

# **Chapter 1. Introduction**



---

TS. Nguyễn Hồng Quang  
Viện Công nghệ thông tin và Truyền thông  
Trường Đại học Bách Khoa Hà Nội



# Tài liệu tham khảo

---

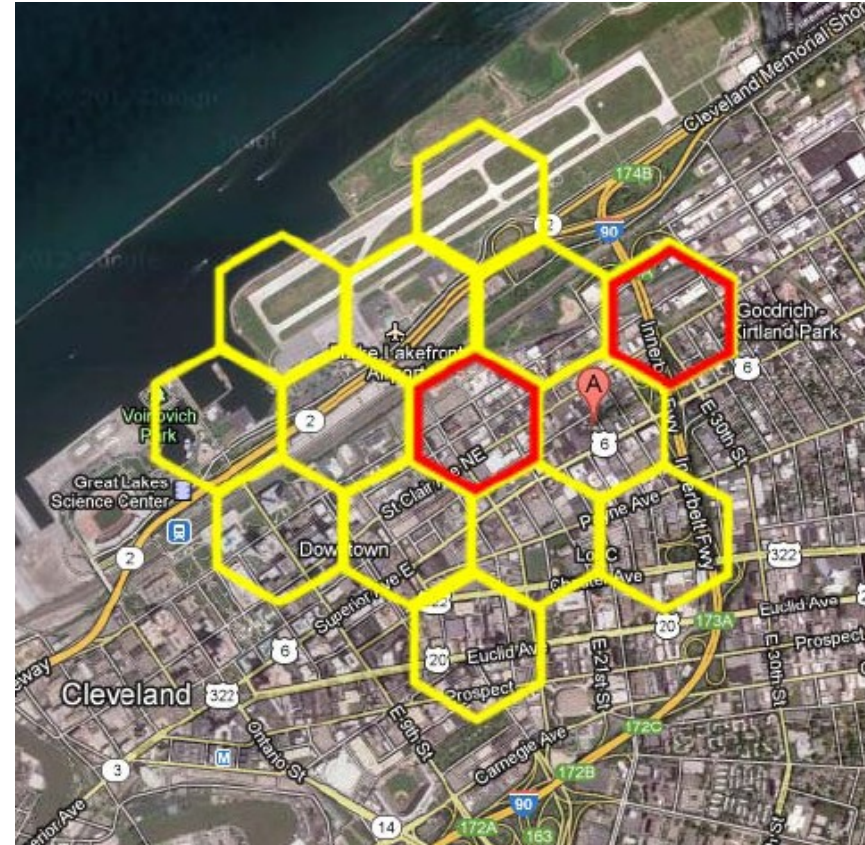
Mobile Application Development –  
Android OS, Victor Matos, Cleveland  
State University

# Hardware: Reusing Cell Phone Frequencies

## Base stations of the world, unite!

The main idea behind cellular communications is the division of a large city into small areas called cells each hosting a Base-Station. Base-Stations operate with just enough power to reach only the users inside their individual cells. Each hexagonal cell covers approx. 10 sq miles (26 km<sup>2</sup>)

Trạm thu phát sóng di động (Base Transceiver Station) sử dụng các máy phát công suất thấp, do đó các tần số có thể được sử dụng lại trong các ô (cell) không liền kề.





# What is Android?

---

- Android OS is an open-source Linux-based operating system for mobile devices.
- It is being developed by the Open Handset Alliance and Google Inc.
- The operating system has a number of native applications supporting telephony, messaging, emailing, contact management, calendar, entertainment, multimedia experience, location services, mapping, social interaction, etc.
- Third party Java developers can use the Android API to extend the functionality of the devices.
- Google provides an on-line electronic market for third-party developers to sell-distribute their custom applications.



# What is the Open Handset Alliance?

---

A consortium of 80+ technology and mobile business companies.

“ ... Today, there are 1.5 billion television sets in use around the world. 1 billion people are on the Internet. But nearly 3 billion people have a mobile phone, making it one of the world’s most successful consumer products...

Building a better mobile phone would enrich the lives of countless people across the globe.

The Open Handset Alliance is a group of mobile and technology leaders who share this vision for changing the mobile experience for consumers ...”

