# Google Android Strategy

Memo to the CEO

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In this paper, we analyze the future of the smartphone operating system market and consider strategies that Google Android can employ to survive and grow.

INDUSTRY OVERVIEW: STATE OF THE MARKET

- New Entrants
  - Smartphones are a growing part of the more mature cell-phone market.
    - Mobile phone sales declined overall in 2008, but smartphone sales grew.
    - This is a multi-billion dollar market with strong expected growth.
    - 9% of U.S. consumers brought smartphones in 2007, up to 19% in 2009.[1]
  - PC and electronics manufacturers have minimal entry barriers.
    - They are likely to favor Android because of open-source licensing, low cost of development, and low barrier to entry for the OS market.
  - The recent entry of several open source contenders has created a competitive pressure for open standards.
    - Lowers entry barriers and switching costs for handset manufacturers.
- Imminent Shakeout
  - Many new entrants create a highly competitive atmosphere.
  - Advances in hardware have reduced the barrier to entry.
  - Network externality effect with software applications involving both developers and users leaves room for only a small number of competitors.
  - The trend towards standardization will lead to one dominant platform.

US Operating System Share
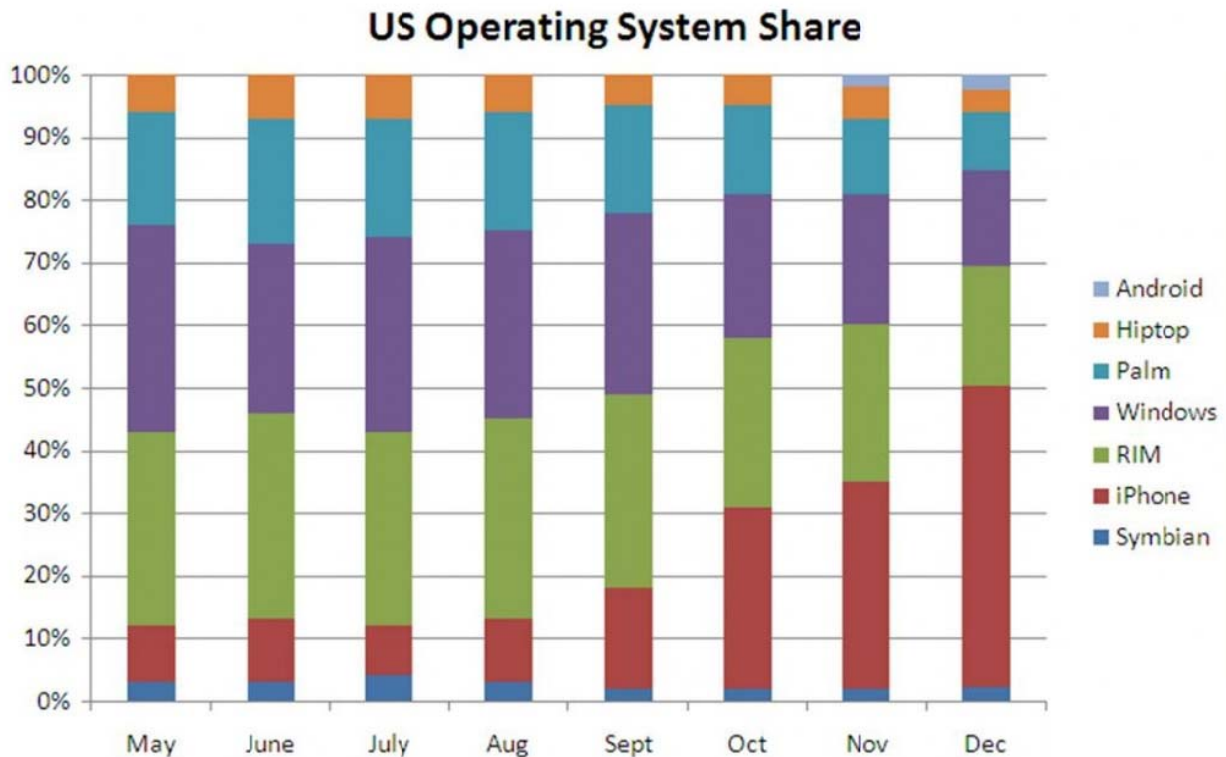
Source: AdMob, Inc. (Jan 2009)[2]

