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Research Paper Engineering

Mobile operating system: A Case study on Symbian and Android

Vidyasagar S.D. II Sem M.C.A , JNN Engineering College, Shimoga

ABSTRACT

Mobile devices, the most popular communication devices which have become very essential in day to day life. Today, in year 2011 we use these electronic devices for mobile tele-communication such as mobile telephony, text massager or data transmission over a cellular network and also we use mobile devices even to browser internet, to entertain by watching videos, playing games, taking photograph and also to get help for visual work. But what we take for granted today was only a big idea

KEYWORDS:

Introduction:
A mobile operating system (mobile OS) is the operating system that controls a smartphone, tablet, PDA, or other mobile device. Modern mobile operating systems combine the features of a personal computer operating system with touch screen, cellular, Bluetooth, WiFi, GPS mobile navigation, camera, video camera, speech recognition, voice recorder, music player, Near field communication, personal digital assistant (PDA), and other features.

History of Telecommunication
41 years ago in order to understand how we got this fire lets go back in 1971. The word 'telephone' comes from two Greek words tele (far) and foni (voice) and it can be defined as an instrument 'that transmits and receives sounds from a long distance'. Alexander Graham Bell is credited with the invention of the telephone. But it is still widely believed that it was Graham Bell who invented the telephone and the first spoken words over a call were "Mr. Watson, come here, I want to see you."



Telephone

The basic principle is like this: a phone has a microphone which is a device that converts sound energy into electrical impulses; a speaker to convert electric signals into audible sound and a cable that connects two or more telephones to each other. There are two states a telephone can be in: on hook (idle) and off hook (in use), and in both the states, different components of a telephone work. When a caller tries to get through to someone, he picks up the receiver from the cradle this automatically puts the telephone on the 'off hook` mode and dials a number.

Zero generation: The Pre-cell phone mobile telephony technique also known as zero generation. Such a radio telephone system get encourage before the invent of cellphone. One such technology is the Auto-radiopuhelin (APR) launched in1971 in Finland has the countries first commercial mobile phone network.



First generation Mobile (1G): It stands for first generation wireless technology cellphones. These are the analog cell phones standards that was introduced .And continued until being replaced by 2G digital cell phone. In 1973 Motorola employee Dr. Martin Cooper invented the first generation mobile device.

Second generation Mobile (2G): In 1980 Symbian foundation released the first software for a mobile computer which was founded by David potter. 2nd generation wireless telephone technology cant normally transfer data such as email or software .other than digital voice call itself. And other basic ancillary data structure such as time and date. Never the less SMS messaging is also available as a form of data transmission for some standards. 2G services are frequently referred as communication services or pcs in the US.

2.5G: It is the stepping stone between 2G and 3G cellular wireless technologies. The term second and half generation is used to describe the 2G system that have implemented packet switch domain in an addition to the circuit switch domain.it does not necessarily provides faster services because of bundling of mess lock is used for the circuit switch data services.

3G Mobile: It serves the next stage in the development of wireless communication technology. Significant features of 3G system are they support much high data transmission Rate and offer increase in capacity. Which made a suitable for high speed data application as well as for traditional voice call .In fact 3G system are designed to process data and since voice signal are converted to digital data? The 3rd generation mobiles was first introduced by NTT DoCoMo in japan in the Tokyo region in May 2001.3G handset provides many new features and possibly for new services are almost limitless .Including many popular apps such as TV streaming ,multimedia, video conference, web browsing ,email, paging, fax and navigational maps.

3G's Smart Phone: As explained by earlier generation by generation mobile devices became more and more capable and intelligent due to rapid technological improvement and hardware communication. Mobile devices need a special program to control its resources efficiently. As the result mobile operating system were introduced. The mobile operating system also known as mobile OS, mobile platform or hand held OS is the OS that control mobile device. Similar In a principle to an operating system in such as Linux, windows that control desktop computer or a laptop.

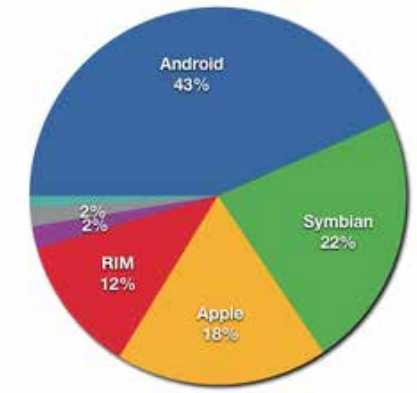
Palm's Web Operating System (web-OS)
Palm's web-OS utilized standards such as HTML, CSS, and JavaScript as their main building blocks. Its Mojo AJAX framework is based on Dojo. It also uses web-kit as its browser engine, with SQLite as local storage, part of HTML5 standards.

Apple's iPhone:
iPhone is by far the most powerful and elegant mobile OS yet. It's based on Mac OS X (which is based on freeBSD). The UNIX kernel with POSIX-thread is well suited for mobile computing processing needs. iPhone's Coca Touch UI paradigm redefined the mobile UI. Its multi-touch gesture based navigation system is the most advanced currently in the market (there have been enough articles on iPhone so need not try to elaborate again here).

Mobile operating system: Symbian and Android

Symbian, it is the most popular mobile OS developed in C++ programming language. Symbian was a proprietary operating system for mobile devices until recently, under Android's huge challenge and losing market ground; Nokia bought all the Symbian outstanding shares, and created Symbian foundation and declared it open source. The main platforms for Symbian include S60 and UIQ. UIQ was closed down and all people got laid off shortly after the creation of Symbian foundation. As to how appealing open source Symbian to developers is yet to be seen. S60 series are no doubt the leader in number of installed base today. However, Symbian's market share, especially in the smartphone area, is getting smaller and smaller largely due to iPhone.

