A McLean Group Whitepaper

Introduction to Android and Its Effect on M&A Activity

By Brent Lorenz
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EXECUTIVE SUMMARY

Anyone who attended the 2011 International CES show, produced by the Consumer Electronics Association (CEA) must have noticed all of the smart phones and tablets supported by Android's operating system. As with any leading-edge, consumer product software technology, the market moves fast. Android has powerfully impacted the mobile device market, to say the least. On February 11, 2011, Nokia announced a major change in strategy, switching from the Symbian platform to Microsoft Windows. Nokia's announcement followed, by a matter of weeks, the 4Q10 news that Android had surpassed Nokia Symbian as the world's #1 smart phone OS. Clearly, the world's #1 phone manufacturer decided that drastic changes were required if it wanted to compete. Nokia had two choices: switch to Windows or switch to Android. Nokia chose Windows, and whether or not it succeeds with Windows, only time will tell. Android has had a huge effect on big companies, but how has it affected acquisitions of smaller software companies? This whitepaper will take a close look at Android and how Android is driving innovation and M&A activity alike in 2011.

WHAT IS ANDROID?

First of all, what is Android and why is it so important?

Android is an operating system that is used in many smart phones. Furthermore, Android is successfully penetrating the rapidly expanding tablet computer market and other device market segments. Based on a version of open-source OS Linux, with extensions built for mobile devices, the Android platform originally was developed by Android, Inc., a Palo Alto, CA start-up that Google acquired in 2005. Today, Android is an open-source OS that is maintained by Google.

SONY-ERICSSON ANDROID-BASED XPERIA-X10

SAMSUNG GALAXY ANDROID-BASED TABLET COMPUTER

HOW DOES GOOGLE MONETIZE ANDROID?

People often wonder, "What's in it for Google if the Android software platform is free?" Many successful (and unsuccessful) software companies have been built upon the open source model, which typically involves charging for support and regularly tested releases. Google's support and release of Android reflects a different business model. Android is a natural extension of Google's valuable search engine business, by placing more search capabilities on mobile devices in addition to standard browsers. Google can generate searches from voice commands on a mobile device, from

Google Maps, or other applications. Any Android application requiring search capabilities can increase Google's search-based advertising revenue.

Google also charges licensees of some Android applications and charges third parties to sell applications in the Google store. Android will drive M&A activity as many smaller firms begin competing for revenue at the Android application store, much the way they do at the Apple iTunes store. Consolidation and M&A activity inevitably will follow.

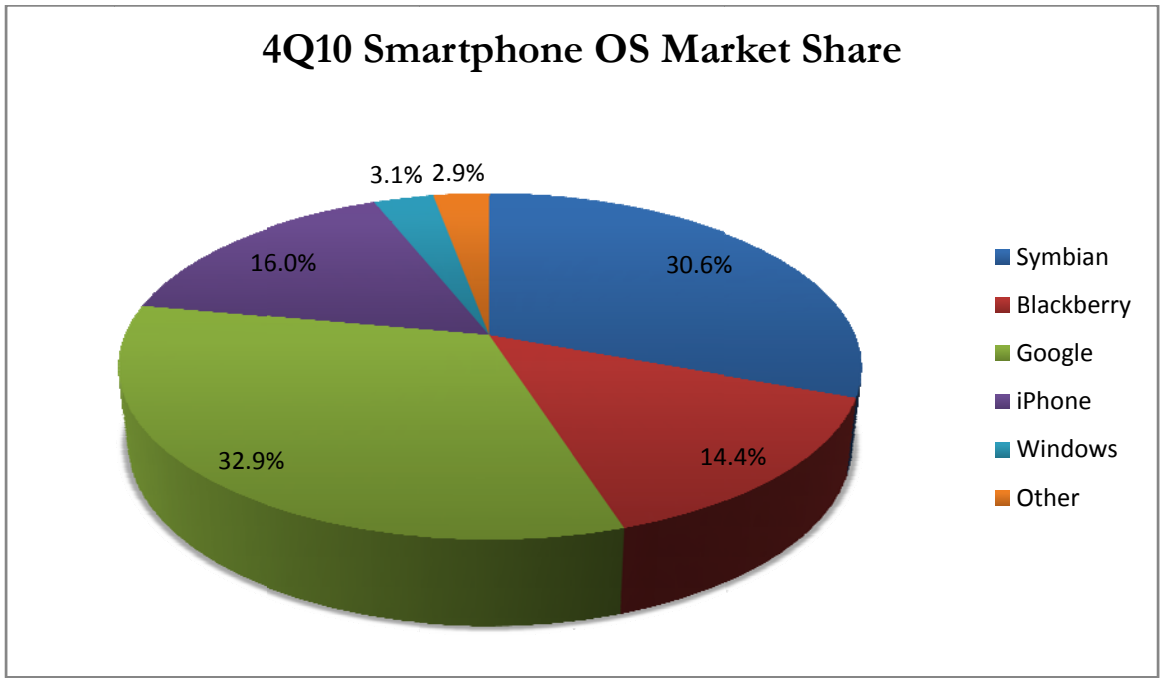
For more information, see such articles as:
http://pocketnow.com/android/how-does-google-make-money-with-android
http://www.fool.com/investing/general/2010/08/10/does-google-have-an-android-revenue-model.aspx