# Open Handset Alliance Members





# The Mobile Revolution

---

Dreaming aloud, I want my Smartphone to be ...

- |   |                                     |
|---|-------------------------------------|
| 1. Phone  | 15. Cash                            |
| 2. Pager  | 16. Cook, house chores              |
| 3. PDA Organizer  | 17. Psychologist / Mentor / Adviser |
| 4. High Quality Camera (still & video)                          | 18. Personal trainer                |
| 5. Portable music player  | 19. Dance instructor                |
| 6. Portable TV / Video Player / Radio                           | 20. ????                            |
| 7. Laptop   |                                     |
| 8. Play Station   |                                     |
| 9. GPS / Compass / Navigation (road & inside buildings)         |                                     |
| 10. Golf Caddy (ball retriever too)                             |                                     |
| 11. Book Reader (I don't read, It reads to me with passion!)    |                                     |
| 12. Electronic key (Car / Home / Office)                        |                                     |
| 13. Remote Control (Garage, TV, ...)                            |                                     |
| 14. Credit Card / Driver's License / Passport / Airplane Ticket |                                     |





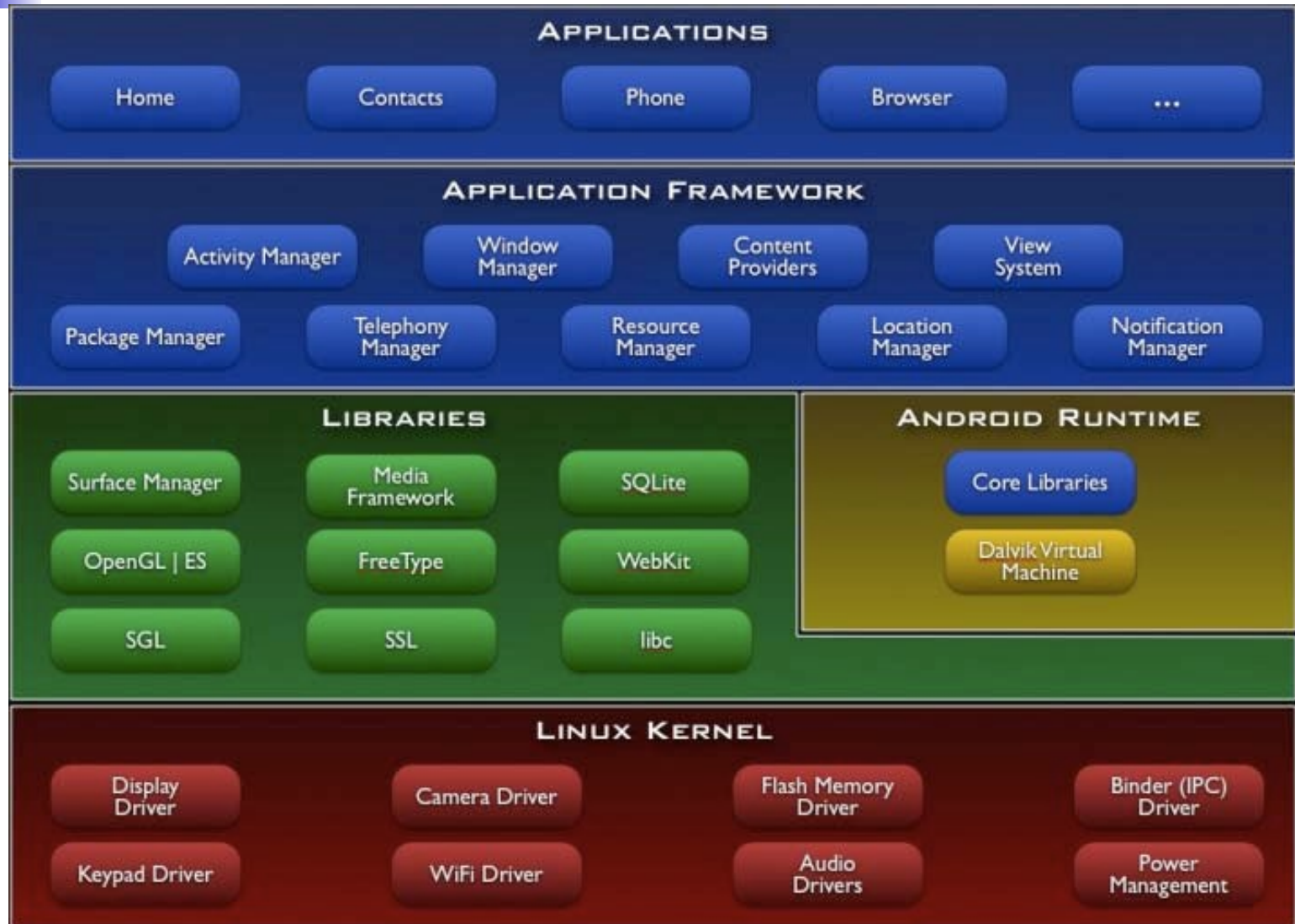
# Android Software/Hardware Components

---

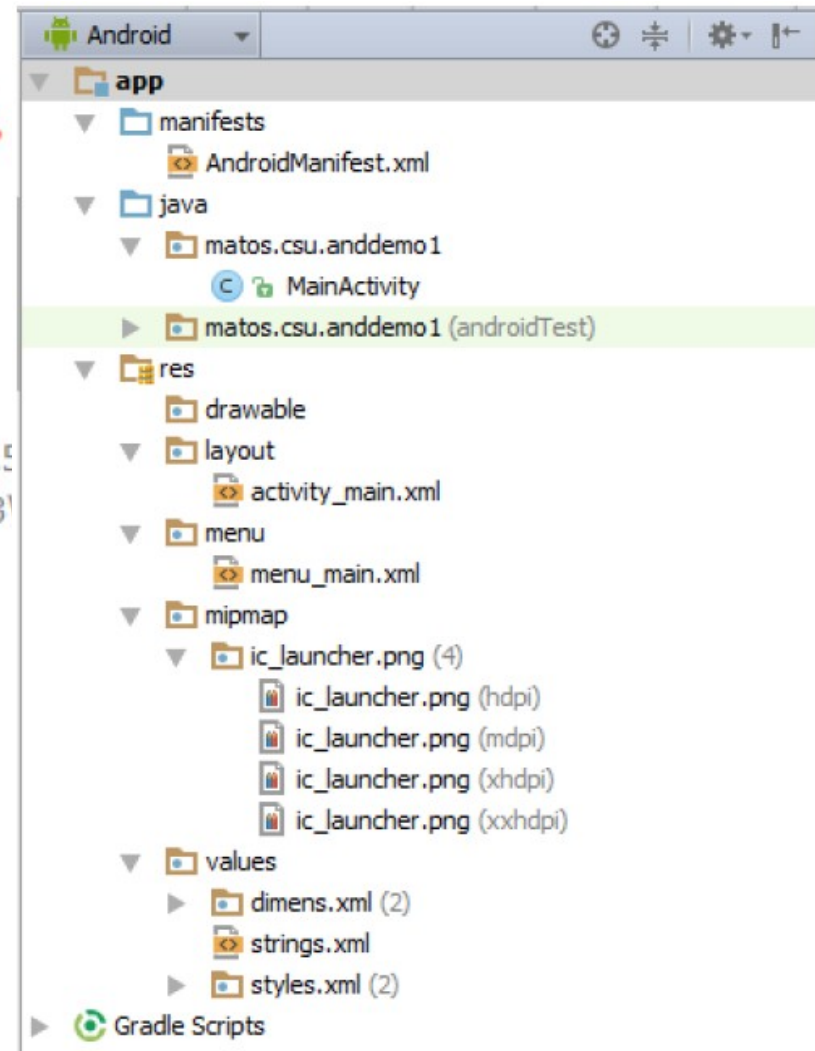
