

Notes to the reader:

This article was completed on September 10, 2008. While the predictions at the end of the article are still valid, the market information cited is a bit dated.

Sidebars 1 and 2 have been omitted from this document. The lack of this information will not diminish this document as a way to assess my writing ability.

[Title:] Open Source in the Mobile Phone Market

[Alternate title:] Open Source and the Mobile Phone Market

The mobile phone market is a confusing, ever-changing series of moves and counter moves by the major players, as well as by hungry, aggressive wannabees. This article explores what effect Linux and the open source movement have had, and will have on the mobile handset market. Both Linux and open source software are influencing the actions of billion dollar companies. In this market, open source has become an essential tool to compete, grow a business, and make a profit.

One expects a company like Google to do this with their Android platform, since they use Linux for most of their corporate needs. But what is going on with Nokia? They are the world-wide market leader, yet they are going the open source route to defend their market dominance.

First, we need to look at the current state of the mobile market. This will provide the context needed for the analysis that follows. Some financial and population statistics are needed to explain what is going on. As you read this article you will understand why this was necessary, and please understand that the statistics will be kept to an absolute minimum.

Reliable, current market statistics are impossible to find without purchasing the expensive market reports available from market research firms. Since I have no interest in paying \$2,500 for one of these reports, I am relying on what is available on the Internet. For our purposes, approximate values for market share are good enough.

[Section title:] Nokia Oyj

The most successful cell phone manufacturer in the world is Nokia. During the 12 months ended March 2008, 65% of all mobile phones shipped world-wide had a Symbian-based operating system installed. So far, 200+ million units have been sold, there have been over 235 models used on 250+ provider networks. Symbian has over 4 million registered developers who have created thousands of applications.

[insert Figure 1: Fig_1_Nokia_N96_600dpi.tif]

[Caption: Nokia_N96]

[Source: http://www.symbian.com/phones/nokia_n96.html]

Nokia has used Linux in Internet tablets for years but has yet to sell a Linux-based cell phone. One has not been announced to date. Given their moves to make Symbian open source, they are not expected to produce Linux handsets in the near future.

[Section title:] Research in Motion

The Research in Motion BlackBerry platform is one of the darlings of corporate America. RIM offers versions of their Enterprise Server for Microsoft Exchange, Novell GroupWise, and IBM Lotus Domino so corporate e-mail support is excellent.

The BlackBerry platform benefits from a reasonable amount of commercial, shareware, and freeware applications. Think of any need a user might have and there are multiple applications available. I am personally underwhelmed by the software available, but that may just be me.

[insert Figure 2: Fig_2_BlackBerry_Curve_8300_600dpi.tif]

[Caption: BlackBerry Curve 8800]

[Source: <http://www.rim.com/products/handhelds/index.shtml>]

[Section title:] Microsoft

Since I am a writer by profession it is my habit to collect interesting RSS feeds on a range of topics. While writing this article I noticed something really odd about Windows Mobile. There were 218 documents in my “mobile phone” RSS folder, and only two of them were about Windows Mobile. By one estimate it was installed on 21% of the new phones sold in the US market during 4Q07, yet it does not seem to create much news. To me, this says something about the degree to which Microsoft controls the corporate space. It is interesting that the large national news organizations that provide me these feeds feel Microsoft’s control is so secure that Windows Mobile is just not newsworthy.

Windows Mobile has an adequate number of applications, but they do not tend to have a high “Wow” factor. The compelling thing about this platform is the warm, fuzzy feeling it gives corporate IT departments.

[Section title:] Apple

The iPhone became available in the US on June 29, 2007. Time magazine named the iPhone the Invention of the Year for 2007. During the 4Q07 it accounted for about 6.5% of all smart phones shipped worldwide.

The iPhone has significant market momentum. According to an Apple press release, it took 74 days to sell the first one million first-generation units. Apple sold one million second-generation units the first weekend they were publicly available.

This success is noteworthy considering the Apple Mac OS X v2.0 (ARM) is derived from FreeBSD.

[insert Figure 3: Fig_3_Apple_iPhone_600dpi.tif]

[Caption: Apple iPhone]

[Source: <http://www.apple.com/iphone/features/homescreen.html>]

[Section title:] Palm

The Palm OS has had better days. If you examine their website you will notice that devices with the Palm OS are sold in the United States by Verizon Wireless, AT&T, and Sprint. Palm also manufactures smart phones that run Windows Mobile. From December 2007 through March 28, 2008 they sold 833,000 units, which were a mix of Palm OS and Windows Mobile. A very large but unknown percentage of the Palm OS units were the slick little Centro.

