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THE MOBILE ELITE:

MEETING THE GROWTH CHALLENGE
IN THE 4G ERA

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“A good hockey player plays where the puck is. A great hockey player plays where the puck is going to be.”

— Wayne Gretzky

THE HYPERCOMPETITIVE MOBILE SECTOR

Mobility is everywhere. But with this growing ubiquity comes a set of unique challenges for companies riding the wireless wave of opportunity. Throw the impending arrival of the broadband 4G era into the mix and uncertainty levels are set to spike as the scramble for competitive advantage reaches fever pitch. Given the current volatility of the U.S. mobile sector, it could be argued that a period of *hypercompetition*¹ is engulfing the formerly stable wireless industry. Established markets are constantly threatened by new entrants with technologies or business models that throw traditional standards and rules into flux, resulting in periods of prolonged market volatility.



Perhaps because of this heightened uncertainty, much of the established U.S. mobile sector still finds itself treading water, unsure of where and how to capitalize on new opportunities. Such companies can embrace the prospects of a more democratized digital world or staunchly defend existing businesses and protect traditional revenue streams. The decision is not so clear-cut, and now more than ever, the challenge is to do both. To begin with, incumbents must find new ways to compete against the waves of innovation emerging from Silicon Valley that have shifted the locus of creativity in mobile to the West Coast. But how should companies ride out this volatility? In the short term, viable pathways to growth need to be secured—or else the masters of old mobile risk being marginalized by a growing army of upstarts.

WELCOME TO THE OPEN MOBILE WORLD

Currently, the core elements of mobile disruption are centered on a patchwork of seismic events unfolding around three pillars of change: the rapid acceleration of innovative mobile Web technology; rising consumer demand for new mobile products and data services; and an evolving regulatory policy debate pushed along by the U.S. Federal Communications Commission, which seems inclined to pursue a more open, competitive market environment—the likes of which the industry has yet to experience. Collectively, these elements are the cornerstones of the *open mobile era*—a macro-level phenomenon that reaches far beyond the boundaries of the traditional U.S. mobile industry, into the surrounding technology and media sectors and across myriad adjacent vertical industries adopting wireless technologies.

For a number of years, Deloitte's* telecoms industry group has been researching the likely impact of the open mobile era and publishing a series of studies that offers incumbents guidance on how to capitalize on emerging growth opportunities. Findings from the latest study, focused on surveying a select group of senior executives in and around the mobile industry, once again point to growth and innovation as the dominant issues of the day. The gentle breeze of change is long gone, and in its place, a full-blown, Schumpeterian headwind threatens to leave a trail of creative destruction in its wake. The industry's leaders are seemingly challenged on an almost daily basis by floods of new entrants. Many of these incumbents have limited experience in developing cutting-edge, mobile-technology-based business models, proving that experience in itself is not a harbinger of success in this mobile era.²

* As used in this article, "Deloitte" means Deloitte LLP. Please see www.deloitte.com/us/about for a detailed description of the legal structure of Deloitte LLP and its subsidiaries.

Our research suggests that, in periods of market volatility, resources—often more so than market position—can be a determining factor of success. The pressing need for new organizational capabilities to compete and capitalize on new opportunities is evident. What is also apparent is the expanded role of platform leadership and ecosystem development to support top-line growth and innovation initiatives. However, the understanding of the roles that capabilities play in deploying these strategies remains inconsistent. At the heart of this issue is perhaps a growing tentativeness among incumbents to fully embrace open platform tactics. Mobilizing and managing new open ecosystems becomes crucial to business model innovation, especially in light of recent sector events that are rapidly redrawing the competitive landscape. But in which areas, and to what extent, should strategic approaches be built upon open methods of collaboration with third parties?