WHY IS ANDROID DRIVING INNOVATION?

Android's meteoric rise in popularity in the mobile handset market reflects two key points:

- Android is not iPhone, Blackberry, Symbian or Windows
- Android is (for the most part) an open source OS

To understand why Android is driving innovation today, just scan the mobile OS global competitive landscape. Today, five operating systems dominate handsets: Symbian, Blackberry, iOS (iPhone), Android and Windows.



Source: http://www.canalys.com/pr/2011/r2011013.html
**** Google includes Android, OMS and Tapas***

Nokia-owned Symbian is a successful but declining OS that soon will be phased out completely in favor of Windows. When Android overtook Symbian for the first time as the #1 smart phone OS in 4Q10, the handwriting was on the wall for Symbian.
(http://www.canalys.com/pr/2011/r2011013.html)

RIM has its homegrown Blackberry OS and Apple has its own proprietary iPhone iOS for their respective devices. Microsoft Windows' phone solution is not tied to any specific handset manufacturer but Microsoft tightly controls it.

Among the above-mentioned software solutions, Android alone is vendor independent and largely open source. Why does this matter? Handset manufacturers other than Nokia, Blackberry or Apple (and those declining to license Windows) have few other options than Android. Therefore, such handset vendors as Motorola, HTC and Samsung have opted to go to market with Android. While such OS solutions as Symbian and MeeGo also are open source, they are maintained and controlled by Nokia, which does not plan to invest in them any longer.

Most importantly, Android levels the playing field in the handset market. Because it is a free, open source alternative, Android enables other handset companies to compete with iPhone and Blackberry without having to license Windows.

The following chart briefly surveys prevailing handset operating systems:

OS	Owner	Key points
Android	Google	Hardware independent, open source, fastest growing
Symbian	Nokia	Driven by world's #1 phone manufacturer, open source, being replaced by Windows
iOS	Apple	The "gold standard" of smart phones, but not low cost
Blackberry OS/QNX	RIM	The "gold standard" of enterprise smart phones, especially for mobile email
Windows	Microsoft	Hardware independent, familiar to all using Windows desktop
MeeGo	Nokia, Intel	New open-source venture, likely to be replaced by Windows.

Symbian (Nokia): Symbian, Ltd. developed the Symbian OS for use on many Nokia smart phones including such recent models as the Nokia N8, Nokia C6-01 and Nokia C7-00. (Source: http://in.reuters.com/article/2010/05/26/idINIndia-48812620100526).

In 2008, Nokia purchased Symbian Ltd. for €264 million and turned over most of the code to open source. Many saw the act of releasing Symbian to open source as a preemptive strike against Android, which at that time had yet to achieve market dominance.

While Nokia has not had as much success in the US as abroad, Symbian remained the #1 smart phone OS until Android surpassed it in 4Q10. Symbian still commands strong market share holding to second place at over 30% share. (Source: http://www.canalys.com/pr/2011/r2011013.html) However, many view Symbian as out of date versus newer solutions, and Symbian's market share has been declining. Nokia knew that it needed to make changes to combat its declining market share. Most felt that Nokia only had two choices remaining: Embrace either Android or Windows. On February 11, 2011, Nokia announced that it was moving to Windows, effectively ending the life of Symbian and MeeGo.

iPhone iOS (Apple): Many consider the iPhone the smart phone gold standard both in terms of hardware and software. Apple directly has driven iPhone's OS innovation and the application benefits from a broad range of 3rd party software developers. Apple owns and controls both the iPhone and iPad, which run on Apple iOS operating system. Apple's wildly successful online iPhone/iPad Application Store also has driven independent innovation with thousands of

inexpensive applications available. But Apple very carefully controls the guts of the iPhone software, meaning that there are fewer opportunities for smaller software companies to compete in that ecosystem.

Windows (Microsoft): Many manufactures offer handsets driven by a mobile version of Microsoft Windows. While Windows has not achieved the same popularity as its competitors in the smart phone space, Microsoft still remains a strong market force, as evidenced by its new partnership with Nokia.

