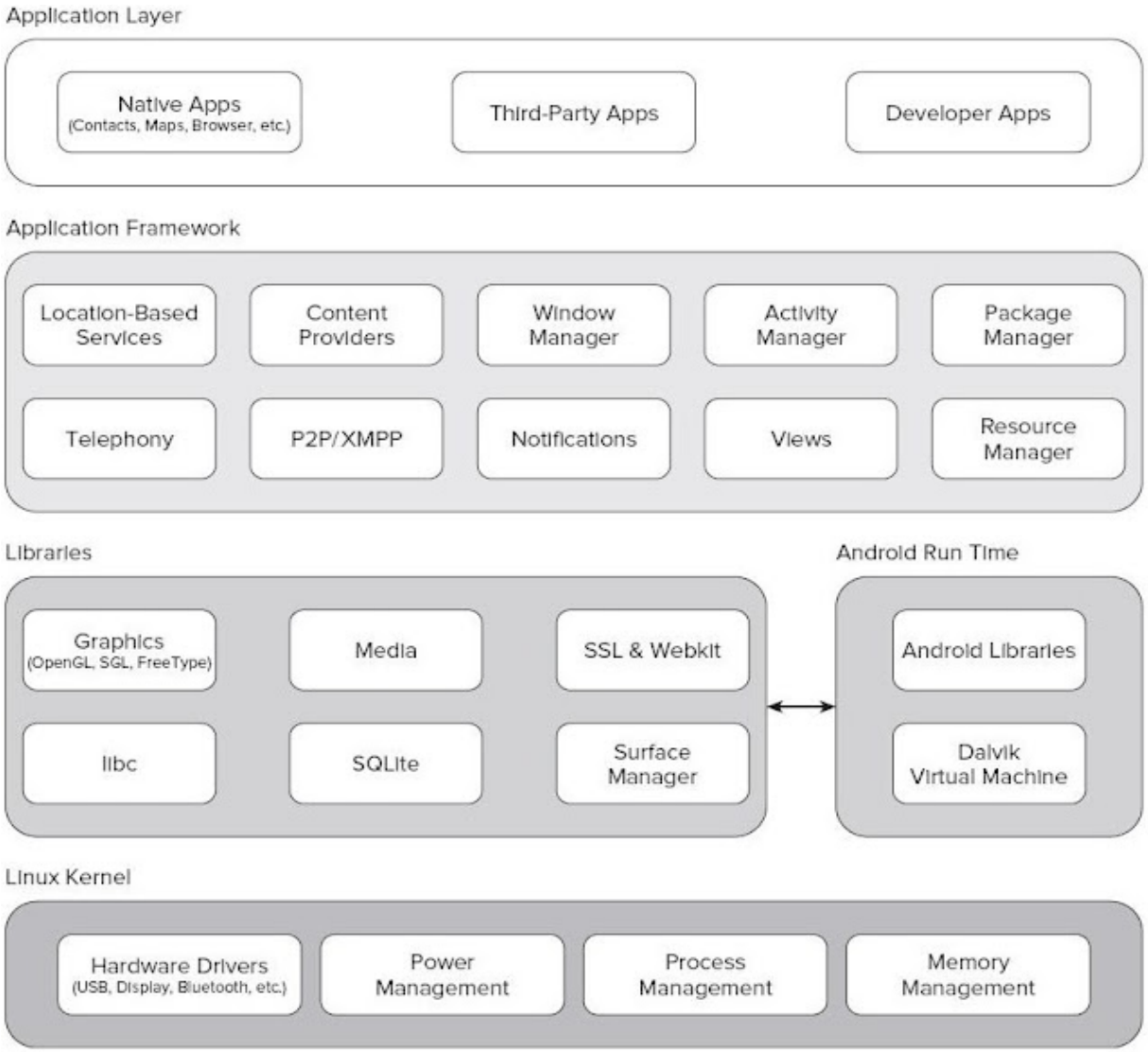
The history of Android

- Google acquired Android Inc. in 2005
- In 2007 born the Open Handest Alliance (OHA): Motorola to Samsung, Vodafone T-Mobile, Intel from Texas Instruments
- Target: open platform with no brakes and limits (royalty!)
- Just in 2007 the first SDK (a sort of beta)
- In 2008, the first 'real' device: the T-Mobile HTC G1
- End of 2008 Google sells for $ 400 the "Dev Phone 1", to test the development and use of any app with no limit of data from phone operators
- Curiosity: the ver. 1.1 forcing devices to have a physical keyboard!
- Virtual keyboard in 1.5 (April 2009)
- 2.0 in 10/2009
- 2.3 in 12/2010: added support for XL screens (WXGA and above)
- 3.0 in 02/2011: optimized version for the tablet, new UI, hardware acceleration and multi-core processors support
- 4.0 in 10/2011: UI completely redesigned to integrate smart phones and tablet and a sea of system improvements
