



Survey on Improvisation of Mobile Operating System's in Smartphone's

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Abstract: Mobile Industries seems to follow the continuous growth and progress has become motto of these industries. New technologies are being developed every other day to mark the continuous growth of industry. Every company is willing to provide new features and easy to use interface to their customers. But perfection is thing which comes with time. Today's mobile devices are multifunctional devices capable of hosting a broad range of applications for both business and consumer use. Smart phones and tablets allow people to access the Internet for email, instant messaging, text messaging and Web browsing, as well as work documents, contact lists and more.

Keywords: Android, Symbian, iOS, and Windows Mobile Operating System

I. INTRODUCTION

Over the past 10 years, information technology has grown so exponentially, that no-one is now tied to a single location in order to do their work, access their emails or check the latest news. We have seen laptops and personal organisers evolve into all-in-one smart phones, cloud computing and virtual private networks allowing to access any information you want, wherever you are. The increase in mobile technologies has changed the way we conduct business as well as our personal lives, and it looks to change even more over the next few years. Currently, palmtop computers, third-generation smart phones, GPS devices and wireless debit card payment terminals are everyday examples of how mobile technology has made its way into every aspect of our lives.

II. MOBILE OPERATING SYSTEM

The term mobile device is used to mean a wide range of consumer electronics. Usually mobile device is used to describe the devices that can connect to the Internet. However, some will classify digital cameras and standard MP3 players as mobile devices as well [1]. The category of mobile devices includes the following devices, as well as others:

A. Personal Digital Assistant (PDA):

PDAs are handheld devices that combine elements of computing, telephone/fax, Internet and networking in single devices.

B. Smartphone's:

Smartphone combine both mobile phone and handheld computers into a single device. Smartphone's allow users to store information (e.g., e-mail), install programs, along with using a mobile phone in one device. For example, a Smartphone could be a mobile phone with some PDA functions integrated into the device or vice versa.

Examples of Smart phones: Sony Ericsson, Palm Treo, Blackberry, Nokia T-Mobile Sidekick, Torq, Motorola Q, E-Ten, HP iPad, I-mate.



Figure 1. Smartphone's in our life.

Like a computer operating system, a mobile operating system is the software platform on top of which other programs run. When you purchase a mobile device, the manufacturer will have chosen the operating system for that specific device [2]. The operating system is responsible for determining the functions and features available on your device, such as thumbwheel, keyboards, WAP, synchronization with applications, e-mail, text messaging and more. The mobile operating system will also determine which third-party applications can be used on your device. Some of the more common and well-known Mobile operating systems include the following:

C. iOS:

The most popular mobile operating system though not by a very large margin but a very convincing one, iOS has always been the favorite of mobile phone lovers and the gadget geeks. iOS has been an operating system which has never went out of the market, even for a single day[3]. Apple has been updating the world's most popular OS ever since it launched it and has always been successful in grabbing eyeballs. It still continues to rule the market even after years since its inception.

D. Android:

Android is the newest kid in the block which has taken the whole world by surprise. It has risen to a position in such a short span of time which is unprecedented in the mobile phone operating systems market. This OS by one of the

biggest software companies in the world has truly stood by its brand name. Google proved once again why it is one of the best when it comes to software development and has brought the mobile phone operating system which has straightaway given way to one of the greatest tech wars ever- iOS vs Android.

E. Research in Motion (RIM):

This operating system by Blackberry has always been the first choice of executives and people for whom internet is what they live with and live by. Blackberry has made a position for itself which has made it a separate device people love to possess apart from other mobile phones. It's the continuous work of their software developers that has made a mark.

F. Windows for mobile phones:

Microsoft is not only ruling the PC world but also has invaded the mobile phone operating systems and has made a mark for itself and is one of the most popularly used mobile phone operating devices from among the many in the market today. It has striven hard and has developed a very good platform for mobile phone users.

G. Symbian:

Mobile phone operating systems provide a lot to choose from and it is the user and his or her needs that define which mobile phone operating system they want to use and it is not that a single OS is ever going to satisfy the needs of all the users and so the variety in the market of business and technology is a much needed one.

