The real title of this course:

Isn't *Programming Evironment (makes no sense)*

may be *Programming Evironment***s**

Is …

Mobile Applications Development

The main goal:

The ability to:

understand,

design

and

develop mobile applications

The structure of this course:

1. Introduction
- A little history: from telegraph to smartphone
- General hardware structure of a smartphone

2. Operating platforms – short presentation
- Apple's iOS
- Google's Android
- Microsoft's Windows Mobile
- Nokia's Symbian OS
- BlackBerry

3. Programming platforms - short presentation
- iOS: xCode
- Android: Android Studio
- Windows Phone: Visual Sudio
- Mixed: Xamarine, Corona, Marmalade, Unity3d

4. Mobile apps development rules
- A bussines perspective
- The app design rules
- How to test mobile apps
- Security solutions
- Simulator/emulator vs device

The structure of this course:

5. Programming apps/Corona SDK-part 1

- SDK's enviroment description
- Programing on Lua

• types, values and variables, expressions and operators, statements: if, for, while, standard libraries, examples

6. Programming apps/Corona SDK-part 2

- Libraries: native.*, os.*, io.*, string.*, display.*, math.*, media.*

7. Programming apps/Corona SDK-part 3

- Events

8. Programming apps/Corona SDK-part 4

- Types

The structure of this course:

Part 3

9. Programming apps/Android Studio-part 1
- Introduction to Android Application Architecture:
- Android activity life cycle
- defining UI through Layout Files;
- implementing Programming Logic;

10. Programming apps/Android Studio-part 2
- Basic User Interfaces and Using Controls;
- Android's Common Controls;

11. Programming apps/Android Studio -part 3
- Adapters and List Controls;
- Menus and Action Bars
- Styles and Themes;
- Working with Dialogs

12. Programming apps/Android Studio -part 4
- Touch Screens
- Using Google Cloud Messaging with Android

13. Programming apps/Android Studio -part 5
- Preparing for Release: what is an APK file and generating a signed APK
- Deploying Applications: Google Play Store and Beyond
- Recapitulation

The structure of this course:

The Last Part:

14. Final evaluation !!!!!!!!!!!!!!!!!!!!!

(don't worry about this)

And of course,

7 labs (only SEVEN, but this is)

with

our new friends

and

Mobile Applications Development

Course 1
Introduction

1. A little history: from telegraph to smartphone

2. General hardware structure of a smartphone

Who does't know history, does't understand the present and can't anticipate the future !

*Note: please replace "**history**" with "**history of technology**"*

Alessandro Volta, 1800, the voltaic pile, first electrical battery that could continuously provide an electrical current to a circuit.
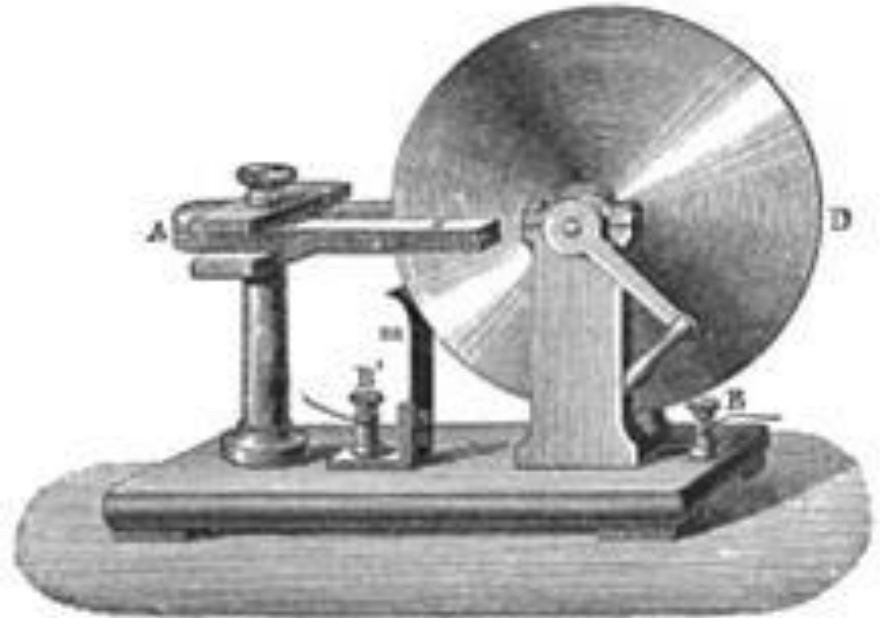
Alessandro Volta
(1745-1827)

