Mobile Phone Operating Systems: A Comparison

Kandarp Singh
SRM UNIVERSITY

ABSTRACT- Continual growth and progress are the root cause of improvement, achievement and success. Though is followed by our mobile industry. From the age of pagers to modern smart phones and keep going on the development in mobile industries have fulfill the above lines. Now a day's competition among mobile company are on their rage. Every company is willing to provide new features and easy to use interface to their customers and the most attracting feature is their performance. This paper include the various features, pros, cons of the major operating system. By analysis I hereby present the a comparison and specification to users for better judgment and selection their mobile or Smartphone regarding their use.

Index Terms— Mobile Operating System , Platform, Architecture, Network, Operating System Category, Mobile OS Uses, Features.

———————————— ◆ ————————————

INTRODUCTION

With rapid demand of mobile phones in customers, we often see, wave of confusion for selection of the best phone in their minds and this confusion lead them to select an inappropriate or some highly qualified phone for them. In present era hundreds of brands with different operating systems and providing tons of features and applications to customers seems a competition of manufacturers and overlapping technologies.

Competition in mobile industry is increasing day by day. Every mobile company wants to provide best features in their mobiles. As a result, we see various mobile companies providing different architecture, platform and operating systems, having different features on a competitive edge. In this paper, I will be talking about various mobile operating systems, their architecture together with their features, advantages and lack points. Through this paper, I will compare between these operating systems and will try to provide ideas for various new features which may be added to them so as to make them better for customers.

HISTORY

Hexagonal cells which are used by mobile phone base stations are invented by bell labs engineers. During the World War II radio phones are initially used. In 1930s it is possible to make call by a telephone customer on ship. Such types of call are very costly. During 1940s Motorola developed a two way Walkie-Talkie and a two way radio for military which is very big in size, but with time it goes decrease in size and increase in features. Now as we can see clearly, in past mobile phones get develop and grow rapidly. Since 1940 we have the craze of such telecommunication that allow users the facility of voice chat over line known as 0G, it uses analog signals (VHF 35-44MHz, 152-158MHz & UHF 454-460MHz).

Next during 1979 Nippon Telegraph and Telephone Japan bring the advance version 1G that also provide voice call but over digital signals that make it lot better and computable also the use of data transfer over this network came in existence with the speed of 600-1200bps.

Then RadioLinja (Elisa Oyj), Finland show up the light on 2G in 1991, that changes the mobile communication completely. It provide higher bandwidth for both voice call(400&450MHz, 900&1800Mhz) and data use(9.6,56,236kbps) it provide two new features SMS and WAP to users.

Afterward in 2011 NTT Docomo, Japan brings 3G & 3.5G that give us one more feature of MMS along with all in 2G system. The best part of this technology is its high data speed up to 14Mbps that allow video calling available on mobile phones.

3G network with such great technology still lack in some of the fields such as full-motion video, multi-media, wireless teleconferencing etc, that are overcome in 4G networks also it give interconnectivity to networks. It has all 3G features with very high data speed up to 100Mbps.

Operating System

What is an Operating System?

An OS is the most critical and now a days essential software element of any processor-based device. The Operating System is used to manage the hardware and software resources within a device also used to perform and manages basic tasks such as the recognition of input device, such as keyboard, and generation of output to the device's screen. It also control the different processes execution. It is also responsible for the management and proper utilization of memory and for communication within the device.

In the mobile world, the more complex Operating Systems are used that contain several additional feature as: User Interface(UI) as it become increasingly important as the devices become more complex day by day. Usually user have no direct interaction with Operating System. OS is used as a base onto which the applications required by the user are loaded.

Categories of Mobile Operating System

The Mobile Operating Systems can be classified on the base of existing operating systems used by different computers.

Real-Time Operating System (RTOS)

Real-Time Operating System responds to the inputs immediately and generate its results quickly on at same point of time. These systems are usually used in scientific devices and similar small instruments where memory and resources are crucial and tighten. These devices have very limited or zero-end user utilities, and the effort goes into making the OS really memory efficient and fast.

Single User, Single Tasking Operation System(SUST OS)

These operating system provide a user to operate a process at a time. Thought these systems provide user interaction rather than real time OS. The only drawback is that performing multi-operations at a time is rather difficult in these OS.

Single User, Multi Tasking Operating System(SUMT OS)

This type of operating systems provide feature to run more than one program or process concurrently like scanning and monitoring at same time or word processing etc.

Multi-User Operating System

These operating systems provide either one or more than one user to operate at a time. Even some OS permit hundreds of concurrent users.

Different Mobile Operating Systems:

There are many mobile operating system vendors in market that provide user various features.

Symbian OS: Symbian Ltd. has introduce this operating system in June 1998. The native language of this operating system is C++ and though it is also known as its primary programming language. It has the largest installed base. Symbian Operating System is used by Nokia mobiles. From the development point of view, it must possess the right Software Development Kit(SDK) and the Integrated Development Environment (IDE) tool of our choice. An IDE generally used to possess a source editor, compiler and/or interpreter and debugger and it is a software application which allows the computer programmer to develop software for a certain specific or chosen platform. The IDE required for symbian OS is either Carbide C++ or Visual C++. In this the programmer is free to use any programming language.

