

WELCOME

Mobile Applications Testing



NETWORK: BROADBAND

- ❖ **MOBILE BROADBAND** is the marketing term for wireless Internet access through a portable modem, mobile phone, USB wireless modem, tablet or other mobile devices.

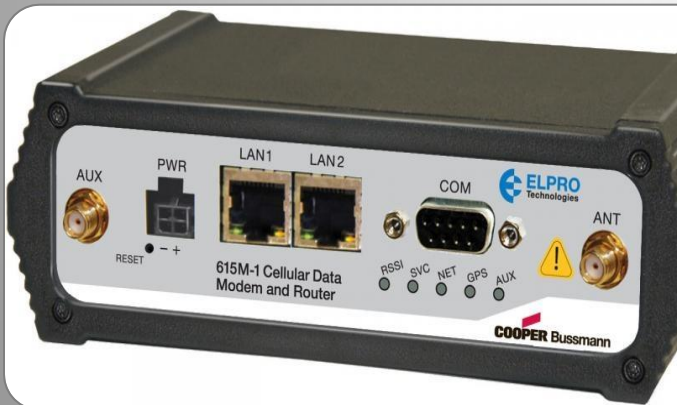


- ❖ A barrier to **MOBILE BROADBAND** use is the coverage provided by the mobile phone networks.
 - *This may mean no mobile phone service or that service is limited to older and slower mobile broadband technologies.*
 - *Customers will not always be able to achieve the speeds advertised due to mobile data coverage limitations including distance to the cell tower.*
 - *In addition, there are issues with connectivity, network capacity, application quality, and mobile network operators' overall inexperience with data traffic.*
 - *Peak speeds experienced by users are also often limited by the capabilities of their SmartPhone or other mobile device.*

NETWORK: Cellular Modem

Three main types of cellular modems:

- ❖ **Cell phones** - using phones as modems to enable Internet access on computers, aka **tethering**
- ❖ **Cellular cards** - portable **network adapters** that plug into computers, aka **aircards**
- ❖ **Cellular routers** - portable **network routers** that contain built-in cellular modems



NETWORK: 1G to 4G

EVOLUTION



1G
1981



2G
1992



3G
2004



4G
2011



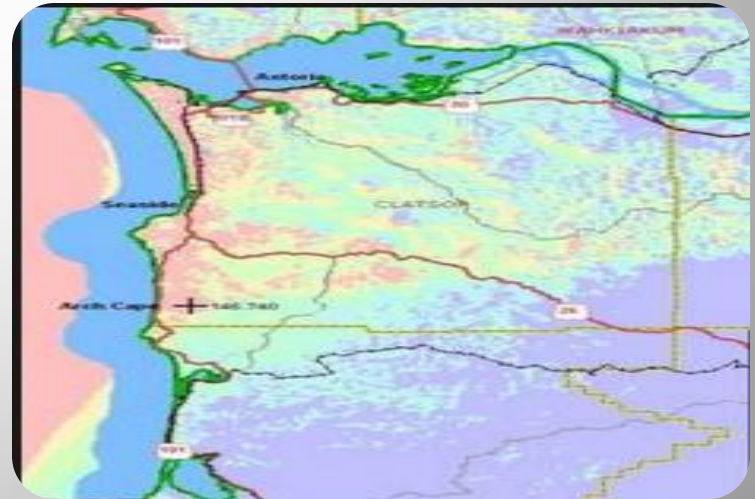
5G
2020

NETWORK: 1G to 4G Evolution

- ❖ **1G** analog signal used by cellular towers
- ❖ **2G** technology upgraded the analog signal to digital and powered the inclusion of sending text messages across the network
- ❖ **3G** technology made use of electromagnetic wavelengths, known as spectrum, to broadcast a wireless broadband signal that allowed users to access the Internet and download applications using a 3G data card or a handheld mobile device
- ❖ **4G** called an “ultra-broadband” access for mobile devices. 4G networks are based on an all Internet protocol packet switching instead of circuit switching

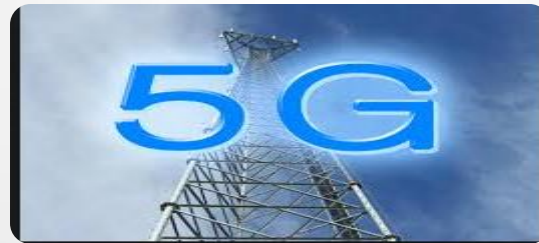
NETWORK: 1G to 4G Service Coverage Facts

- ❖ In 2011, 90% of the world's population lived in areas with 2G coverage while 45% lived in areas with 2G and 3G coverage, and 5% lived in areas with 4G coverage.
- ❖ By 2017 more than 90% of the world's population is expected to have 2G coverage, 85% is expected to have 3G coverage, and 50% will have 4G coverage.