The Volta's voltaic pile

Electricity: 1831, Michael Faraday, *electric dynamo* which can generate electric current

Michael Faraday
(1791-1867)

Electric-dinamo: first electric generator

Communications: one of the human evolution engine

[William Fothergill Cooke](#) and [Charles Wheatstone](#), in 1837, patented the first commercial electrical telegraph

The first comercial telegraph   A Morse key

Hello World ⇔ .... . .-.. .-.. --- .-- --- .-. .-.. -..

Alexander Graham Bell , 1876, the first telephone

Old phones

A (tele)phone is a device that converts the human voice, into electric signals suitable for transmission via cables or other transmission media over long distances.

The beginnings of mobile telephony

- One of the earliest fictional descriptions of a mobile phone can be found in the 1848 science fiction novel Space Cadet by Robert Heinlein.

- Germany, 1926, such connections were established in trains that assures the link between Hamburg and Berlin. This service was offered to 1st class travelers
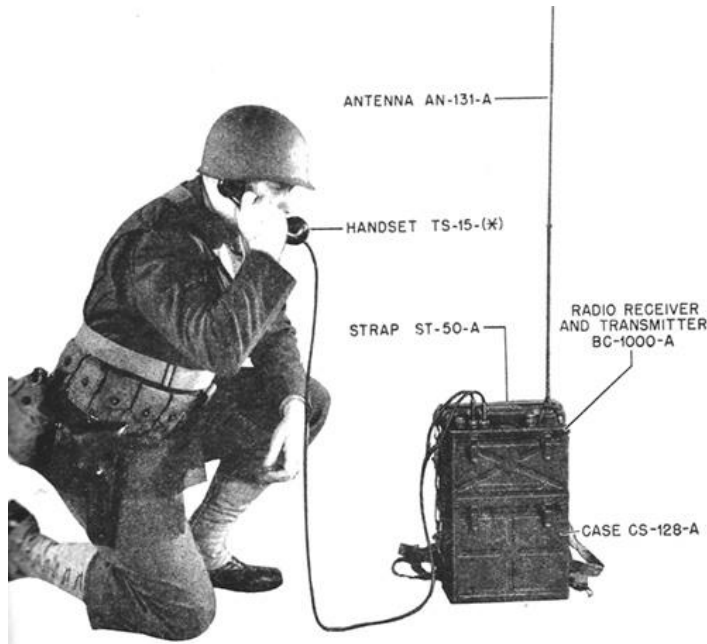
Note: wireless parallel to the railroad track worked as antenna

The beginnings of mobile telephony

In the Second World War, US army use wireless/radio telephony connections;

SCR 320 or "walkie-talkie"
-made by Motorola in 1940
-38 pounds (17Kg)
-with a 3-mile (4,8Km) range

SCR 536 (called "handy-talkie" at first)
-made by Motorola in 1942
-about 5kg
-a variant for aircraft

The beginnings of mobile telephony

- wireless telephones for automobiles became available in the 1946s

The beginnings of mobile telephony

In the USSR, in 1961 was presented a mobile telephone with weight only 70 g and could fit on a palm.

The first semi-smartphone

Nokia's [Mobira Senator](#)

-22 pounds (10Kg).