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[1] PC Magazine: "RIM, Apple Top U.S. Smartphone Sales."
http://www.pcmag.com/article2/0,2817,2329913,00.asp

- Market Niches and Differentiation
  - Consider the US market, with OS shares shown above.
    - Apple iPhone and Google Android are the only ones showing growth.
      - Failed release of Blackberry Storm coupled with iTunes App Store growth accounted for Blackberry's losses and Apple's growth.
    - All other players are losing market share due to poor products.
      - Windows Mobile shows extreme lack of innovation.
      - Symbian, Hiptop, Palm, etc. currently pose no major threat in the U.S. market.
  - Blackberry serves large business and road warrior niche with many corporate features.
    - Exchange integration and physical keyboard
    - Corporate models with high security and reduced consumer features
  - The iPhone created the mass market of consumer entertainment smartphones.
    - Entertainment and multimedia features, along with an intuitive interface, attract new customers that would not have smartphones.
  - Google Android must create its own niche in order to survive the shakeout.
    - Focus on embracing corporate standards to appeal to small business while positioning to become the open source standard.
    - Provide superior browsing experience and cloud computing services.
  - OS choice creates switching costs for handset manufacturers, carriers, developers, customers
    - Handset manufacturers must support OS hardware requirements.
    - Developers have steep learning curves and many lines of code already written.
    - Many apps are specific to an OS, so customers will have different user experiences migrating to another OS.
- Carriers exert supplier bargaining power.
  - AT&T and Verizon are the biggest and most influential in the US market. [3]
    - Apple's exclusivity with AT&T allowed them to leverage fist mover advantage in picking the largest international carrier and entering many countries.
    - Android's Open Handset Alliance opens access to all other carriers. [4]
  - Customers often keep their carrier even when switching phones.
  - Google's ubiquitous wi-fi plan could end the era of carrier dominance. [5]
    - Skype and VoIP products provide infinite talk time.
- Rivalry and Price Competition

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[2] AdMob: "AdMob Raises $12.5 million more for mobile advertising." http://gpsobsessed.com/admob-raises-125-million-more-for-mobile-advertising/

[3] USA Today: "AT&T Eager to Wield its iWeapon." http://www.usatoday.com/tech/wireless/2007-05-21-at&t-iphone_N.htm

[4] Open Handset Alliance: Members. http://www.openhandsetalliance.com/oha_members.html

[5] Google Public Policy Blog: "Google's vision of wi-fi on steroids." http://googlepublicpolicy.blogspot.com/2008/05/larry-page-talks-about-googles-vision.html

- - Google encourages many competitors all using its software.
    - Apple relies on increased experience (measured in phones sold) to facilitate cost-cutting on the hardware and production sides.
    - Most smartphones are headed to <$200 price points.
  - Every company enhances their product with complements.
    - Google provides open-source software and many cloud services to encourage a wide array of applications on different hardware.
    - Apple provides iTunes Music and Apps, as well as syncing with other Apple desktop applications
    - RIM and Windows Mobile complement Microsoft Office and Exchange Server.