Android OS: It is Linux kernel based software platform and operating system for mobile devices which is developed by google but later on Open Handset Alliance(OHA). It's native language is Java that is also the officially supported language for android OS. In android os applications can be written in other languages also but then compiled to ARM native code. Android OS is usually used in Samsung, HTC, Sony mobiles.

iPhone OS (iOS) : Apple present an expensive and strong operating system with native language is C. iOS is also present in iPad, iPhone and iPod touch.

BlackBerry OS : BlackBerry facilitate its smartphones with operating system developed by them. The main attraction for this operating system are: multitasking and support to special device such as trackballs, touch-screen, track-wheel, and track-pad etc. It uses only C++ for its design and it supported by many languages UK English, US English, German, French etc.

Windows Phone OS: It Windows Mobile Operating system is developed by Microsoft and it is used by smartphones and mobile devices. Different version of windows mobile operating system are released time to time: Windows 7, Windows 8 and now a days its advanced version 8.1 is an rage. It is based on the Windows CE 5.2 kernel and programmed in C++ language. Its applications can be developed mostly in C# widely developed on visual studio.

Beside these operating systems we have some more operating systems either recently introduced or some that are not so popular now a days. In that queue we have two big name that are recently introduced **Firefox OS** and **Ubuntu touch** both are Linux base mobile os specially design for touch interfaced smartphones. Rest we have **PalmOS** design for PDAs, **Sailfish** developed by Jolla. Then **GRID OS** by Fusion Garage designed for Grid 10 Tablets and Grid 4 Mobile Phones also we have **WebOS** developed by Palm later acquired by HP and LG Electronics, **Tizen** is also a open source operating system rather than above Linux based OSs then we also had a great time with java based os like **MeeGo** also in RealTimeOS category there is one big name of **Nucleus RTOS.**

Given table represent and summaries the detail about these mobile operating systems.

Vendor Programming	Language	Operating System	Application Store
Apple	C	iPhone OS	iPhone App World
Microsoft	Visual C#,C++	Windows Phone	Windows Mobile Market
OHA	Java	Android	Android Market
RIM	Java	BlackBerry OS	Blackberry App World
Symbian Foundation	C++	Symbian OS	OVI Store

Result

On the basis of the above discussion about the various mobile operating system, we can give difference between various mobile phones. In our paper we will be considering iPhone and other android mobile phones.

- iPhone is the first smart phone with touch screen feature in it also it give its own app word market with best applications and there priority is to their performance.
- Whereas Android is Google's Linux based mobile operating system that has powered many smart phones. also Android market contain many apps with lots of features.
- Both android and iOS are better for touch facility but blackberry gives the qwerty keyboard feature and process keyboard shortcuts that makes navigation all around applications lot better and easy.

- Now blackberry also got its app word named BlackBerry App Word.
- Symbian OS were basically design for easy and user friendly interface and mostly use on bar or qwerty keyboard phone of Nokia.
- Symbian also have its own app store named as OVI Store.
- All of these stores provide verity of application but iPhone have record of maximum of applications for its users, then its league is followed by android stores. well symbian store is continuously growing though also have variety of apps. In between newly developed windows mobile OS have quite interesting apps. BlackBerry always be in its own league of business oriented phone and provide mostly the business apps in its own app world.

i) By comparing the loading time between the iPhone and other mobile phones we can say that an iPhone takes lesser loading time as compared to the loading time taken by other phones as iPhone use c that give it the shortest compile and run time.

ii) As compared to security point of view iPhone is again lot secure than other. It force the user to close the phone while checked online missing but in other OS this feature may allow user to continue their work. Also it get latest fingerprint scanner.

iii) In blackberry phone GPS feature is provided which enhances the feature of google maps especially for turn by turn directions this makes it more directive than others.

iv) The phone quality of Blackberry is better than others mobile phone quality.

iv)The iPhone lacks basic cut & paste capabilities while all other phone provide it.

v) The apple has a superior user interface design despite of that blackberry possesses the keyboard

shortcuts that makes navigation around applications easy.

vi)The blackberry has a unique feature for contacting people that makes contacting to people more easily.

vii) The iPhone's development tool is quite efficient, It carries everything from an visual debugging, accurate simulator to profiling tools while other such as symbian does not support the development tools.

Different mobile operating system usage in decades

OS USAGE YEAR	iOS(%)	Android(%)	Symbian(%)	BlackBerry(%)	Others(%)
2009	35.50	0.50	39.50	1.00	23.50
2010	33.00	4.50	34.00	10.50	18.00
2011	25.00	14.50	30.25	15.00	15.25
2012	24.00	23.25	32.00	7.00	13.75
2013	25.75	37.00	9.00	3.50	24.50

CONCLUSION:

We can surely call this generation as mobile generation as they become so essential and ideal now a days. Very soon these internet connected mobile computing devices will fall in their price and will increase in its functionality. And there will be clear winners and losers in the mobile app market. Apple, Android and Windows has appreciably started in the market. Critical to the success of this market growth and application stores, they are the armies of software developers that create mobile apps. The most sophisticated competitors are already creating or enabling the ecosystems that will allow access to content and applications across devices.

REFERENCES:

1)http://en.wikipedia.org/wiki/Mobile_operating_system

2)http://www.gsmarena.com/glossary.php3?term=os

3)http://arnelirobles.hubpages.com/hub/Top-10-Mobile-Operating-System

4)http://www.slideshare.net/kaushal_kaith/3g-4g-5g

5)MOBILE TECHNOLOGY:EVOLUTION FROM 1G TO 4G from 'ELECTRONICS FOR YOU' magazine.