-first [fully automatic](#) international cellular service—[NMT](#)—the first-generation ([1G](#)) of mobile communications.

The first pocket phone

Motorola's [MicroTAC](#), 1989

1992, the first hand-sized digital mobile phone that used 2G
Motorola International 3200

The first cell phone without an external antenna, 1998
## Nokia 8810

1. A little history: from telegraph to smartphone

The first cell phone that incorporate Wireless Application Protocol (WAP), which gave mobile users web access for simple devices—a stripped-down, mostly text version, but a revolutionary step for mobile internet.

Nokia's 7110

The first mobile phone with a GPS navigator integrated GeoSentric - Benefon Esc! It was splashproof, greyscale, and allowed users to load maps to trace position and movement.
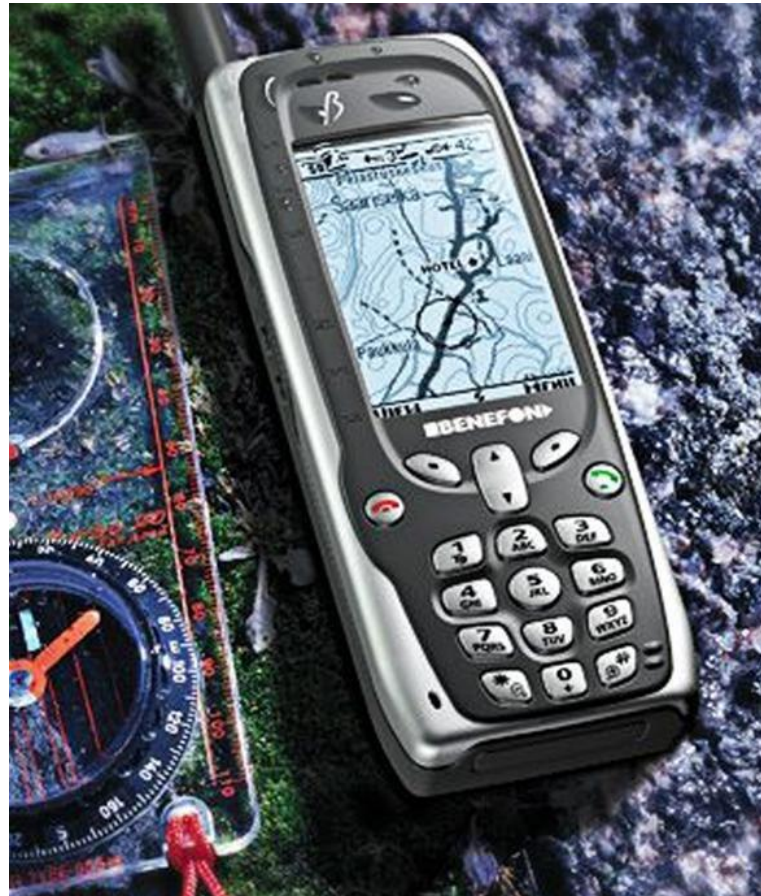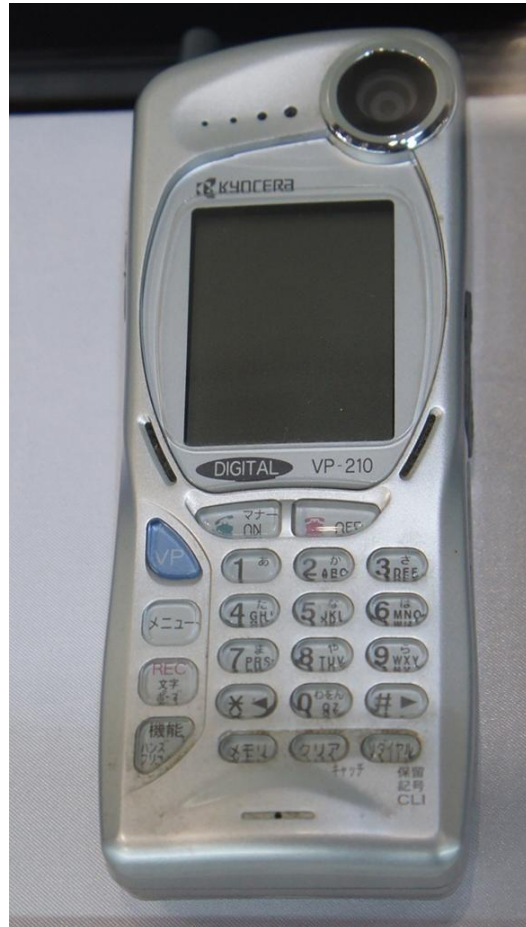
1999, The first phone with a in camera
Kyocera's Visual Phone ([VP-210](#))