PRESENT POSITIONING

Apple: Strengths, Weaknesses, Opportunities, and Threats
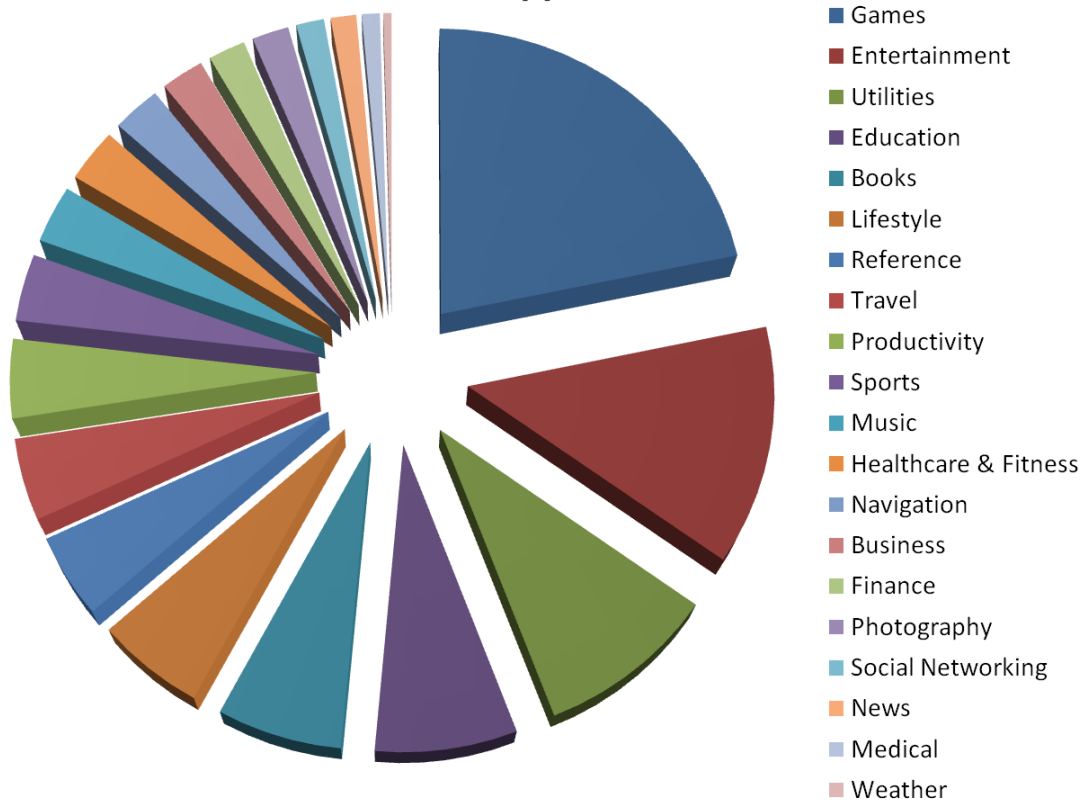
- Strengths
  - They have first mover advantage in several areas.
    - Developer community is locked in and growing.
      - They lack bargaining power or viable alternatives.
      - There is a large switching cost to move to development for another OS.
    - Apple already has 20x more applications than Google in its App Store due to a 1 year head start, a larger market, and better incentive structure for developers. [6]
    - Network externality created by convergence of many users and developers, with both communities growing.
  - Hardware and software complements increase value.
    - iTunes Music & App Store increases value of iPhone and locks in users.
    - Vertical integration provides customer assurance.
      - Apple Stores provide customer support, assurance, and outreach.
      - Control from factory to retail allows tighter quality control.
- Weaknesses
  - Apple has no successful cloud services or platform for providing them.
  - Apple's inexperience in providing these services evidenced by disastrous launch of MobileMe with 20,000 users unable to access their e-mail for 2 weeks[7].
    - Arbitrary application approval processes discourage developers.
    - Apps are rejected for providing services similar to Apple or AT&T.[8]

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[6] The Business Insider: "Google Android App Store 5% As Big As iPhone's." http://www.businessinsider.com/2009/1/android-app-store
[7] WIRED – "After a Decade of Secrecy, Apple Reluctantly Tries Out Transparency"- http://blog.wired.com/gadgets/2008/10/apple-openness.html

- Developers risk spending time developing an app that cannot be sold or distributed freely through the App Store to the whole market.
- Opportunities
  - Apply experience from Macbook manufacturing techniques.
  - Expand on the iPhone's strength as a mobile gaming and multimedia platform.
    - Allow video game developers to utilize iPhone as a mobile gaming device.
    - 21% of all (18000) apps are games, and 32.4% of iPhone users have downloaded at least 1 game versus 3.8% for average cell phone user.[9]
    - Casual gamers that would not buy the Nintendo DS or Sony PSP will use iPhone games and benefit from this move.[10]
    - Apple's app distribution in the iTunes Store shows their focus on entertainment and multimedia offerings, with minimal business services.
  - Expand and improve cloud services with syncing, such as MobileMe.
  - Improve desktop-level syncing with other PC & Mac software.