NETWORK: is 5G around the corner ?

- ❖ Aug 28, 2013 – Huawei (Chinese company) intends to introduce commercial 5G networks by 2020, a service touted as "100 times faster" than current 4 G networks.
- ❖ May 15, 2013 - Samsung says it has successfully tested technology that will be at the core of 5G mobile connectivity.



Mobile Ecosystem

Mobile World Statistics

Carriers/Service Providers

Network

Manufactures

Devices

Platforms/OS

Frameworks

API-Apps

Services

MANUFACTURES / MAKERS

Rank	Manufacturer	Units (M)	Market Share	Q4 2014 Share	Supported OS
1	Samsung	82.8	24.3%	20.1%	Android, Tizen, Windows
2	Apple	61.6	17.9%	20.1%	iOS
3	Lenovo	18.7	5.5%	6.6%	Android (Tizen)
4	Huawei	17.5	5.1%	6.6%	Android (Tizen)
5	LG	15.4	4.5%	4.2%	Android
6	Xiaomi	15.0	4.4%	4.6%	Android
7	ZTE	12.5	3.5%	3.6%	Android, Firefox
8	Coolpad/Young	11.5	3.4%	4.0%	Android
9	TCL/Alcatel	9.7	2.8%	4.5%	Android
10	Vivo	9.3	2.7%	3.1%	Android
	Others	97.1			
Total		340.8			

MANUFACTURES / MAKERS

Responsible for :

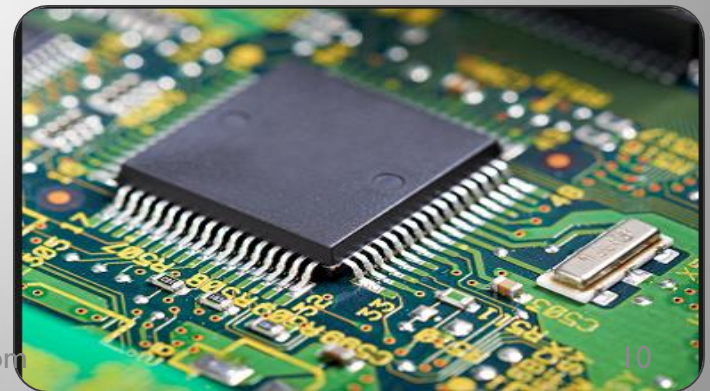
Concept and Prototyping:

- Designs, features, and interface options (like keypad or touchscreen)
- The phone's weight, scale, size, portability

Hardware and Software:

- Printed circuit board, LCD screen, keypad, antenna, microphone, speaker and battery
- Firmware/OS
- GPS and WiFi capabilities

Documentation.



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Devices

Handheld PC, Palm-size PC, Pocket PC, Pocket computer, Palmtop PC



PDA Electronic Organizer, Mobile Phone , Feature Phone, SmartPhone, Phablet



PMP, DAP



E-Reader



Handheld Game Console



Portable/Mobile Data Terminal

Devices: Principals of Mobile Computing



Portability

Facilitates movement of device(s) within the mobile computing environment



Connectivity

Ability to continuously stay connected with minimal amount of lag/downtime, without being affected by movements of the device



Social Interactivity


Maintaining the connectivity to collaborate with other users, at least within the same environment



Individuality

Adapting the technology to suit individual needs.