- 4.1 Jelly Bean: SDK is already available; the new version will be widespread in the mid of july

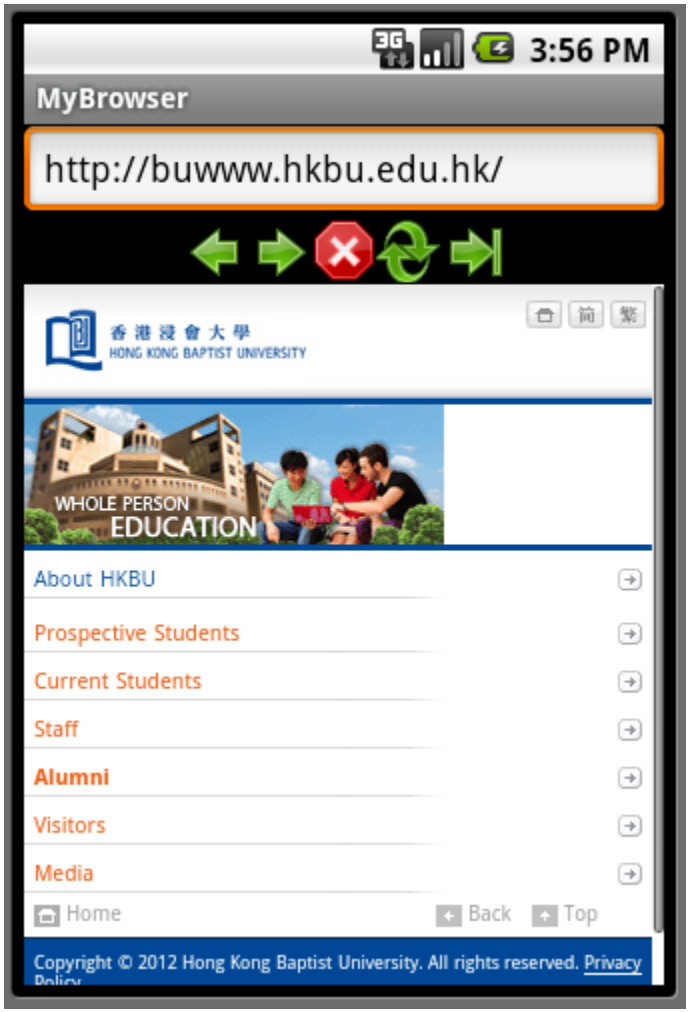
Android and Java

- With Java there was no need to rewrite everything from scratch (language specification, compiler, debbugger, etc..)
- Developers already have most of the required skills
- Java philosophy is perfectly in keeping with the heterogeneous world of mobile (write one run everywhere)
- Not using Java Micro Edition (J2ME) cause of royalty and performance indicator (it's 10 years old!) => **Dalvik VM!**
- There are several standard Java lib (not AWT and Swing)

Android Architecture



Let's create our Android app!



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Credits

- Book: "Professional Android 4 Development" [Reto Meier, Google Inc.]
- http://www.wikipedia.org
- http://juku.it/articles/mobile-e-cloud-computing.html
- http://developer.android.com
- http://create.msdn.com
- https://developer.apple.com

Thanks you all!