Breakdown of iPhone Apps as of Feb. 3, 2009

Legend:
- Games
- Entertainment
- Utilities
- Education
- Books
- Lifestyle
- Reference
- Travel
- Productivity
- Sports
- Music
- Healthcare & Fitness
- Navigation
- Business
- Finance
- Photography
- Social Networking
- News
- Medical
- Weather

Source: CNN Money[11]

[8] Slashdot: "Apple Rejects iPhone App as Competitive to iTunes." http://yro.slashdot.org/yro/08/09/13/1924215.shtml
[9] Mac Daily News: "Why There are So Many Games for Apple's iPhone." http://macdailynews.com/index.php/weblog/comments/19969/
[10] Square Tech: "iPhone, iPod Touch get in the Game." http://77square.com/tech/videogames/story_433007

- Threats
  - Apple is solidly entrenched in the consumer and entertainment niche of smartphones, making it difficult to move into other niches without risking alienating its customer base.
  - Open-source OS and development could eventually out-innovate Apple's closed system.
  - Older, more experienced companies may be able to outcompete Apple on price and carrier subsidies.
  - Emergence of competitor app stores with superior features likely to overcome Apple's first mover advantage.
    - This could attract more consumers to use competing platforms making them more attractive to developers to these platforms and overcome Apple's first mover advantage in acquiring a developer base.
  - Alternative iPhone app stores could put competitive pressure on prices in Apple app store and reduce Apple's ability to exert quality control over apps.
    - Could hurt Apple's quality image as well as reduce their app store revenue.

Google: Strengths, Weaknesses, Opportunities, and Threats

- Strengths
  - Google is a recognized brand name for innovation in cloud and data.
  - Open source platform is attractive to developers.
    - Developing environment which is more familiar and easier for experienced developers attracts many developers, creating large network of available code and support from fellow developers which creates a network externality.
    - Open and unregulated app store provides easy system for app publishing.[12]
      - Developers have a better guarantee their work will be published.
  - Multi-platform OS runs on many hardware configurations.
    - This provides increased network effect.
    - Hardware manufacturers, developers, and consumers want to avoid lock-in to one hardware platform with no choices.
  - Cloud computing services provide complements.
    - E-mail and calendar syncing maintain information across locations.
    - Free online office software suite not only backs up files, but allows for collaboration on documents -- a feature not offered by competitors.
  - Google Earth/Street View with Traffic, Google Voice Recognition, etc.

[11] CNN Money: "Why there are so many iPhone games." http://apple20.blogs.fortune.cnn.com/2009/02/03/why-there-are-so-many-iphone-games/
[12] Metallikop: "G1 vs. iPhone." http://www.metallikop.com/?cat=5

- Large amounts of data provide high potential for convenient and highly desirable software that improve consumers' lives.
- This data is a strong benefit that other companies do not share, and allows for many innovative software developments.
- Weaknesses
  - Open source platform increases security concerns.
    - Apps cannot easily be tested and guaranteed across all hardware platforms.
    - In exchange for multi-platform support, there is no way to maintain a consistent reputation of quality for Android apps and the Google platform.
    - Google has no final say in production of hardware for its platform.
  - Google is starting from scratch in the smartphone OS market.
    - No relations previously existing with carriers or handset manufacturers.
    - Inexperience shows in maintaining an App Market.
  - The Android App Market is relatively empty and lacking in functionality.
    - Developers have minimal incentive to develop for a small audience and a market that is mostly free apps, with paid apps only introduced recently.[13]
    - They have lost first mover advantage in securing both carrier alliances and a developer community, hampering growth of the system and community.
- Opportunities
  - Leverage Gmail and other web services in the cloud.
    - There are 92 million Gmail users, and growing. [14]
    - Use Google Earth + Street View to provide high-quality, voice-based, turn-by-turn directions and GPS geolocation.
    - Expand on YouTube and Google Docs integration for Android handsets.
  - Use free enterprise-level services to claim the small business niche.
    - Blackberry requires corporate Exchange servers with high cost of entry and recurring cost of maintenance, with non-trivial chance of downtime.
    - Google's cloud services such as Gmail and Google Docs are low cost with virtually no maintenance requirements or downtime.
    - New innovations in offline access of Gmail and Google Calendar allow competition with desktop corporate software such as Microsoft Outlook.
    - Business consumers do not care about Apple's strengths in entertainment.