III. IOS (IPHONE OS).

iOS (previously iPhone OS) is a mobile operating system developed and distributed by Apple Inc. Originally unveiled in 2007 for the iPhone, The user interface of iOS is based on the concept of direct manipulation, using multi-touch gestures. Interface control elements consist of sliders, switches, and buttons. Interaction with the OS includes gestures such as *swipe*, *tap*, *pinch*, and *reverse pinch*, all of which have specific definitions within the context of the iOS operating system and its multi-touch interface. Internal accelerometers are used by some applications to respond to shaking the device (one common result is the undo command) or rotating it in three dimensions (one common result is switching from portrait to landscape mode[3]. iOS is derived from OS X, with which it shares the Darwin foundation and various application frameworks. iOS is Apple's mobile version of the OS X operating system used on Apple computers.



Figure2. Architecture of iOS.

At the highest level, iOS acts as an intermediary between the underlying hardware and the apps that appear on the screen. The apps you create rarely talk to the underlying hardware directly. Instead, apps communicate with the hardware through a set of well-defined system interfaces that protect your app from hardware changes. This abstraction makes it easy to write apps that work consistently on devices with different hardware capabilities.

The implementation of iOS technologies can also be viewed as a set of layers, which are shown in Figure I-1. At the lower layers of the system are the fundamental services and technologies on which all apps rely; higher-level layers contain more sophisticated services and technologies.

IV. ANDRIOD OS:

Android is a Linux-based operating system designed primarily for touch screen mobile devices such as smart phones and tablet computers. Initially developed by Android, Inc., which Google backed financially and later bought in 2005, Android was unveiled in 2007. Android is open source and Google releases the code under the Apache License [3]. This open-source code and permissive licensing allows the software to be freely modified and distributed by device manufacturers, wireless carriers and enthusiast developers. Additionally, Android has a large community of developers writing applications ("apps") that extend the functionality of devices, written primarily in a customized version of the Java programming language.

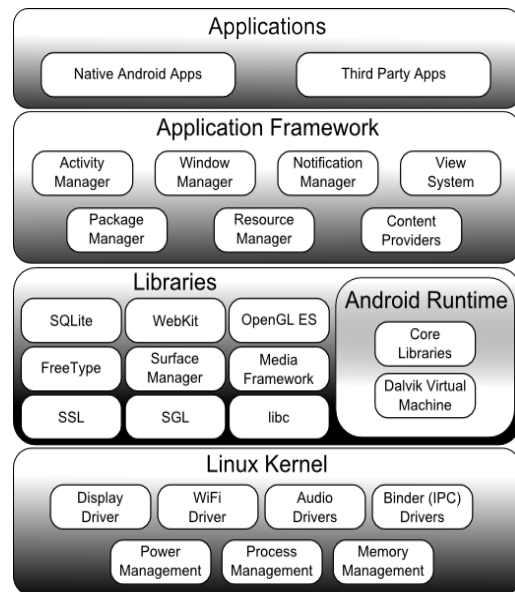


Figure3. Architecture of Android.

Android's user interface is based on direct manipulation, using touch inputs that loosely correspond to real-world actions, like swiping, tapping, pinching and reverse pinching to manipulate on-screen objects [6]. The response to user input is designed to be immediate and provides a fluid touch interface, often using the vibration capabilities of the device to provide haptic feedback to the user. Android devices boot to the home screen, the primary navigation and information point on the device, which is similar to the desktop found on PCs. Android home screens are typically made up of app icons and widgets; app icons launch the associated app, whereas widgets display live, auto-updating

content such as the weather forecast, the user's email inbox, or a news ticker directly on the home screen.

A home screen may be made up of several pages that the user can swipe back and forth between, though Android's home screen interface is heavily customisable, allowing the user to adjust the look and feel of the device to their tastes. Third party apps available on Google Play and other app stores can extensively re-theme the home screen, and even mimic the look of other operating systems, such as Windows Phone. Most manufacturers, and some wireless carriers, customise the look and feel of their Android devices to differentiate themselves from their competitors.