… and so on …

… and so on …

.

.

until our days

.

.

and things will not stop here …

so I don't know what will be tomorrow

# and finaly a few smartphones' definitions:

1.   **a smartphone is a phone that runs a complete operating system.**

2.   **a device that combines a cell phone with a hand-held computer, typically offering Internet access, data storage, email capability, etc.**

3.   **a mobile phone which includes functions similar to those found on personal computers: information management, mobile calls, email and Internet access.**

4. **"a mobile telephone with computer features that mayenable it to interact with computerized systems, send e-mails, and access the web".** *Collins English Dictionary 2012*

5. A smartphone or smart phone is a <u>mobile phone</u> with an advanced <u>mobile operating system</u> which combines features of a <u>personal computer</u> operating system with other features useful for mobile or handheld use. They typically combine the features of a cell phone with those of other popular <u>mobile devices</u>, such as <u>personal digital assistant</u> (PDA), <u>media player</u> and <u>GPS navigation unit</u>. *(wikipedia.com)*
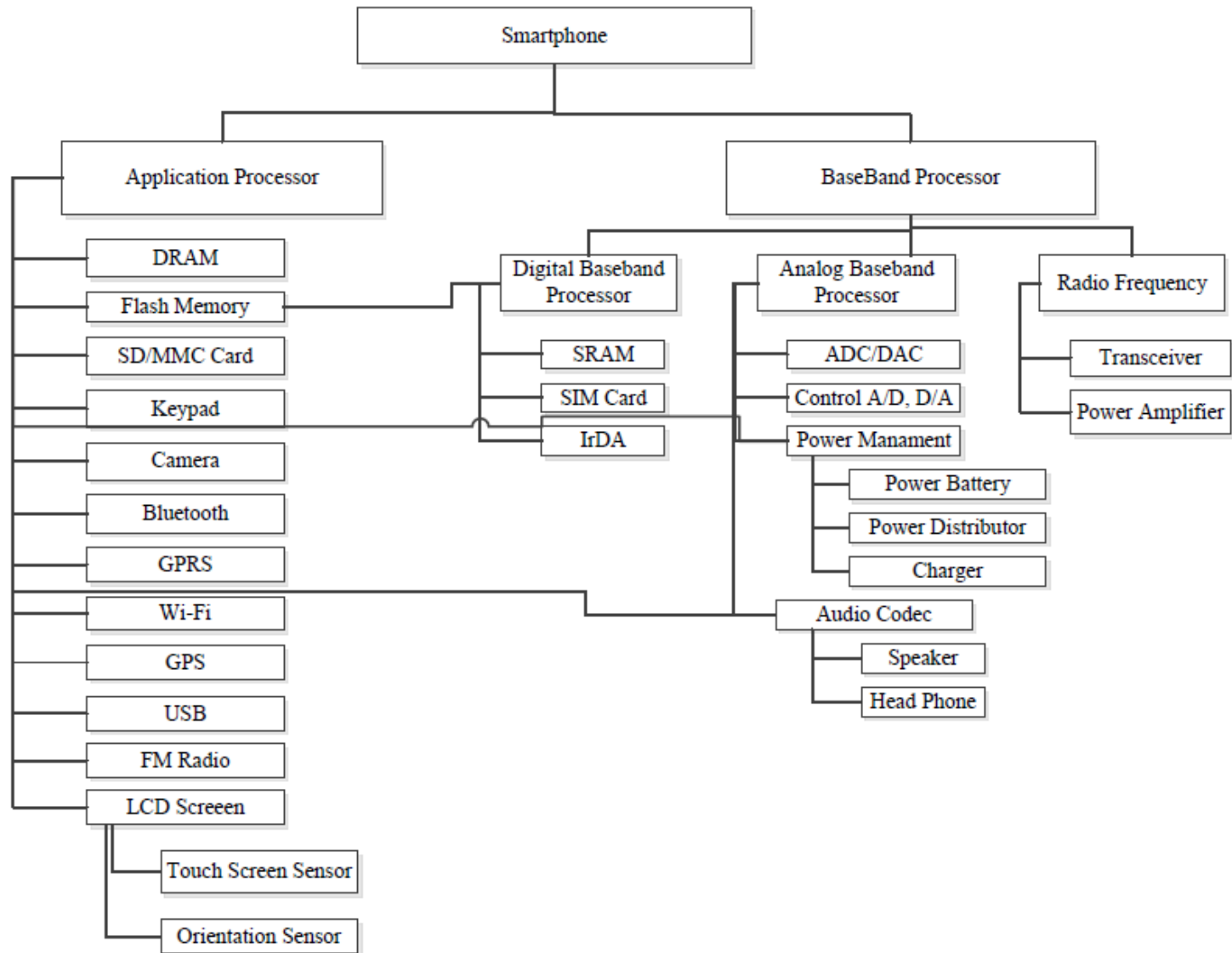
2. General hardware structure of a smartphone