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[13] Android Developer Blog: "Android Market update: support for priced applications." http://android-developers.blogspot.com/2009/02/android-market-update-support-for.html
[14] USA Today: "E-mail Carriers Deliver Gifts of Nifty Features to Lure, Keep Users." http://www.usatoday.com/tech/products/2008-04-15-google-gmail-webmail_N.htm

- See further discussion under the strategy section.
- Threats
  o Google's entry attempt fizzles out.
    - Android App Market fails to gain momentum due to incredibly late entry and late introduction of features such as paid apps.
  o Android has not claimed a niche in the smartphone market.
    - The imminent shakeout presents a large threat – without a stable and loyal niche of customers, Android will not survive.
      - Apple is entrenched and dominant in the market of entertainment smartphones, and the many Google-Apple synergies do not warrant competition on this front without cannibalizing a healthy relationship.
  o Development on the OS itself may not be sufficient to meet the standards of any consumer niche – either entertainment demands or business security requirements.
    - Currently, cloud services are still not trusted to entirely handle a business's computing and data storage needs[15], although Google is in the best position to change that.
      - Google has massive resources in customer experience and cloud computing, combined the two could be used to create a cloud computing system which meets with the standards of businesses.
  o Lack of widespread adoption by handset manufacturers is marginalizing the variety that would be provided from an open, multi-platform OS.
    - The HTC G1 and G2 only operate on a small niche of consumers that actually overlaps greatly with the iPhone, accounting for its poor performance.
  o There exists a very specific strategy that can ensure Android's success, but it hinges on cooperation from developers, handset manufacturers, and carriers.
    - Lack of carrier adoption can also hamper the success of Android.
    - Handset manufacturers may not build phones sufficiently capable or intuitive, and this could drag down Android's image.
    - Many handset manufacturers still want to attempt to compete with Apple on media phones, and may use Android as a platform without working directly with Google to shore up Android for this usage.
      - Android still lags behind Apple significantly in areas of customer experience and support, interface and usability, and multimedia access and ubiquity. All of these are necessary features for a smartphone OS targeted at the mass market.

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[15] Computer World UK: http://www.computerworlduk.com/management/security/standards-law/news/index.cfm?newsid=13652

SHORT TERM FUTURE POSITIONING

- In the short term, we consider Apple iPhone and Google Android as the only two relevant players in the mobile OS market.
    - These strengths will quickly erode if not acted on.
- Google and Apple benefit from accommodating/collaborating with each other more than competing directly with each other
    - Google benefits from increased use of Google services by iPhone users, as Google receives about 50 times more searches from iPhones than from any other mobile handset[16].
        - Google clearly benefits from large number of iPhone users using Google online services, would not want to lose this large market for its services.
        - Google has offered an iPhone optimized search, voice search, and improved syncing capability between Gmail and Google Calendar for iPhone users, indicating that they do stand to benefit from offering their services to iPhone users.[17]
    - Google online services add value to iPhone, as they provide the user with a better online experience, so Apple benefits from Google services
        - Apple does not have the experience and does not want to dedicate the resources to provide these services themselves, so it benefits from Google providing them for them.
            - Apple's inexperience in providing these services evidenced by their poor launch of MobilMe services.
            - Apple has Google as the default search engine and map provider on the iPhone.
            - Apple could more easily provide compatibility with Google's services than with other competitors (Microsoft's) services.
- Google
    - Maintain focus on strategy of adding value to the platform with the eventual goal of increasing Google advertising revenue.
        - Improve the Internet browsing experience relative to the iPhone.
    - Focus on cloud services.
        - Deal with user's concerns about trust and security.
    - The industry is currently headed towards standardization.
        - Google must move quickly to embrace and implement open source standards, regardless of the status of open source development.[18]
    - Leverage Google data to build superior GPS and voice recognition.