V. WINDOWS OS:

Windows Mobile is a family of mobile operating systems developed by Microsoft for smart phones and Pocket PCs. Windows Mobile is the predecessor of Windows Phone.

In February 2010, Microsoft announced Windows Phone to supersede Windows Mobile. As a result, Windows Mobile has been deprecated. Windows Phone is incompatible with Windows Mobile devices and software. The last version of Windows Mobile, released after the announcement of Windows Phone, was 6.5.5. Windows Phone (abbreviated as WP) is a series of proprietary mobile operating systems developed by Microsoft. It is the successor to Windows Mobile [8]. The latest major release is Windows Phone 8, which was launched on October 29, 2012.

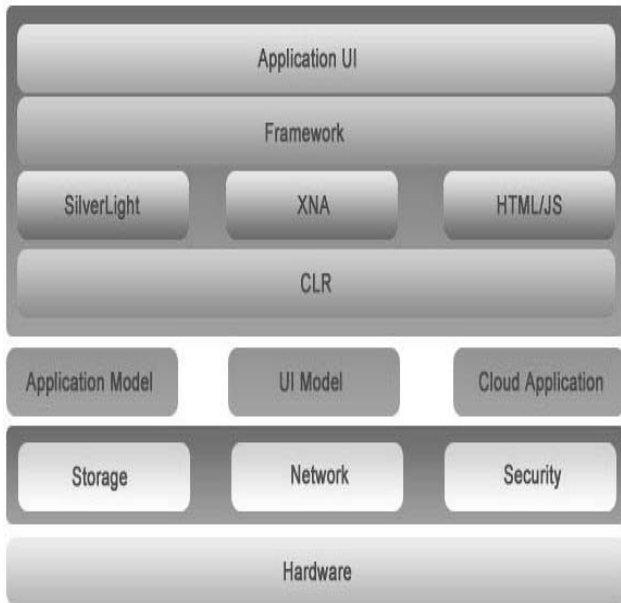


Figure4. Architecture of Windows phone os.

Windows Phone features a user interface based on Microsoft's Windows Phone design system, codenamed Metro and was inspired by the user interface in the Zune HD. The home screen, called the "Start screen", is made up of "Live Tiles", which have been the inspiration for the Windows 8 live tiles. Tiles are links to applications, features, functions and individual items (such as contacts, web pages, applications or media items). Users can add, rearrange, or remove tiles. Tiles are dynamic and update in real time – for example, the tile for an email account would display the number of unread messages or a tile could

display a live update of the weather. Since Windows Phone 8, live tiles can also be resized to either a small, medium, or large appearance.

VI. COMPARISONS OF MOBILE OS

These tables provide a comparison of operating systems, listing general and technical information for a number of widely used and currently available PC and handheld (including Smartphone and tablet computer) operating systems. The article, usage share of operating systems provides a broader, and more general, comparison of operating systems that includes servers, mainframes and supercomputers.

Because of the large number and variety of available Linux distributions, they are all grouped under a single entry; see comparison of Linux distributions for a detailed comparison. There are also a variety of BSD operating systems, covered in systems. Microsoft's was met with rave reviews from day one of its launch back in late 2010, but despite its beautiful and smooth UI it hasn't caught up with users. One way or another, part of the blame for this was some immaturity of the platform - multitasking arrived later and it was very limited, the apps weren't there, customization was somewhat limited, and the list just went on and on, depending on how much you want to pick the nits. But it was clear Windows Phone 7 wasn't as mature as iOS or Android. It was damn close, but not on par. Now, with the announcement of Windows Phone 8 Microsoft is making one giant leap towards the market leading platforms, and matches them in a lot of aspects. We'd say it even outpaces iOS and possibly Android with its new stunning Start Screen which makes us feel we won't miss widgets too much[4]. The real change happens under the hood, though. Windows Phone 8 now runs on the Windows NT kernel, the same kernel Windows 8 runs on. This means that you get support for multi-core chips and you'd get faster ports of apps and easier overall development across platforms. This will strengthen Microsoft's ecosystem. And with the addition of offline maps by Nokia, it's one step ahead of the competition there as well. So who wins the mobile OS battle this time? Is the open Android still the king, or do you prefer the peaceful and limited Apple walled iOS garden, or is Windows Phone a breath of fresh air and the winner in this race.