Blackberry OS and QNX (RIM): Blackberry smart phones and new Blackberry tablets run on a version of the proprietary Blackberry OS. Blackberry also leverages the QNX embedded OS. RIM acquired QNX in 2010 for $200 million.

MeeGo (Nokia and Intel): Linux OS-based MeeGo was announced in 2010 as a Nokia/Intel joint effort targeted at smart phones and consumer devices. As Nokia shifts to Windows, MeeGo may already be destined for the dustbin.

So what does all this mean? Symbian and MeeGo probably will fade away. Windows has never achieved deep penetration in smart phones, despite the recently-announced Nokia partnership. That leaves RIM and Apple as powerful incumbents and Android as the low-cost, open source growth option that now dominates the market. Therefore, significant rewards await those software companies committed to developing Android-compatible products and M&A activity is poised to follow.

HOW IS ANDROID AFFECTING M&A ACTIVITY?

Companies acquire other companies for one of a few simple reasons, including:

1. Products or IP that can be leveraged as part of a larger product offering with more resources and distribution channels
2. Access to engineering talent and people with sought-after expertise
3. Defensive or competitive maneuvers
4. Cash flow

First, Android is driving strong M&A demand for companies that develop Android-compatible applications or development tool sets. For mobile handset application software developers, Android – along with iPhone and Blackberry – has become a "check-box OS solution" that must be supported. For example, a company designing a software development tool kit for 3D user interfaces most likely would intend to support Android, Blackberry and iPhone platforms at the very least.

Second, firms may acquire target companies staffed with engineers having Android expertise. Such experts can help port other existing applications to Android, or develop new Android-based products required by acquirers that don't yet have the requisite in-house expertise. For example, firms may acquire engineers having Android expertise so that they can add Android support to existing smart phones or tablets presently running Blackberry OS.

Finally, companies may acquire firms having Android expertise simply to compete against Android. RIM recently acquired The Astonishing Tribe (TAT), a key developer of much of Android's user interface. RIM has been perceived as falling behind both iPhone and Android in the user interface realm. By acquiring TAT, RIM brought expertise in-house to improve its products and staunch the flow of products to Android-supported competitors.

WHO MIGHT ACQUIRE SOFTWARE COMPANIES WITH ANDROID EXPERTISE?
Three primary types of firms might acquire software firms with Android expertise:

Handset manufacturers have acquired smaller software companies quite regularly: Nokia acquired Trolltech a few years back (Qt product line) and Symbian; RIM acquired TAT and QNX. Such acquisitions make a great deal of sense for firms like Nokia and RIM that internally support their software platforms and need to bring additional expertise in house. However, given its recent partnership with Windows, Nokia is less likely to bring software expertise in-house through acquisitions.

Larger software firms like Google or Microsoft frequently acquire smaller firms to build on their legacy, in-house expertise. In addition, roll-ups of several smaller players may enable those smaller players to compete more effectively as part of a large company than they can on their own.

Semiconductor manufacturers sell media processors, graphics co-processors and other chips to smart phone manufacturers. Key chip firms and core licensees include Texas Instruments, Qualcomm, Broadcom, Intel, ARM, Imagination, Freescale and many others. Chip companies frequently acquire software firms to strengthen the developments tools that are bundled with the chip. By acquiring a popular software tool suite or OS, a chip firm can increase its competitive advantage. Types of software may include: Android or other OS software development tools and board support packages; media software like VoIP or video codecs, and user interface toolkits. Many such acquisitions have closed, including: Intel's acquisition of Wind River (OS and software development platforms), Cavium's acquisition of Monta Vista (Linux-based software development platforms), and Imagination's acquisition of Hellosoft (VoIP and WiFi software).

Cash flow may be less applicable to the majority of the Android marketplace given its emerging-market nature, but financial buyers may acquire profitable software firms for their cash flow.

