# The Android Platform
- in a nutshell -

What is Android?

- **Android is an
  Operating system, middleware and includes
  some main applications***
  (current version 2.2)

- **Android is
  a project of the Open Hand Set Alliance**
  Platform: Apache Software licence 2.0 (ASL 2.0)
  Kernel: Free Software Foundation's General Public License 2 (GPLv2)**

- **Android is built on the Linux Kernel 2.6*****

Objectives of Android (simplified)

Business		
Time to market	HW Compatibility	App Store
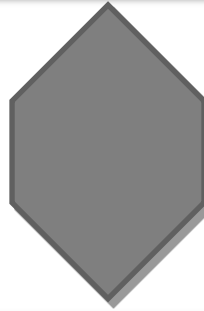
| Technology		
Existing Know How (Java, Linux, ..)	Open platform (Evolution, Popularity, Adaptation, …)	Reusability of components

Features*

- **Application framework**

- **Dalvik virtual machine**

- **Integrated browser (WebKit engine)**

- **Optimized graphics**
- **powered by a custom 2D graphics library**

- **3D graphics based on the OpenGL ES 1.0 specification (hardware acceleration optional)**

Features*

- **SQLite**

- **Media support** (MPEG4, H.264, MP3, AAC, AMR, JPG, PNG, GIF)

- **GSM Telephony** (HW dep.)

- **Bluetooth, EDGE, 3G, and WiFi** (HW dep.)

- **Camera, GPS, compass, and accelerometer** (HW dep.)