Devices : FeaturePhone vs SmartPhone



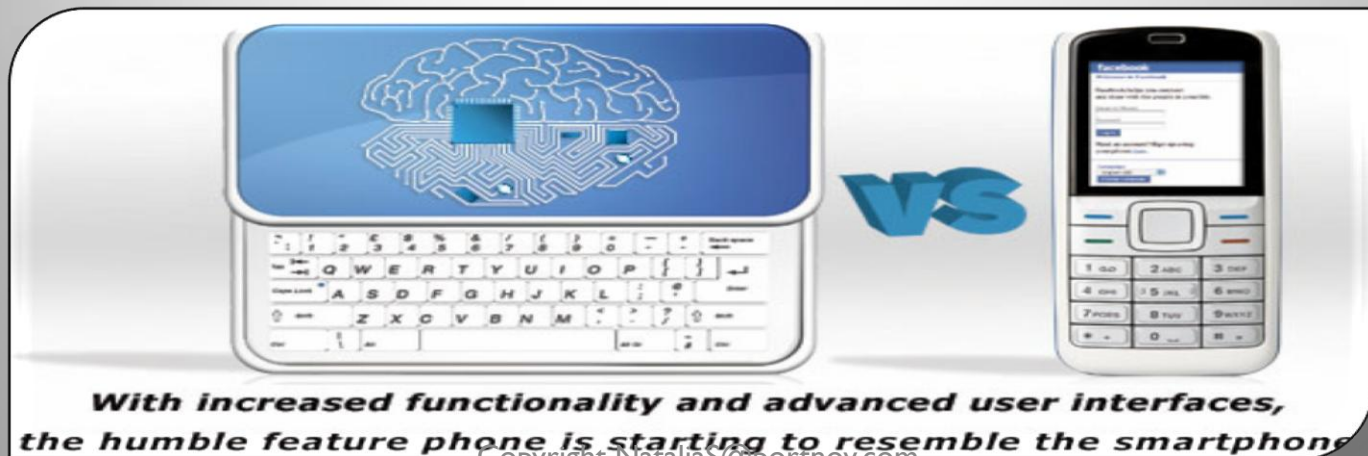
SmartPhones are those which have advanced computing capability than Feature phones

FeaturePhones are low-end device with lower-price

Devices : FeaturePhone vs SmartPhone

In short :

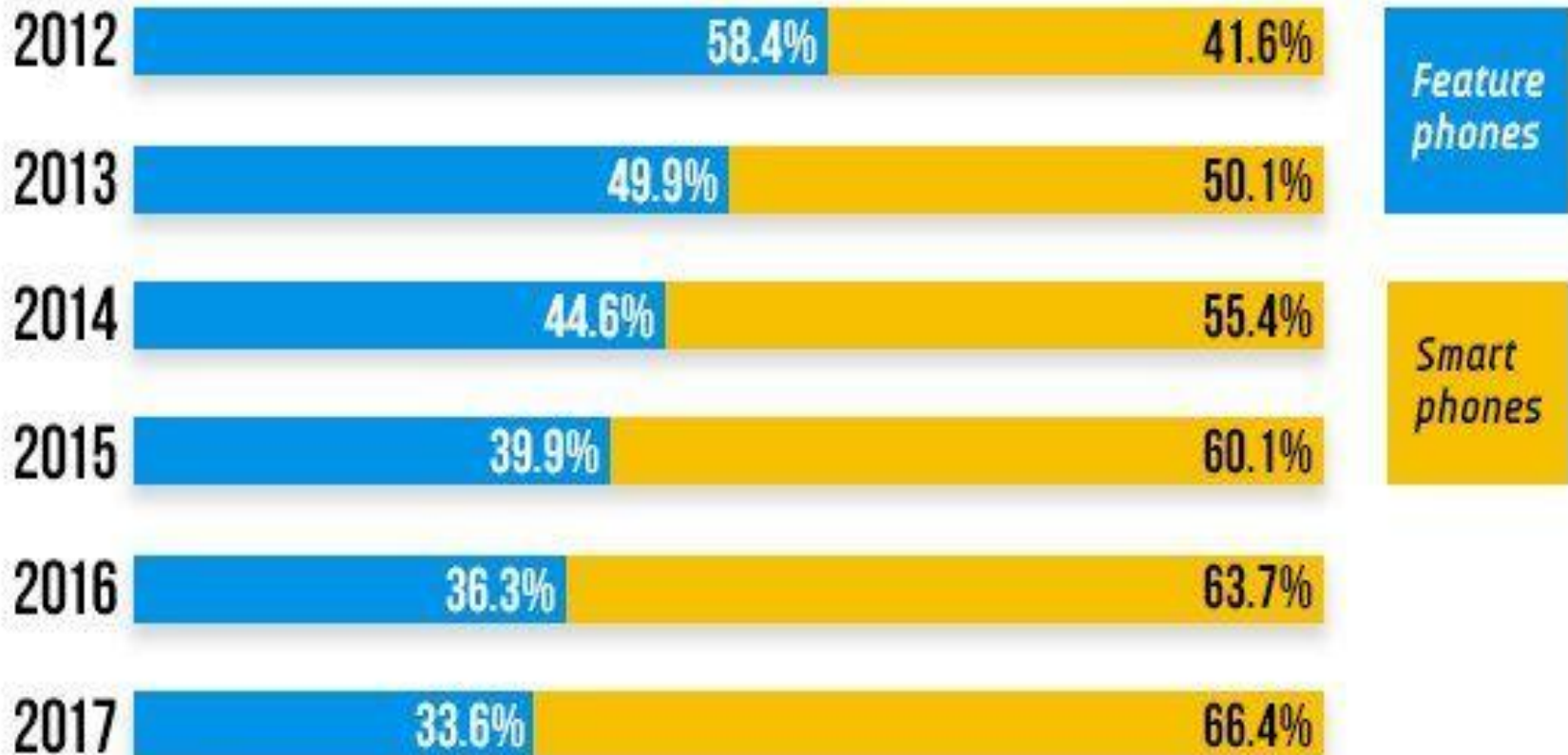
- ❖ *SmartPhones usually have a wider array of key features.*
- ❖ *These can include a full Web browser, 3G or 4G network support, Flash player capability, GPS, higher-resolution camera, third-party application support , video conferencing and more*