Key Android-Related Historical Acquisitions

Target Company	Acquirer	Deal Value	Transaction Date	Key Technology
TAT	RIM	$119M	December 2010	User interface development software for Android and other platforms
QNX	RIM	$200M	April 2010	QNX embedded operating system provided RIM an in-house OS to compete with Android
MontaVista	Cavium Networks	$53M	November 2009	Embedded Linux and Android tools
Symbian Ltd.	Nokia	€264M	June 2008	Symbian open-source OS maintained by Nokia
Android Inc.	Google	-	July 2005	Initial Android acquisition

Source: Capital IQ

Additional Android-Related Recent Transactions
January 2010 – January 2011

Transaction Announced	Target/Issuer	Buyers/Investors	Total Transaction Value $M US	Key product
01/07/2011	OneStepAhead Aktiengesellschaft	CloudMade Ltd.	-	Telematics and digital maps
01/04/2011	Appache Mobile LTD	DNA Dynamics, Inc. (OTCPK:DNAD)	-	Games and applications
12/15/2010	Critical Path Software Inc.	eBay Inc. (NasdaqGS:EBAY)	-	Software development
12/13/2010	Reach Unlimited Corporation	NAVTEQ Corporation	-	Mobile speed trap alerts
12/2/2010	TAT The Astonishing Tribe AB	Research In Motion Limited (TSX:RIM)	$119.44	User Interface software tools
11/01/2010	Vortxt Interactive, Inc.	Transcontinental Inc. (TSX:TCL.A)	-	Mobile messaging
10/11/2010	Ozura World Ltd.	PT Inovisi Infracom Tbk (JKSE:INVS)	$30.00	Mobile social networks
09/27/2010	Blovestorm.com	UC Mobile Ltd.	-	SMS and VoIP
09/13/2010	Gameview Studios, LLC	DeNA Global, Inc.	-	Games
07/27/2010	SMobile Systems, Inc.	Juniper Networks, Inc. (NYSE:JNPR)	$69.50	Mobile security
07/06/2010	Twidroyd	Ubermedia	-	Client for Twitter
05/20/2010	ShapeWriter, Inc.	Nuance Communications, Inc. (NasdaqGS:NUAN)	$6.57	Shape writing software
05/10/2010	mAPPn Wireless (China) Inc.	CyberAgent Ventures, Inc.	-	Application development
03/23/2010	Tapjoy Inc.	Offerpal Media, Inc.	-	Monetization and distribution
03/12/2010	Swift App, Inc.	HootSuite Media, Inc.	-	Social media
02/11/2010	Kolbysoft	Skyfire Labs, Inc.	-	Google Android Browser
01/08/2010	Mimvi, Inc. (OTCBB:MIMV)	-	$0.24	Search and discovery

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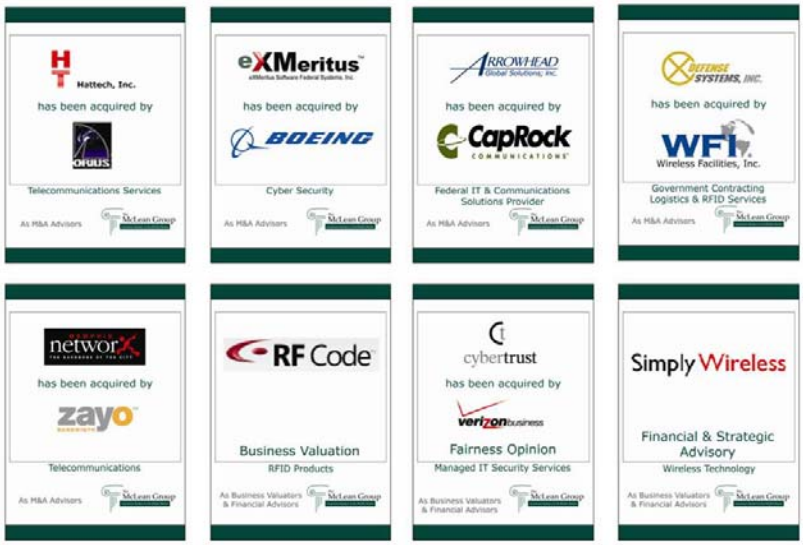
Selected Technology & Telecommunications Services Engagements



The McLean Group Technology & Telecom Practice

The Washington, DC area incubates a large number of technology companies serving the federal government, telecommunications and Internet industries. Many government agencies and corporations produce a steady stream of entrepreneurs who establish and grow successful middle market businesses in the region.

We have served these regional technology firms among others nationally and worldwide. Whether product- or service-oriented, our research, analysis, valuation and investment banking professionals have experience with a broad array of technology companies. We are well-equipped to help our clients build value and close successful transactions.

About the Author

Brent Lorenz, a Vice President in The McLean Group's headquarters office, has more than 15 years' experience driving business development, sales and product management for such high technology companies as Texas Instruments, IBM and venture capital-funded startups. He focuses on M&A for embedded software firms and semiconductor manufacturers and specializes in smart phone, mobile consumer device, and enterprise telephony markets. Specifically, he targets firms developing products centered around technologies such as VoIP, video software, DSP software, code development tools, graphical user interface (GUI) tools, and device management software.

Have questions about this whitepaper? Email blorenz@mcleanllc.com

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