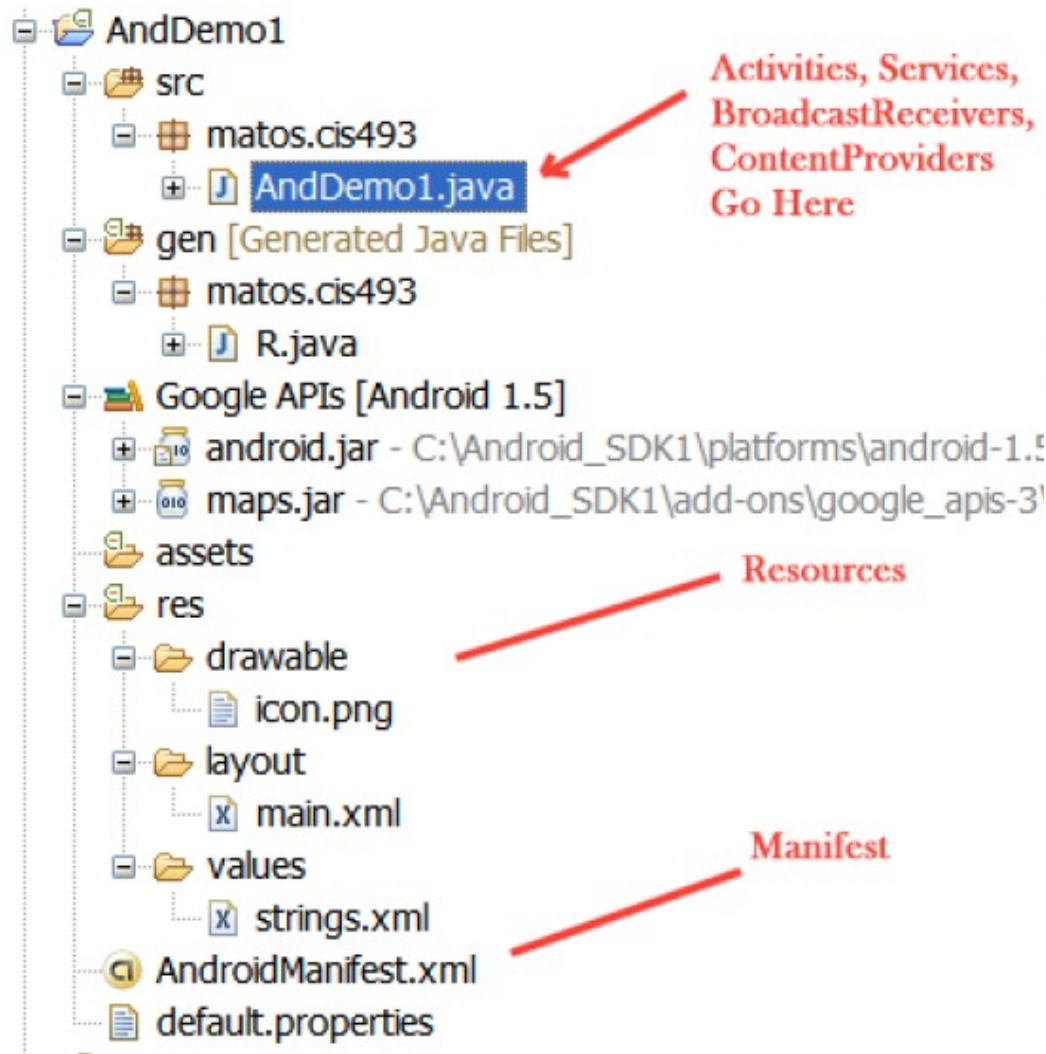
- Dalvik virtual machine
- Integrated browser (WebKit)
- Graphic Capabilities (hardware acceleration)
- SQLite for structured data storage
- Media support (audio/video)
- GSM Telephony (hardware dependent)
- Bluetooth, EDGE, 3G, 4G, NFC, and Wi-Fi (hardware manufacturer dependent)
- Camera, GPS, compass, accelerometer, gyroscope, proximity/ambient light, barometric pressure, fingerprint reader, heart rate sensor (hardware dependent)
- Software Development Tools & Application framework (device emulator, debugging, profiling, plugin for the Eclipse IDE, resource managers, Android Studio)

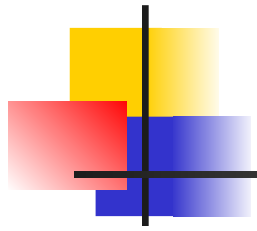


# Android's Software Architecture



# Structure of a typical Android Application





# Next: Android Studio