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[16] Financial Times-"Google Homes in on Revenues form Phones"-http://www.ft.com/cms/s/0/667f13de-da60-11dc-9bb9-0000779fd2ac.html?nclick_check=1

[17] SearchEngineWatch: "Google Search Results Now (Visually) Optimized for the iPhone and G1" http://blog.searchenginewatch.com/081218-231122

[18] ComputerWorldUK "Open source mobile telephony goes mainstream"-http://www.computerworlduk.com/toolbox/open-source/open-source-business/in-depth/index.cfm?articleid=2022

- o Android is currently the only major alternative mobile OS as capable as Apple's iPhone.
  - Consider the HTC Magic, which shows that Android could potentially compete in the same niche as the iPhone, with touch-screen based multimedia and gaming.
- o In order to maintain Android's position, Google must move quickly to capitalize on the current strengths of the platform.
  - Exercise greater control over handset designers to ensure that new phones showcase Android's strengths in web browsing and cloud services.
- o Contribute company resources to developing Android.
  - Put talented mobile developers as full-time on Android.
  - Use strengths in advertising to increase Android's visibility.
- o Develop and maintain developer incentives in order to grow the platform.
  - Improve the app store structure of paid apps to attract developers.
  - Compete with Apple on developer satisfaction,
  - Build core group of open-source developers for the project.
- o Provide increased security to corporate users of cloud services.
  - Address concerns about data migration and reliability.
  - Sign contracts with corporate customers to mitigate fears of future price gouging, and allow easy data retrieval to allow customers to remove their data.
- Apple
  - o Continue to leverage App Store, ensuring compatibility of next generation iPhone with existing apps.
  - o Alternative app stores do pose a threat to Apple's close quality control and high reputation of their mobile platform.[19] Apple's possible responses include:
    - Engage in massive litigation to destroy competitors.
    - Sign exclusive contracts with important developers.
    - Fight and win price war by lowering app prices.
  - o Consider the parallel to the desktop OS wars.
    - Windows maintained a significant lead over Apple for a long time due to disproportionately large number of software developers working on Windows software.
    - Apple is now in the position that Microsoft was in, and it holds the upper hand in developer community and developer incentives.
      - Developer contracts could be useful in avoiding losing important developers to other mobile platforms.
  - o Improve upon this position by releasing more features in the developer SDK that would capitalize on Apple's strengths in multimedia.
    - Provide video recording capabilities to developers, increasing the existing iPhone's longevity as a mobile video platform.

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[19] Wall Street Journal "Breaking Apple's Grip on the iPhone"-
http://online.wsj.com/article/SB123629876097346481.html

- - Improve 3D graphics capability and support, attracting video game developers to the iPhone platform; if necessary, sign exclusive contracts with video game software developers.
  - o Apple can further strengthen its position by eliminating some obvious weaknesses that currently leave an opening for competitors.
    - - Turn-by-turn GPS is still not satisfactory on mobile phones.
    - - Negotiate deals with carriers to provide iPhone tethering.
  - o Cooperate with Google to compensate for weaknesses in cloud-based small business software and navigation data.
- Current trends point to an accommodation strategy between players in these two major market segments. Although the two fields do have some overlap as they both attempt to release full-featured mobile platforms, in general they attempt to coexist and serve their respective customer niches.