Devices :

FeaturePhone vs SmartPhone Comparison Data

Predicted smartphone v feature phone shipments worldwide 2012-2017



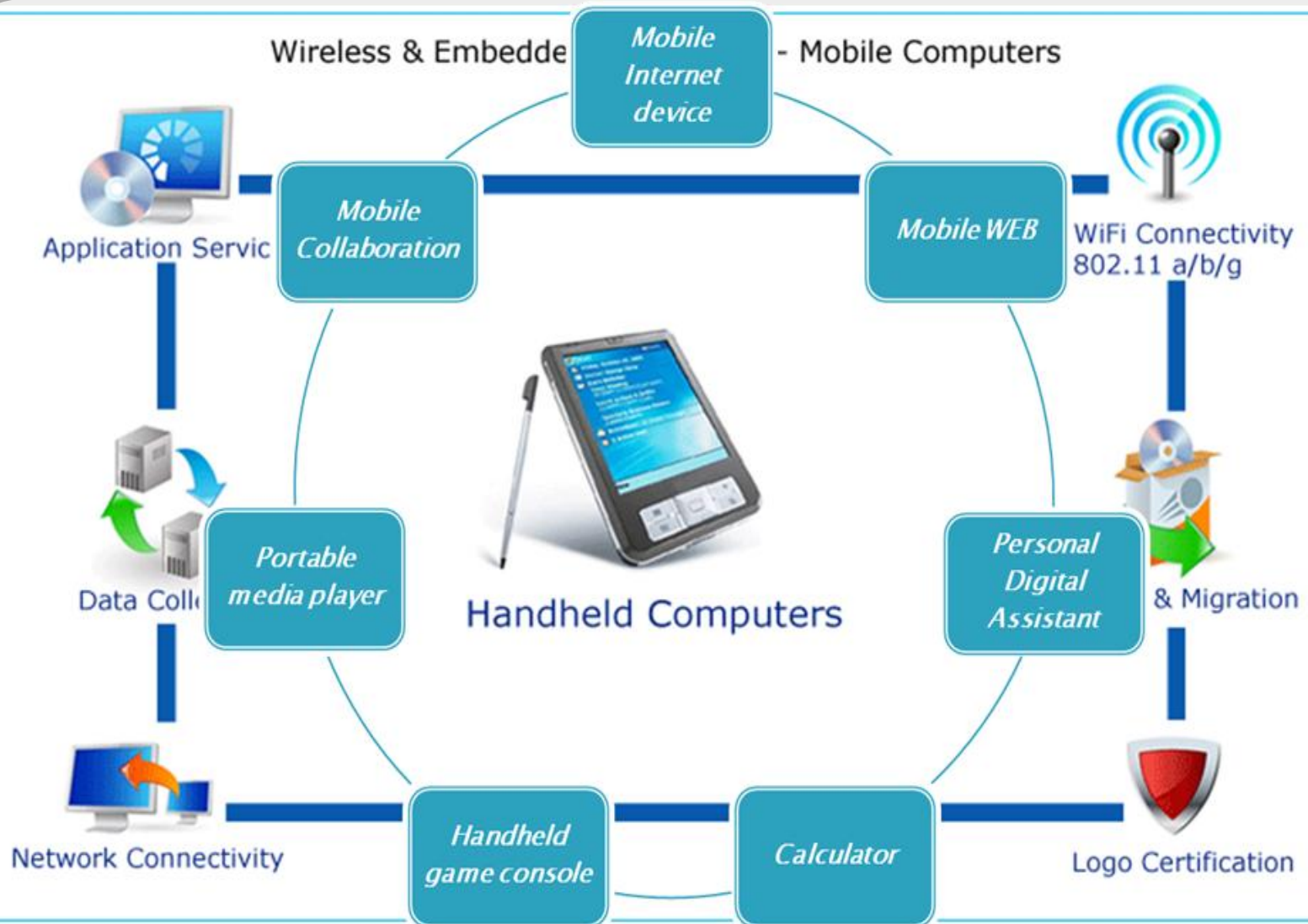
Source: International Data Corporation (IDC), "Worldwide Quarterly Mobile Phone Tracker"

