

Android

AN OPEN PLATFORM FOR MOBILE DEVELOPMENT



Agenda

Introdução

Detalhes de plataforma

Software development

Bibliografias

Tarefa

O que é o 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 code in the Java and C/C++ language;**

Put simply, Android is a combination of three components:

- **A free, open-source operating system for mobile devices**
- **An open-source development platform for creating mobile applications**
- **Devices, particularly mobile phones, that run the Android operating system and the applications**

What is the Open Handset Alliance (OHA)?

- It's a consortium of several companies
- Devoted to advancing open standards for mobile devices
- Develop technologies that will significantly lower the cost of developing and distributing mobile devices and services





2. Platform

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

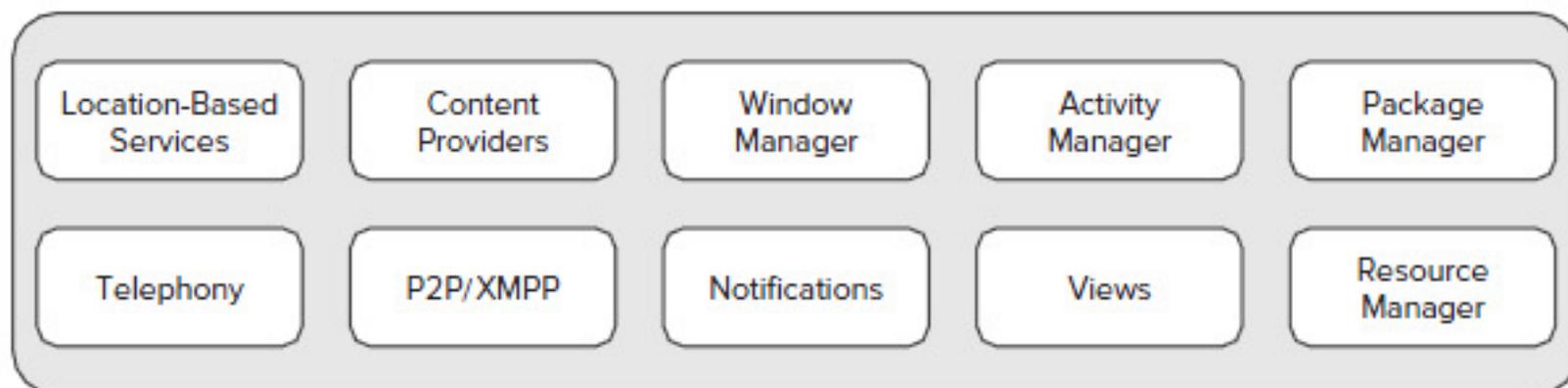
2.2 Operating System(s)

- 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).

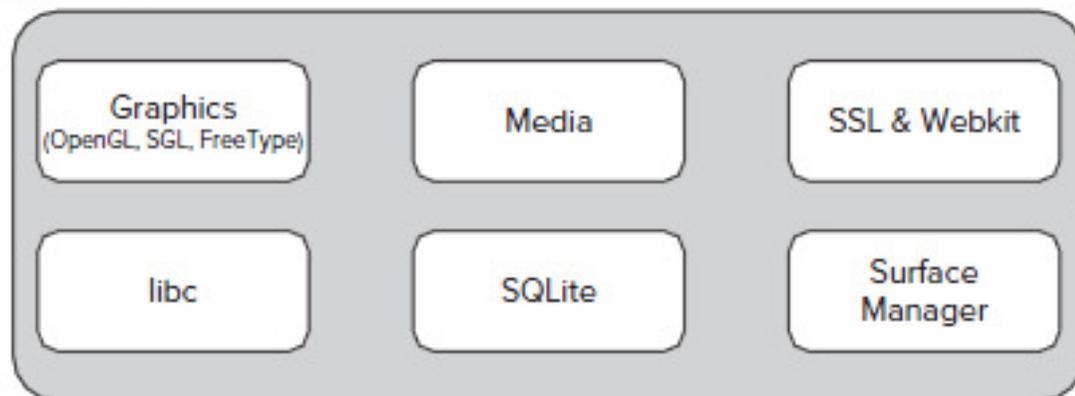
Application Layer



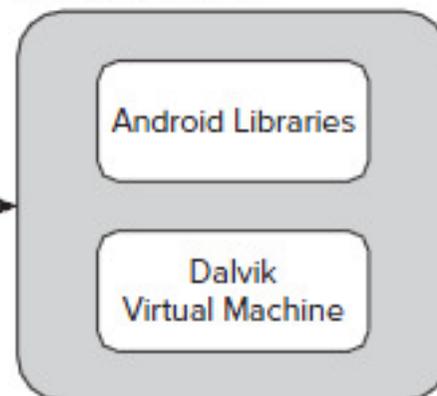
Application Framework



Libraries



Android Run Time



Linux Kernel





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.



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
- 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 (NDK)



Two major advantages:

- 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

NATIVE ANDROID APPLICATIONS

Android phones will normally come with a suite of generic preinstalled applications that are part of the Android Open Source Project (AOSP), including, but not necessarily limited to:

- An e-mail client
- An SMS management application
- A full PIM (personal information management) suite including a calendar and contacts list
- A WebKit-based web browser
- A music player and picture gallery
- A camera and video recording application

Calculator, An alarm clock

Bibliografias

Programming with the Google SDK



O'REILLY®

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Introducing Google's Mobile
Development Platform

Second Edition

Ed Burnette

ANDROID



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Reto Meier

Tarefa:

1) Instalar o SDK do Android, de acordo com <http://developer.android.com/sdk/index.html>

- É necessário ter uma máquina virtual java instalada.

2) Se quiser usar o Eclipse, as coisas ficam mais fáceis... instale o Android Development Tools (ADT) que é um plug-in para o Eclipse.

Tarefa:

3) Configure o AVD – Android Virtual Device

4) Crie e execute o projeto exemplo “Hello World”

<http://developer.android.com/resources/tutorials/hello-world.html>