[insert Figure 4: Fig_4_Palm_Centro_600dpi.tif]

[Caption: Palm Centro]

[Source: <http://www.palm.com/us/products/smartphones/centro/>]

Palm has suffered from a troubled corporate history. The company has not had the sort of organizational continuity needed to create compelling, cutting-edge technology year after year. I love Palm hardware, but simple observation shows they have products that many people love, but few want to buy.

[insert Sidebar 1: sidebar1.txt]

[Caption: Members of the LiMo Foundation, Open Handset Alliance, and Symbian Foundation as of September 9, 2008]

[Source: LiMo Foundation, Open Handset Alliance, and Symbian Foundation websites]

[Section title:] LiMo Foundation

Using the power of Linux in a cell phone is not new. The first Linux handset was the Motorola A760, announced in February 2003. Until recently, the problem with mobile Linux has been the tendency for companies to do their own development, which deprived them of the ability to spread the effort. They also did not have an independent outside developer community to partner with. These scattered efforts did not allow the creation of the critical mass needed to become a market success.

The LiMo Foundation needs a better public relations firm! Remember those RSS feeds I saved? Not one of them is about the LiMo Foundation. Not one! They seem quite content to let their accomplishments be relatively unknown. When I started work on this article I was aware they existed, but had no idea what they had accomplished.

The Foundation was created in January 2007. By May 2008 their members included network operators with a combined subscriber base of over 500 million. On February 11

2008 they announced 18 new models from seven manufacturers, with an additional three prototypes. As of September 2008 their website lists 25 handsets, though many have not been released for sale yet. It is important to understand these handsets are in the pipeline, and development continues. Verizon Wireless has announced it will sell LiMo phones next year.

[insert Figure 5: Fig_5_LiMo_handset_page__600dpi.tif]

[Caption: LiMo Foundation handset web page, showing Motorola ROKR EM30]

[Source: <http://www.limofoundation.org/en/limo-handsets-2.html>]

As one would expect, the LiMo Platform builds on existing standards and open source projects, and all members can contribute code. Japan's ACCESS has been working on the ACCESS Linux Platform (ALP) for some time. The purpose of this project is to allow developers to port Palm OS applications using a supplied SDK. Since the company has now joined LiMo, it would seem the platform can cannibalize developers from Palm.

[Section title:] Symbian Foundation

Plans for the Symbian Foundation were announced on June 24, 2008. The Foundation will be legally established at some point during the first half of 2009. They currently have a very sparse website with not much more than a few whitepapers available.

One of their major goals is to make sure the Symbian Platform is backward compatible. This includes all applications designed to run on the three principal user interfaces: Nokia's S60, the NTT DoCoMo Mobile Oriented Applications Platform (MOAP), and UIQ's UIQ. This is important because it means current developers are protected, they are encouraged to continue working with the platform, and eventually make the transition to the open source version when that is possible. It also supports the needs of Nokia, network operators, handset manufacturers, and consumers. All of the existing relationships that have made Nokia the market leader will be preserved. That decision will pay big dividends once Symbian goes open source.

[Section title:] Open Handset Alliance

Google acquired 22-month old startup Android Inc. in July 2005. Industry insiders have speculated that the price Google paid for the company did not purchase any significant assets. However, it did bring the Android developers into the Google idea factory.

Formation of the Open Handset Alliance was announced in November 2007. T-Mobile and Sprint are members. AT&T has indicated an interest in the Android platform but they are not currently members of the Alliance.

As this article was written Android is vaporware. Handset manufacturer HTC has received FCC approval for a model called the Dream. One site on the web claims an October 13 launch. YouTube has a short boot-leg video of the Dream sporting a T-Mobile logo which

demonstrates some of the features. By the time you read this, Android handsets should be available because T-Mobile has announced 4Q08 availability of an Android handset.

The bigger issue is consumer appeal. Can the 800 pound gorilla we call Google and their industry partners make Android a commercial success? I believe they will. The pictures I have seen of the HTC Dream remind me of an iPhone. Just imagine what it would be like to own a slick, sleek, open source iPhone. The bigger issue is network support. If either Verizon Wireless or AT&T offer Android phones, or support unlocked phones on their networks, look out handset industry. As mentioned earlier, AT&T has indicated an interest in Android.

[Section title:] Ubuntu Mobile

Canonical Ltd. currently offers versions of Ubuntu 8.04 for netbooks and mobile Internet devices, but there have not been any news releases about Ubuntu smart phones.