HEAVYLIGHT

HEAVYLIGHT

Devices :

Mobile Computers



Devices :

JAILBREAKING : iOS

JAILBREAKING

process of modifying iOS system kernels to allow file system read and write access.

JAILBREAKING TOOLS

(and exploits) remove the limitations and security features built by the manufacturer Apple (the "jail")

JAILBREAKING TOOLS

allow users to run code not approved and signed by Apple.



Devices :

UNLOCKING : IPHONE

An **UNLOCKED** iPhone

can be used with any carrier, not just those that have been approved by Apple.

many **UNLOCKING** solutions only work with certain iOS models

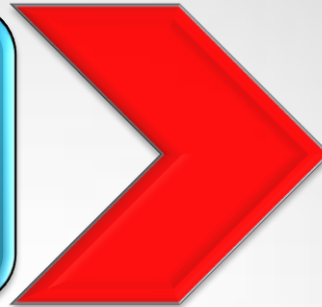
Factory IMEI **UNLOCKS** is a popular solution that works with all iPhone models.



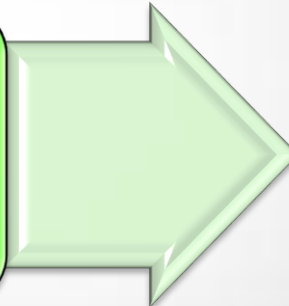
Devices :

ROOTING : ANDROID OS

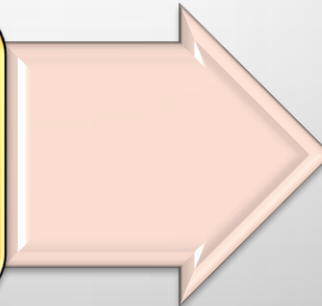
Rooting is the Android equivalent of jailbreaking, a means of unlocking the operating system



you can install unapproved apps, deleted unwanted bloatware,



update the OS, replace the firmware or customize anything



Devices :

ROOTING : GLOSSARY

ROOT

- Rooting means you have root access to your device

ROM

- A ROM is a modified version of Android.

KERNEL

- A kernel is the component of your operating system that manages communications between your software and hardware.

RADIO

- Radios are part of your phone's firmware that controls your cellular data, GPS, Wi-Fi, and other things like that.

FLASH

- Flashing essentially means installing something on your device, whether it be a ROM, a Kernel, or a Recovery

Devices :

ROOTING : GLOSSARY

BOOTLOADER

- Lowest level of software on a device, running all the code that's necessary to start OS

RECOVERY

- Software on a device that allow user to make backups, flash ROMs, and perform other system-level tasks

NANDROID

- From most third-party recovery modules, user can make device backups called nandroid backups.