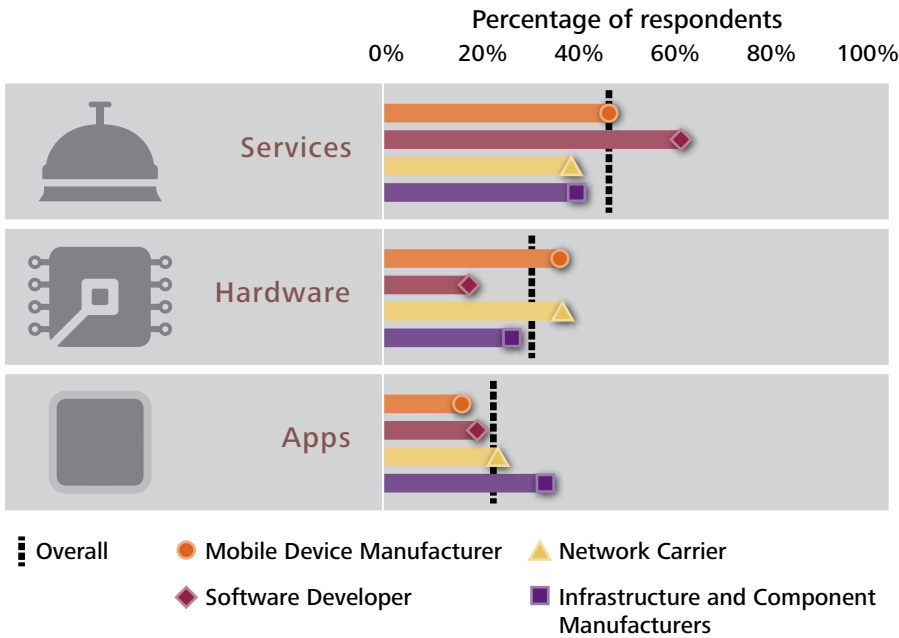
MINING FOR GOLD

The backbone of the open mobile growth era is the rollout of 4G (fourth generation) LTE (Long Term Evolution) and WiMax (Worldwide Interoperability for Microwave Access) wireless network technologies, which are gathering speed. The long-awaited network upgrade is set to address voracious U.S. consumer demand for higher download speeds and greater bandwidth capacity, which should provide enhanced mobile data products and services. On paper, 4G networks promise to usher in a new wave of mobile ubiquity, opening the door for innovation to increase across all areas of the mobile value chain and beyond. And although nationwide 4G coverage is still being developed, the network standards battle between WiMax and LTE has tilted in favor of LTE. The majority of U.S. wireless service providers have announced support for the LTE standard, which is designed to be backward compatible with 3G GSM and HSPA technologies, giving it a cost advantage over WiMax in the process. LTE will also provide network operators 2–5 times greater spectral efficiency than the most advanced 3G networks, reducing the transmission cost per bit and allowing better economics for carriers and end users.³ Recent market forecasts suggest LTE services will generate more than \$11 billion in service revenue in the United States by 2015, and global LTE subscribers will number 303.1 million by 2014.⁴

From a growth perspective, the implications of the move to 4G are significant. Carrier voice revenue declined 7 percent over the last four years, while data revenue soared 132 percent and now accounts for 35 percent of the total revenue for the wireless industry.⁵ This trend is set to grow significantly over the short term and, with it, new revenue opportunities distinct from their traditional network services will emerge for incumbents. 4G is expected to provide the highway to this new value creation.

To begin with, much of the industry believes that an explosion in mobile services, distinct from revenue that comes from straightforward mobile advertising and software applications, will provide the greatest revenue opportunities in the next three to five years. Services, rather than hardware per se, are thought to represent a greater source of future value (see figure 1). It is important to define services in the context of emerging mobile business models in popular consumer and enterprise areas such as entertainment, social networking, mobile payments, mobile cloud services and productivity, and so on. The *SoLoMo* mantra (“social-local-mobile”) is becoming commonplace across the industry and growing louder by the day. Companies should expect to find opportunities in the overlap of social media platforms such as Facebook and location-based mobile services and mobile OS platforms such as Android or iOS. The startup successes of location-based mobile companies, including the likes of Foursquare and Gowalla, provide a perfect example of where future value could emerge in this category.

Figure 1. What will drive future mobile revenue opportunities?