LONG TERM FUTURE POSITIONING

- Many new entrants are likely to attempt to compete in this market, all with their various strengths and weaknesses.
  - o Netbook manufacturers want to use their strengths in high-performance mobile devices to build effective smartphones[20], and will choose the most capable OS for their device.
  - o Older mobile OSes are regaining relevance due to the increased competitive pressure with new entrants. We can expect that they will imitate the industry leaders until they can surpass them in features.
- The market will continue to be split between open-source and closed-source solutions due to their respective customer niches.
  - o Open-source software has fundamental concerns about security and reliability from the point of view of enterprise use.
  - o Conversely, organizations can still use open-source if the cost of internal security standards is less than the cost of using a more reliable and more closely controlled mobile OS such as Apple iPhone.
  - o Closed-source software offers the creator's implied support and guarantees of reliability as added value to the OS itself.
- Microsoft Windows Mobile 7
  - o Slated for release in 2010, it has been hailed as a worthwhile competitor for Apple's iPhone in terms of interface, technology, and features.[21]
  - o Office suite could potentially be improved to allow document collaboration in the style of Google docs, improving appeal to businesses and reducing Google's advantage in this area.
- LiMo Phones

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[20] TopNews-"Eight new smartphones introduced by Acer at GSMA 2009"-
http://www.topnews.in/eight-new-smartphones-introduced-acer-gsma-2009-2126803
[21] AppScout "Motorola: Windows Mobile 7 Coming in 2010" -
http://www.appscout.com/2009/02/motorola_windows_mobile_7_comi.php

- - LiMo shares hardware compatibility requirements with Windows Mobile 6.1, eliminating the switching cost for mobile phone operators.[22]
  - LiMo presents probably the lowest entry barrier for interested developers.
- Symbian and Nokia present a very significant threat as they prepare to move in to the US market with competitive smartphones.
  - As the international leader in smartphone OSes, Symbian has a strong developer base and good relations with many handset manufacturers.
  - Nokia is well-positioned to compete in the multimedia market given these connections and its technological dominance, with rumors of demo 1080p smartphones expected this year.[23]
  - Nokia has also moved to embrace web standards by including Skype pre-installed on their new smartphones[24], which will increase the attractiveness to business consumers who need a large amount of international calling or conferencing.
    - As an older, more-dominant open source OS, Symbian will share many of Android's strengths as it enters the US market.
  - With its market leader position and years of experience, Nokia can now build its App Store based on what has and hasn't worked for everyone else entering the market before it. They have significantly greater transparency in publication standards, and a more intelligently designed category system.
- Apple
  - Apple may potentially choose to distribute the iPhone through other carriers in addition to AT&T, causing more direct competition between iPhone and Android from the consumer's perspective.
  - Apple may be able to further reduce the price of the iPhone based on their increased experience in design and production and continue to focus on being at the high end of the quality spectrum.
    - It can focus on improving the user experience of the App Store by adding more user friendly features such as app recommendations in order to maintain pace with the features being offered by the app stores of competitors.
- Google and Future Responses
  - Android will lose its position as the only open-source mobile OS capable of succeeding against Apple's iPhone, currently the clear leader in the industry.
  - As discussed, Android must take measures to ensure survival in this competitive market by carving out a niche and adopting open standards to attract more developers and manufacturers to their platform.
    - Open standards will reduce the switching cost for interested handset manufacturers and developers who want to move to Android.

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[22] ComputerWorldUK "MWC: LiMo's Linux-based mobile OS stack gains ground"-
http://www.computerworlduk.com/toolbox/open-source/open-source-
business/news/index.cfm?newsid=13418
[23] NokNok "Full 1080p on your Nokia Smartphone"-http://noknok.tv/2009/02/20/full-1080p-on-your-nokia-smartphone/
[24] NokNok "Nokia N97 Comes with Skype"-http://noknok.tv/2009/02/18/nokia-n97-comes-with-skype/

- Similarly, open standards will address the concerns of businesses who are concerned about being locked in to Android-specific standards.
  - Android can also position itself as a strong player in the small business niche, and work its way up to full enterprise services.
    - Develop direct relations with interested enterprise customers and assist them in customizing Android to their needs to allow for in-house development and mitigation of security and privacy concerns.
    - Couple Android customization with cloud service privatization in order to offer a full package to enterprises that would allow them to abandon the older structural requirements of Blackberry software and Exchange servers, causing massive savings which are attractive in this economy.
  - Focus on offering cross-compatibility of Android apps and apps of other phones (iPhone) to expand their user base and eventually demonstrate the superiority of the user experience on the Android.