ADB

- ADB stands for Android Debug Bridge

BRICK

- Breaking device during flashing or other acts.

Devices : TETHERING

TETHERING

connecting one device to another

In the context of mobile phones and tablet computers, tethering allows sharing the Internet connection of the phone or tablet with other devices such as laptops

Connection of the phone or tablet with other devices can be done over wireless LAN (Wi-Fi), over Bluetooth or by physical connection using a cable, for example through



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Platforms / OS

Mobile Application Development Platform (MADP) is *a type of software that allows a business to rapidly build, test and perhaps deploy mobile apps for SmartPhone or Tablets*

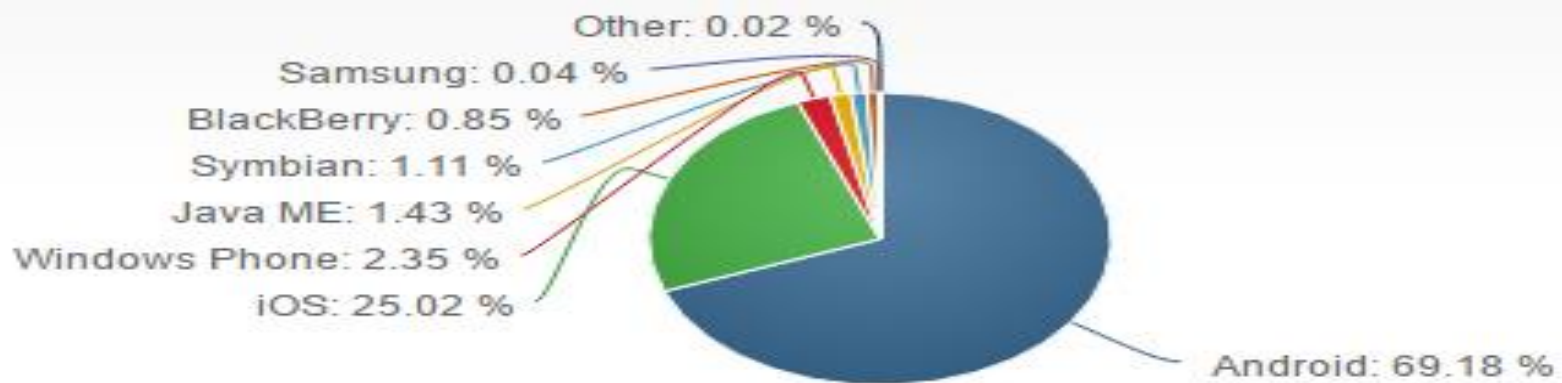
Mobile Operating System (or mobile OS) is *an operating system for SmartPhones, tablets, PDAs, or other mobile devices*



Platforms / OS Market Share 2016

Period	Android	iOS	Windows Phone	Others
2015Q3	84.3%	13.4%	1.8%	0.5%
2015Q4	79.6%	18.6%	1.2%	0.5%
2016Q1	83.4%	15.4%	0.8%	0.4%
2016Q2	87.6%	11.7%	0.4%	0.3%

The worldwide SmartPhone market grew 0.7% year over year in 2016Q2, with 344.7 million shipments, according to data from the International Data Corporation ([IDC](#)) [Worldwide Quarterly Mobile Phone Tracker](#).



