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Platform Presentation

Second Week

Android Platform Team
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Introduction

TEAM MEMBERS

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Main topics

1. Introduction
2. Platform
3. Software development
4. Overall evaluation

Intensive Programme

1. Introduction (1)

What is Android?

- A software platform and operating system for mobile devices
- Based on the Linux kernel
- Developed by Google and later the Open Handset Alliance (OHA)
- Allows writing managed code in the Java language
- Possibility to write applications in other languages and compiling it to ARM native code (support of Google? No)
- Unveiling of the Android platform was announced on 5 November 2007 with the founding of OHA

1. Introduction (2)

What is the Open Handset Alliance (OHA)? (1)

→ It's a consortium of several companies

1. Introduction (3)

What is the Open Handset Alliance (OHA)? (2)

- Devoted to advancing open standards for mobile devices
- Develop technologies that will significantly lower the cost of developing and distributing mobile devices and services

1. Introduction (4)

License

Android is under version 2 of the Apache Software License (ASL)

2. Platform (1)

2.1 Hardware

Android is not a single piece of hardware; it's a complete, end-to-end software platform that can be adapted to work on any number of hardware configurations. Everything is there, from the bootloader all the way up to the applications.

2. Platform (2)

2.2 Operating System(s)

- Android uses Linux for its device drivers, memory management, process management, and networking.
- The next level up contains the Android native libraries. They are all written in C/C++ internally, but you'll be calling them through Java interfaces. In this layer you can find the Surface Manager, 2D and 3D graphics, Media codecs, the SQL database (SQLite), and a native web browser engine (WebKit).
- Dalvik Virtual Machine. Dalvik runs dex files, which are coverted at compile time from standard class and jar files.

2. Platform (3)

2.3 Network Connectivity

It supports wireless communications using:

- GSM mobile-phone technology
- 3G
- Edge
- 802.11 Wi-Fi networks

2. Platform (4)

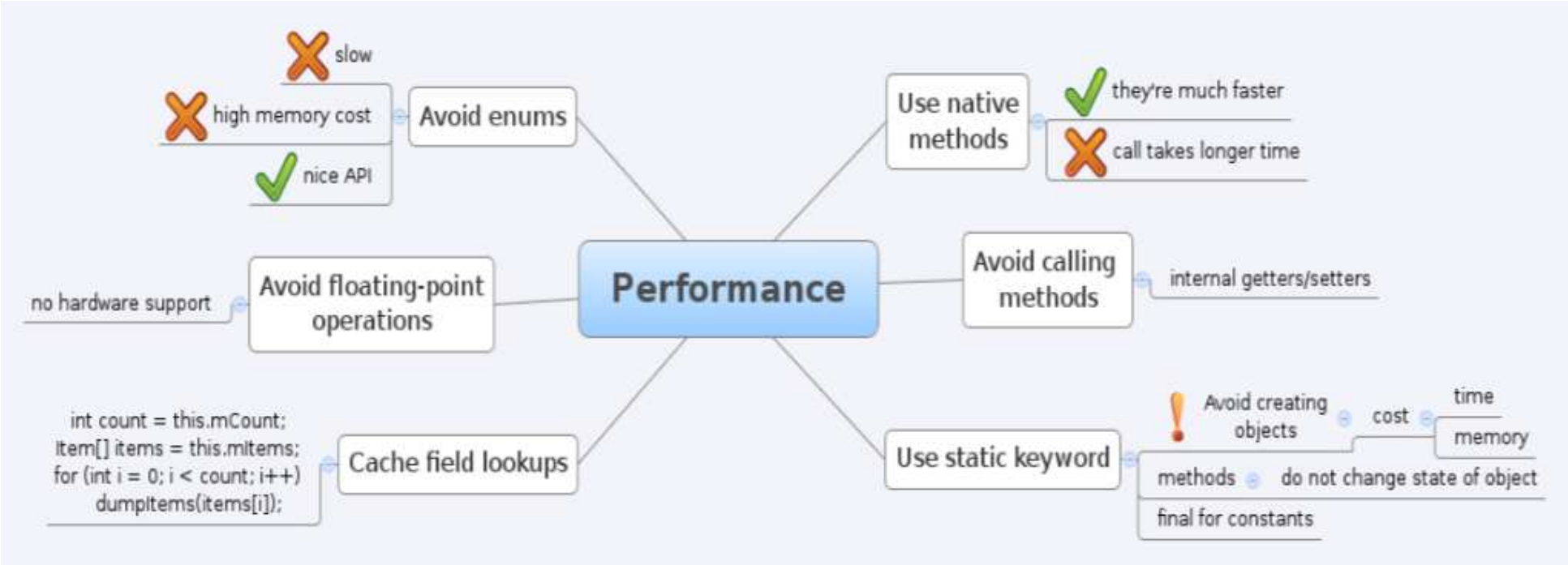
2.4 Security

Android is a multi-process system, in which each application (and parts of the system) runs in its own process. Most security between applications and the system is enforced at the process level through standard Linux facilities, such as user and group IDs that are assigned to applications.

Additional finer-grained security features are provided through a "permission" mechanism that enforces restrictions on the specific operations that a particular process can perform, and per-URI permissions for granting ad-hoc access to specific pieces of data.

2. Platform (5)

2.5 Performance



2. Platform (6)

2.6 Future possibilities

- Google Android Sales to Overtake iPhone in 2012
- The OHA is committed to make their vision a reality: to deploy the Android platform for every mobile operator, handset manufacturers and developers to build innovative devices
- Intel doesn’t want to lose ownership of the netbook market, so they need to prepare for anything, including Android
- Fujitsu launched an initiative to offer consulting and engineering expertise to help run Android on embedded hardware, which aside from cellphones, mobile internet devices, and portable media players, could include GPS devices, thin-client computers and set-top boxes.
- More Android devices are coming and some will push the envelope even further

3. Software development (1)

3.1 Development requirements

- Java
- Android SDK
- Eclipse IDE (optional)

3. Software development (2)

3.2 IDE and Tools

Android SDK

- Class Library
- Developer Tools
  - dx – Dalvik Cross-Assembler
  - aapt – Android Asset Packaging Tool
  - adb – Android Debug Bridge
  - ddms – Dalvik Debug Monitor Service
- Emulator and System Images
- Documentation and Sample Code

Eclipse IDE + ADT (Android Development Tools)

- Reduces Development and Testing Time
- Makes User Interface-Creation easier
- Makes Application Description Easier

3. Software development (3)

3.3 Programming Language(s)

- Java – officially supported
- C/C++ – also possible but not supported

4. Overall evaluation (1)

4.1 Advantages

There are a host of advantages that Google's Android will derive from being an **open source software.** Some of the advantages include:

- The ability for anyone to customize the Google Android platform
- The consumer will benefit from having a wide range of mobile applications to choose from since the monopoly will be broken by Google Android
- Men will be able to customize a mobile phones using Google Android platform like never before
- Features like weather details, opening screen, live RSS feeds and even the icons on the opening screen will be able to be customized
- As a result of many mobile phones carrying Google Android, companies will come up with such innovative products like the location
- In addition the entertainment functionalities will be taken a notch higher by Google Android being able to offer online real time multiplayer games

4. Overall evaluation (2)

4.2 Limitations

Bluetooth limitations

- Android doesn't support:
  - Bluetooth stereo
  - Contacts exchange
  - Modem pairing
  - Wireless keyboards

But it'll work with Bluetooth headsets, but that's about it

Firefox Mobile isn't coming to Android

Apps in Android Market need to be programmed with a custom form of Java

→ Mozilla and the Fennec won't have that

4. Overall evaluation (3)

4.3 Conclusion

We can only hope that the next versions of Android have overcome the actual limitations and that the future possibilities became a reality

Q & A

Any questions?

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