- **SDK** (emulator, tools for debugging, memory and performance profiling, and a plugin for the Eclipse IDE)
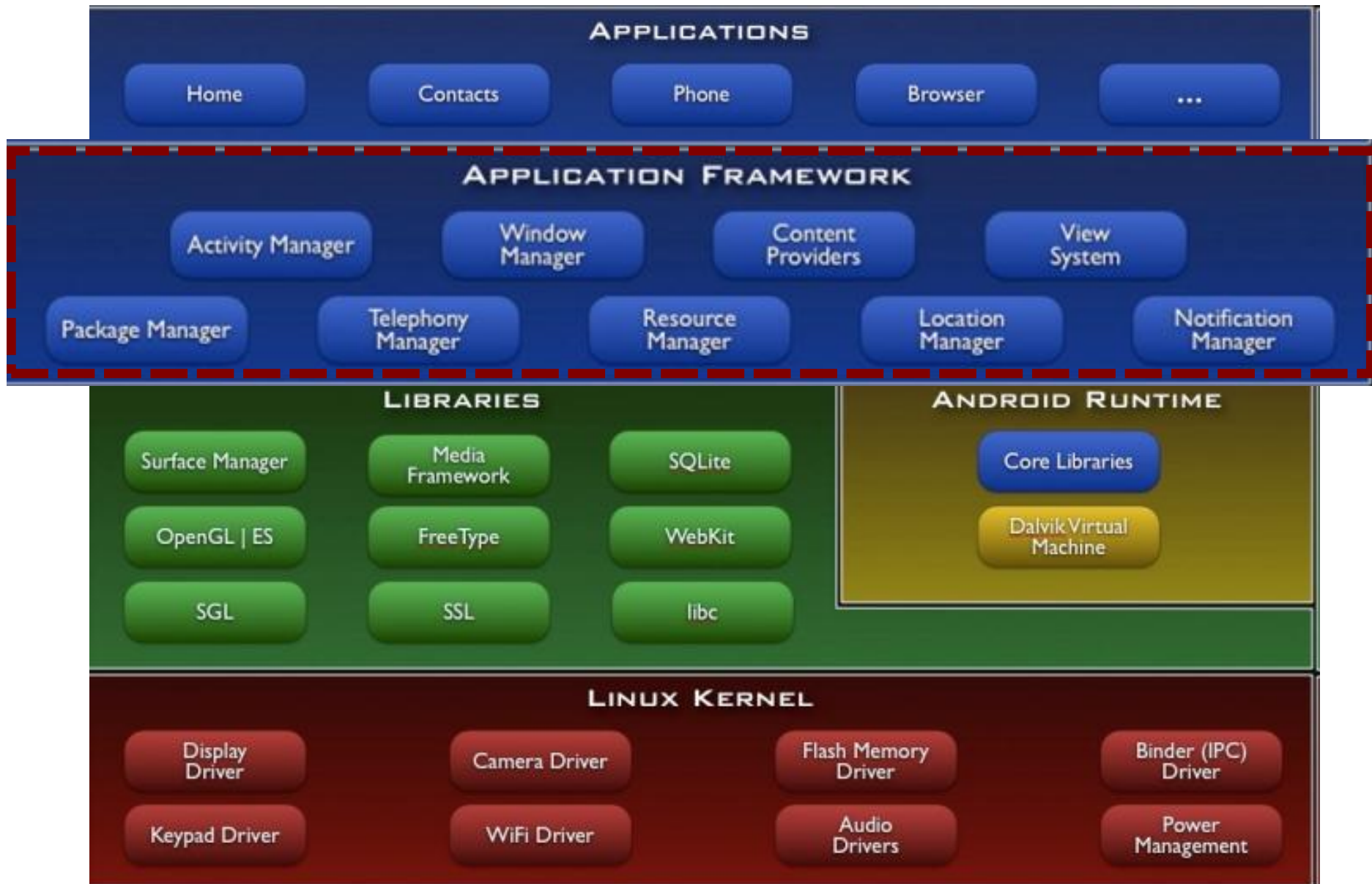
Architecture*
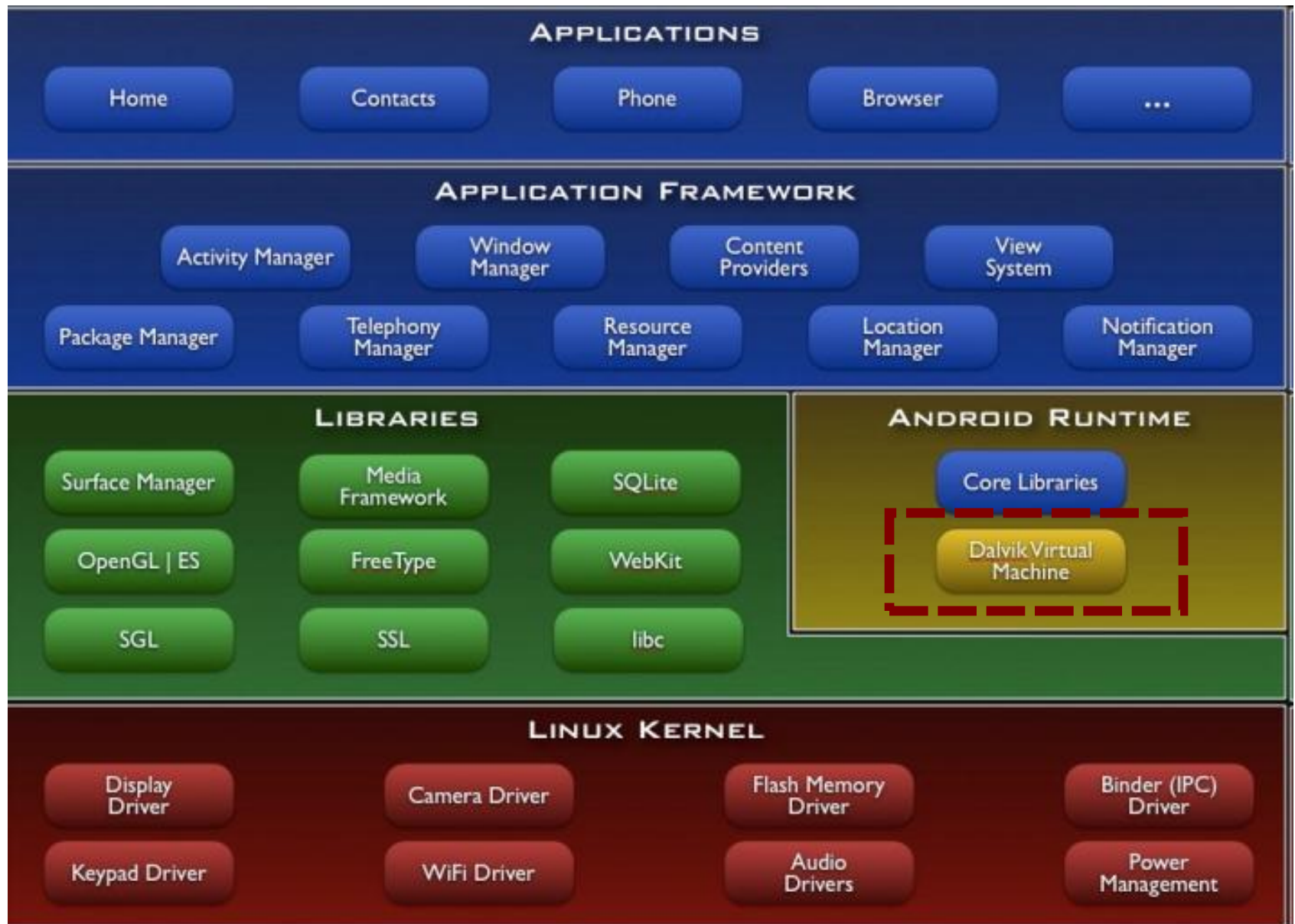
Dalvik Virtual Machine*

- **Register based VM which leverages many concepts from the *Harmony's* class library****

- **Optimized for low memory requirements**

- **Allows multiple VM instances to run at once**

- **Operates on *dex* (*Dalvik Executable*) bytecode, not *Java* bytecode**

- ***dex* files are zipped into a single *.apk* (*Android package*)**

Architecture*

APPLICATIONS
- Home
- Contacts
- Phone
- Browser
- ...

APPLICATION FRAMEWORK
- Activity Manager
- Window Manager
- Content Providers
- View System
- Package Manager
- Telephony Manager
- Resource Manager
- Location Manager
- Notification Manager

LIBRARIES
- Surface Manager
- Media Framework
- SQLite
- OpenGL | ES
- FreeType
- WebKit
- SGL
- SSL
- libc

ANDROID RUNTIME
- Core Libraries
- Dalvik Virtual Machine

LINUX KERNEL
- Display Driver
- Camera Driver
- Flash Memory Driver
- Binder (IPC) Driver
- Keypad Driver
- WiFi Driver
- Audio Drivers
- Power Management

Application Framework*

- **Activities**

- **Views**

- **Intents**

- **Content Provider**

- **Resource Manager**

- **Notification Manager**

Next steps...

Demo

Part I

Demo

Part II