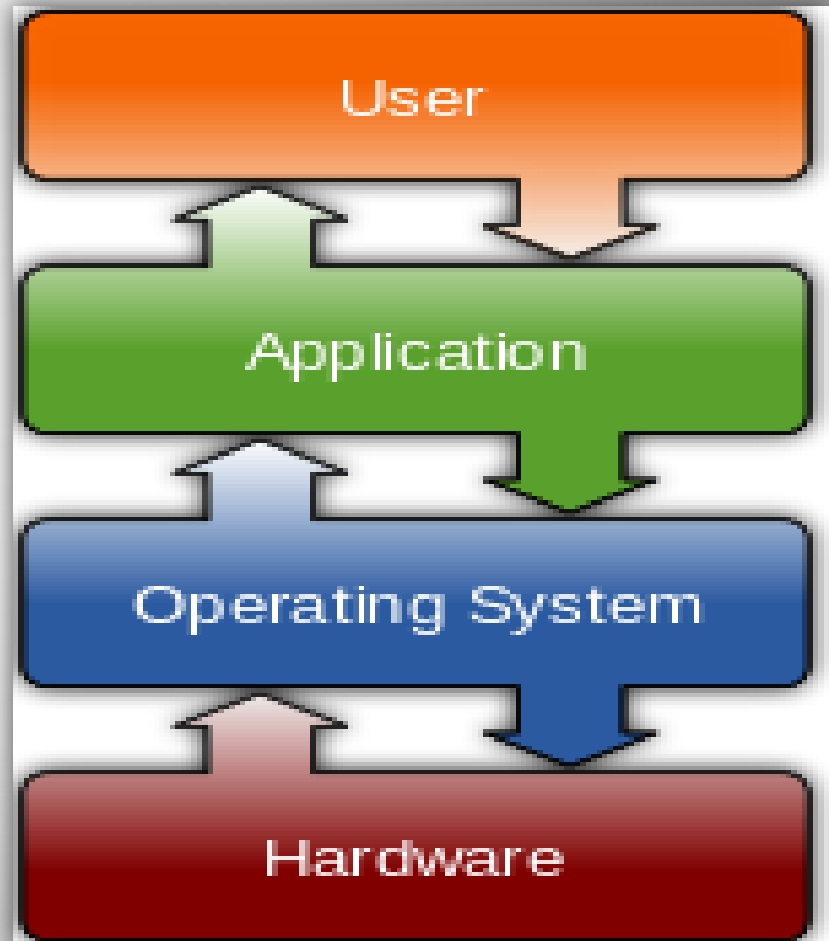
Platforms / OS : Explained

A computing platform is the “stage” where computer programs run.

An operating system sits between applications and hardware, managing how applications access hardware and software resources.

This means that an operating system is a kind of computing platform, but a computing platform is not necessarily a kind of operating system.

A runtime library can also be a computing platform.



Platforms / OS : In short

The terms **PLATFORM** and **OPERATING SYSTEM** mean almost the same thing. □

An **OPERATING SYSTEM** lets your computer run and control its most basic functions, but the **platform** is something, upon what programs/applications (like calendar or web browsers) can be installed and used.

Think of **PLATFORM** as a broader term denoting the difference between Mac and Windows in general, while **OPERATING SYSTEM** is more often used to when referring to specific versions of Windows or Mac

Platforms / OS Licensed

Licensed platforms are sold to device makers for non-exclusive distribution on devices.

The major goal of Licensed Platforms was to create a common/standard platform of Application Programming Interfaces (APIs) development that work similarly across multiple devices with the minimum effort required to adapt the device differences.

Example: Windows Mobile, JME - Sun Microsystems/Oracle; Brew MP – HTC Smart Phone or carrier's firmware, etc



Platforms / OS Proprietary

A proprietary operating system is one which a particular company conceptualizes, designs, develops and sells. Examples of proprietary operating systems are Windows and Mac OS X

Pros

- ✓ Simplified user experience making the overall user experience simpler and smoother.
- ✓ User multiplier effect based on increasing number of people already using it.

Cons

- ✓ Limited Customizability
- ✓ Interoperability Operating systems are often designed to work with a fixed set of hardware specifications



Platforms / OS Open Source

Open source is a philosophy which suggests that the source code behind something should be freely available to the public.

Pros

- ✓ The main advantage is that it allows end users to directly interact with the source, potentially modifying it to suit their wishes.
- ✓ Encourages constant development and innovation, while also creating a community of shared information.

Cons

- ✓ Vulnerable to malicious users
- ✓ Might not be as user-friendly as commercial versions
- ✓ Don't come with extensive support



Platforms / OS SUMMARY

Licensed

- JME
- BREW
- LiMo

Proprietary

- OS X
- BB QNX
- Windows Phone
- bada
- Symbian (Eclipse Lic.)
- webOS

Open Source

- Android-OHA
- Tizen
- Maemo
- MeeGo
- Linux
- Alternative



Platforms / OS : Open Source vs Proprietary

Open-Source Software can replace proprietary software



for



Operating Systems



for



Office applications



for



Image editing



for



Internet browser



for



Video & audio playback



for



Ebooks