Mobile Operating Systems - Overall Scores

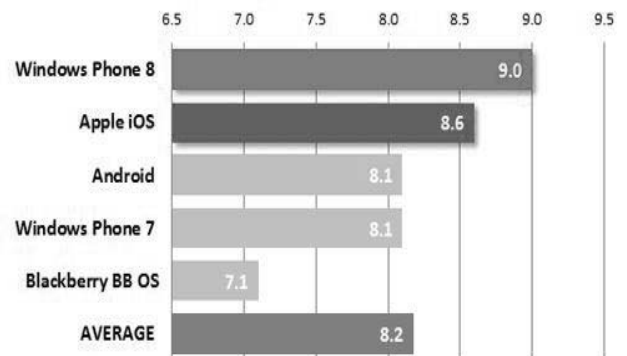
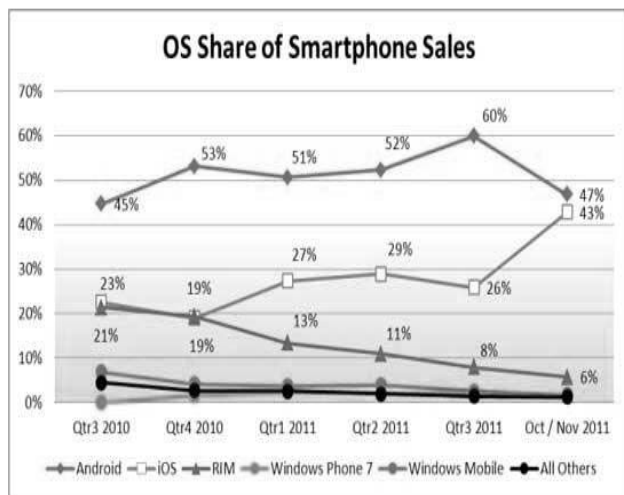


Figure 5. Mobile OS Overall Scores

	iOS 6.0	Android 4.1	Windows Phone 8	Windows Phone 7.8
Apps	650,000+	600,000+	100,000+	100,000+
Multitasking	yes limited	yes	yes limited	yes limited
Widgets	no	yes	expandable Live Tiles	expandable Live Tiles
Expandable storage	no	yes	yes	yes
Multi-core processors	yes	yes	yes	yes
High-res displays	yes	yes	yes	yes
File manager	no	yes	no	no
Drag and drop file management	no requires iTunes	yes	no requires Zune	no requires Zune
Intelligent voice assistant	yes	yes with Google Now	no	no
Sideload apps	Cydia	yes many outlets	no	no
Centralized notifications	yes drop-down pane	yes drop-down pane	no	no
Flash support	no	yes	?	?
Native screenshots	yes	yes	no	no
Offline maps	no paid apps	yes	yes	no only Lumias
Core	Darwin	Linux	Windows NT	Windows CE 7

Figure 6. Comparison study of OS.



Source: The NPD Group, Consumer Tracking Service, Mobile Phone Track

Figure 7. Mobile OS Share of Smartphone's.

VII. CONCLUSION

Android's market coverage is currently witnessing a mushroom growth and it has already threatened the growth of iOS. Android being on Java stack and open source, attracts large number of developer community to build applications over it. Symbian and Blackberry that ruled the market couple of years ago, are struggling. Dell recently announced that they will phase out their all Blackberry devices with their own Dell Streak running on Android. Symbian was also made open source last year but it never attracted much attention of the developers as Android is stealing all the attention with iOS holding the second spot. With tablet market heating up, let's see how market will change in the time to come.

VIII. FUTURE WORKS

The future mobile OS also depends on the available hardware design. We believe a successful mobile system is a result of co-design between software and hardware, together with the progress of the Internet.

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