[Section title:] A World Market

Things are changing in the world economy. The United States has the strongest economy in the world, and it produced about 13.8 trillion USD in goods and services in 2007. The Peoples Republic of China produced about 3.25 trillion USD, and The Republic of India had about 1.1 trillion USD. However, China's economy grew 11.4% in 2007 and the Indian economy grew 9.6%. In contrast, the United States economy expanded a meager 2.2%, and we all know about our current problems with energy costs and the mortgage crisis. Our economy is not growing as fast as India and China, and it is just a matter of time before the US economy becomes the second or third largest.

Another huge issue is population. The United States has 305 million people, while China has 1.3 billion and India has 1.1 billion. To put this in perspective, China Mobile Communications Corporation has 415 million cell phone subscribers. This means just one company in Asia has a third more subscribers than the entire population of the United States.

[insert Sidebar 2: sidebar2.txt]

[Caption: Open Handset Alliance Mobile Operators]

[Source: Open Handset Alliance, Yahoo! Finance, SEC filings, and company websites]

To further illustrate the non-US nature of the world cell phone market, take a look at the mobile operators in the Open Handset Alliance as shown in the Sidebar 2. Sprint Nextel and T-Mobile have about 79 million subscribers. All of the operators together have 893 million.

[Section title:] Analysis

Enough with the statistics! Let's try to understand what is happening, and predict what will happen in the future.

I believe the cell phone market, especially the smart phone market, will be driven by the next 1 billion people who buy one. Most of this subscriber growth will occur outside the United States, with the lion's share coming in developing countries. To a very large extent, these people will access the Internet for the very first time through their new phones. It is very probable this may be their only way to access it. Consumer expectations will be very high and closed platforms will have problems competing.

Since most of these new users will not have any experience with operating systems they will not have any biases about them. All they will care about is what their phone can do for them. To a considerable extent this is already true. I have looked at mobile operator-published specs for many current phones and most spec sheets do not mention either the processor or the operating system. New users in developing countries are not as brand-aware as we are in the U.S. Once compelling, sexy open source handsets are readily available, Windows Mobile and BlackBerry devices will be sold into markets where the playing field is more level.

World demand will drive U.S. technology choices much more than in the past. While the U.S. market and personal incomes are large, our population is a fraction of developing countries like China and India. Manufacturing economies of scale will dictate that the technology available in the United States will be less U.S.-centric.

Non-U.S. developers will become much more numerous, and their influence will be more strongly felt. This increase in developer talent will provide a wider range of consumer choices on open handset platforms.

Those platforms which do not have a central software repository will have to create one quickly. Ultimately, software will rule, and those platforms that clearly support user choice will have a huge competitive advantage.

[Section title:] Predictions

The BlackBerry and Microsoft Mobile platforms are serviceable and well-known technologies, but they are also old technology. Corporate America will hold on to them to the bitter end, but it will ultimately be forced to replace them with cheaper, cutting edge platforms. Users of company-supplied open source handsets may have to accept access and application installation restrictions for security and support reasons. However, the cheaper, more capable applications found on open source platforms will compel a replacement decision in time.

Apple's marketing and technical skills always result in sophisticated, easy-to-use products that increase consumer expectations. Their cool packaging doesn't hurt either. As the owner of an iPod, iPhone, and a MacBook, my initial impression of them always causes me to wonder why Apple can create these products and other companies can not. The iPhone platform has significant momentum, but the closed nature of the operating system and the restricted software repository are distinct negatives. Apple's market share will

continue to increase in the U.S. and world markets in the near term, but growth will eventually be limited by the three open source platforms, LiMo, Android, and the Symbian Foundation platforms.

The Palm OS is dated beyond redemption. I do not see any way it can be altered to compete effectively. The company may survive as a manufacturer of handsets powered by other platforms, but I predict the Palm OS is headed for a museum.

The LiMo Foundation already has handsets in the pipeline and their platform is not even complete yet. A document found on the LiMo site leads me to believe mobile network providers will still have the ability to dictate the user interface. If they choose to control this platform and the applications on it, the LiMo platform will miss a huge opportunity, and it will not be the success it could be otherwise.

Open Handset Alliance members are expected to ship units in 4Q08. I predict Android handsets will ultimately have about the same market share as the iPhone for the following reasons: the marketing prowess of the Alliance members; the completely open nature of the platform; and competition between Alliance handset manufacturers which will quickly bring slick, technologically sophisticated products to market.

The Symbian Foundation does not exist yet, and phones with open source Symbian are probably two years from the market. Intelligent decisions have been made to protect the industry relationships that have made Nokia the market leader. It remains to be seen if they can maintain their market share while it is assaulted by open source LiMo and Android handsets, and closed platform iPhones.