Hardware architecture
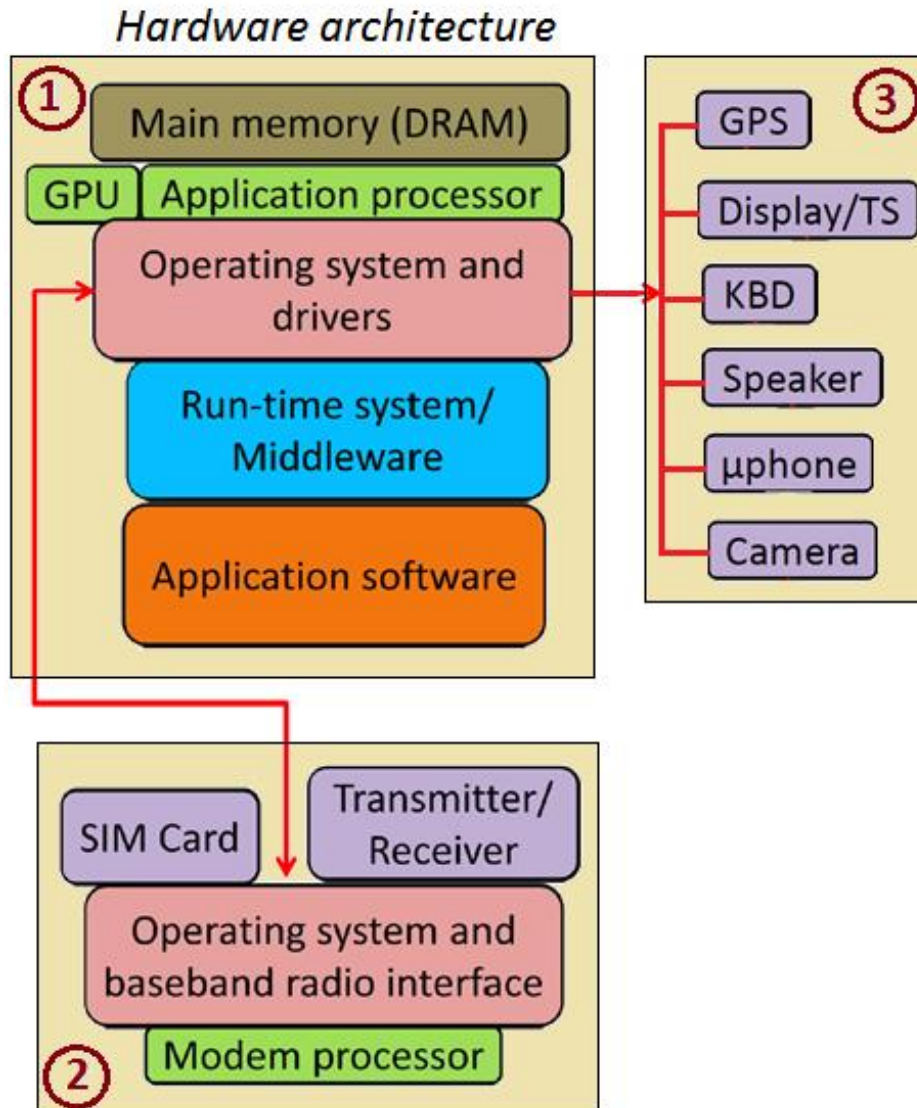
Primary components:

1. an application processor executing the end-user's application software with assistance from the middleware and operating system (OS);

2. a modem or baseband processor with its own operating system components responding to the baseband radio activities (transmission and reception of audio, video, and other data contents)

3. a number of peripheral devices for interacting with the end-user

2. General hardware structure of a smartphone

A higher detailed anatomy of smartphone

2. General hardware structure of a smartphone

in summary

Smartphone is a portable device that encapsulates computing capabilities and cellular network access functionalities in a single integrated multicore processor.

In modern smartphones, dual/quad core processor is composed of two/four processors, each one with a separate RAM and flash memory access and distinct objectives.

The baseband processor is responsible for radio access of the wireless network environment and the application processor is specially designed for the execution of software stack on smartphone.

Application processor is assisted by some specialized multimedia modules in the execution of multimedia functions such as audio, and video with optimal computing resources consumption.

A hardware interface bridges the functionalities gap between application processor and baseband processor.
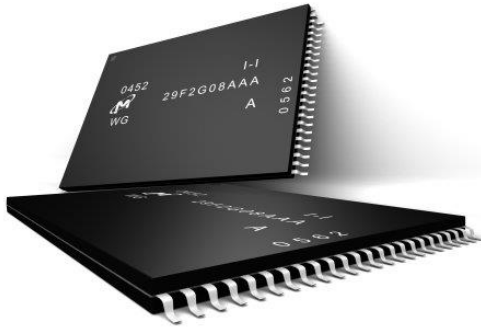
2. General hardware structure of a smartphone

Smartphone's components

2. **General hardware structure of a smartphone**

NAND Flash

DRAM


App Processor

Baseband Processor

Camera Module

- These are microelectromechanical systems (MEMS)

- Gyroscope contains a tiny oscillating plate ("proof mass")

- Deviations of the plate from its normal oscillating path are detected when the device is rotated

- Accelerometer contains a proof mass anchored to a cantilever beam; movement of the device displaces the mass, and can be measured
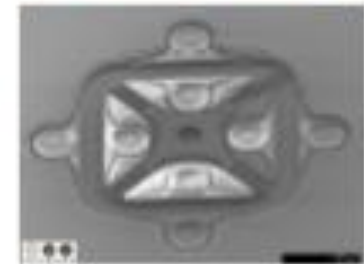
Accelerometer and gyroscope

Do you know

How much gold is in a smartphone?

How much gold is in a smartphone?

There are 10 troy ounces (234 grams) of gold per ton of smartphones.

Ten thousand phones weigh one ton.

Ta-Ta for now!