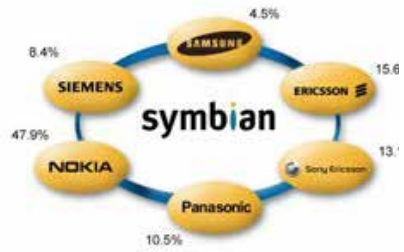
A statistics of mobile operating system of 2011 on different brands of mobiles



Source	Year	Symbian	Android	RIM	iOS	Microsoft	Other OSs
Gartner [43]	2011 Q1	27.4%	36.0%	12.9%	16.8%	3.6%	3.3%
Gartner [44]	2010	37.6%	22.7%	16.0%	15.7%	4.2%	3.8%
Gartner [44][45]	2009	46.9%	3.9%	19.9%	14.4%	8.7%	6.1%
Gartner [45][46]	2008	52.4%	0.5%	16.6%	8.2%	11.8%	10.5%
Gartner [46]	2007	63.5%	N/A	9.6%	2.7%	12.0%	12.1%

Symbian

A very long time ago there was a generation of computers called Psion (some of us can still remember it and someone event worked on those computers). They were created by the Psion Company and worked under Eros operating system. This company in cooperation with Ericsson, Nokia, and Motorola has developed EROS 32 (Symbian OS).



Symbian OS for developers and programmers

Developers find it very attractive that Symbian OS from the very beginning was developed in purpose of getting licenses for wide circle of Companies that develop the telecommunication equipment. In the beginning of the OS for mobile devices development the necessity of full compatibility with different types of processors was declared.



Symbian failed this task, but they found an alternative option - as the basic platform ARM Company processors were used, which have the best combination of productivity, output power and price. Processors were licensed by Intel and Nokia companies. Another advantage of Symbian OS is the built-in multi-language support.

Android

Mobile devices needs. As it evolves, it might include more standardized features, and the OS platform can only become better and better. There are announced handsets using Android coming out this year from LG, Samsung, Motorola, Lenovo, just to name a few. With carriers like Sprint and AT&T getting Android-powered devices under their offerings, along with T-mobile, the landscape for Android development cannot be underestimated. On top of that, Android is also being developed for Netbook, e-book readers, and a slew of other electronic appliances. So it's more than a mobile device OS. This is something Sun attempted with their Jini technology 10 years ago but failed miserably. Android is realizing it now.



Android vs. Symbian

The entrance of the Android operating system into the smartphone market has ruffled more than a few feathers. Not just because it is backed by the Internet giant Google, but also because of the exuberant acceptance of many to the new platform. Compared to the industry giant Symbian, Android is very new with just a handful of handsets under its belt. Symbian roughly has 44% of the market while that of Android is about a tenth of that. But in terms of growth, Android far exceeds Symbian as the former has grown exponentially in just a couple of years while the latter has constantly been losing market share for quite a while now.

Since Symbian has been around for quite some time, it was in use with ordinary phones back when smartphones are not yet very common. Â It was designed to work on phones that have typical keypads and QWERTY keyboards. On the other hand, Android was designed from the very beginning to work with touch capable devices and includes all the tools to take advantage of the GUI and the touch screen interface. Rather than navigating through multiple menus, many of Android's features can be reached with a few taps on the screen.

Although there have been updates to Symbian to add new features like touch functionality, its core has remained the same for quite some time now. The lack of major changes means that Symbian is quite outdated when it comes to new trends and technologies. Although the initial versions of Android was full of bugs and lacked many features, Google has maintained a brisk update schedule to address the issues. The latest version can now compete with other smartphone operating systems. The Symbian OS has almost become synonymous with Nokia mobile phones because it is used mostly on the aforementioned phones.

Android:

1. Android is tightly integrated with Google's cloud services, such as Gmail, Calendar, Contacts, Gtalk, etc.
2. Android is an open source operating system. You can write your own applications in android operating system. Its source code is open for all. Anybody can modify it according to his own need
3. Android is fairly new and has a smaller market share than the older Symbian
4. Android is designed around touch capable devices while Symbian is designed around keypad devices

Symbian:

1. Symbian is an Nokia system which work on only Nokia phones only,
2. Whereas the source code for Symbian system is not available to anybody
3. Symbian is somewhat outdated while Android is constantly updated

Conclusion:

Research Company Canalys estimated in Q2 2009 that Android had a 2.8% share of worldwide smartphone shipments. By Q4 2010 this had grown to 33% of the market, becoming the top-selling smartphone platform. This estimate includes the Tapas and OMS variants of Android. By Q3 2011 Gartner estimates more than half (52.5%) of the smartphone market belongs to Android. In February, 2010 ComScore said the Android platform had 9.0% of the U.S. smartphone market, as measured by current mobile subscribers. This figure was up from an earlier estimate of 5.2% in November 2009. By the end of Q3 2010 Android's U.S. market share had grown to 21.4%.

In May 2010, Android's first quarter U.S. sales surpassed that of the rival iPhone platform. According to a report by the NPD group, Android achieved 25% smartphone sales in the US market, up 8% from the December quarter. In the second quarter, Apple's iOS was up by 11%, indicating that Android is taking market share mainly from RIM, and still has to compete with heavy consumer demand for new competitor offerings. Furthermore, analysts pointed to advantages that Android has as a multi-channel, multi-carrier OS.

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