Source: Deloitte Open Mobile Analysis 2011

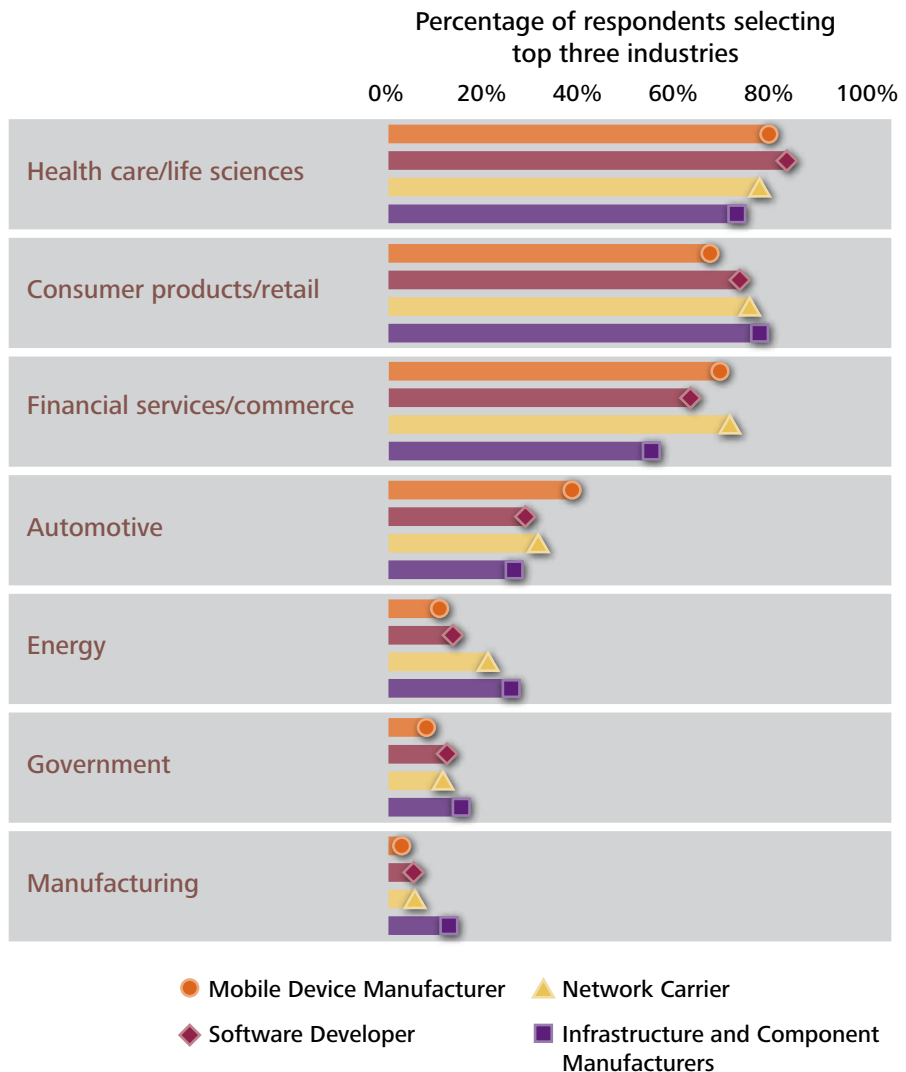
THE RISE OF THE MACHINES

In a similar vein, at the sector level, the emergence of 4G will accelerate widespread mobile business model innovation across a number of vertical industries such as healthcare and life sciences, which are already adopting wireless technologies. Others are quickly following suit, and industries such as consumer products and financial services are likely to experience higher rates of new


mobile business model growth over the next five years (see figure 2). This is generally in alignment with current market trends; the rise of mHealth and smart grid energy technology, in particular, offer huge potential revenue opportunities for mobile incumbents to expand top-line growth.

Machine-to-machine (M2M) wireless technology is often the cornerstone of these opportunities. Although M2M technologies are certainly not new to the industry, worldwide M2M connections are on a steady upward march forecasted to reach 225 million by 2014. Industry-wide M2M operator revenues is estimated to continue its rise from \$4.3 billion in 2008 to \$12.9 billion by 2012. On a global scale, the figures are even stronger; revenue from mobile connected M2M and embedded devices is set to rise to \$18.9 billion by 2014.⁶

Figure 2. Which vertical industry has most potential for new mobile growth and value generation?



Source: Deloitte Open Mobile Analysis 2011

Smarter energy and smarter healthcareA stylized illustration of a man in a dark suit and tie, climbing a large, curved, light-colored structure. He is positioned on the left side of the page, with his body angled upwards and to the right. The structure he is climbing is a thick, curved line that runs vertically down the page. The background is a light, textured yellowish-brown.

Several forces are driving this surge in the M2M market, including the declining cost of mobile device and infrastructure technology; increased deployment of IP, wireless and wireline networks; and a low-cost opportunity for carriers to eke out new revenue streams by utilizing existing infrastructure in new markets. This opportunity will be most prominent across a number of enterprise verticals with energy likely to lead the way: Smart grid and smart metering technologies are set to experience the most growth in the M2M market. The Obama administration's targeted economic stimulus package of \$3.4 billion to modernize the nation's power grid will further accelerate development of this market.⁷ At the broadest level, the emergence of smart grid networks will provide improved tracking of energy utilization, mainly in the form of smart grid metering, for real-time communication between consumers and the electricity grid. This will enable significant energy and cost-saving features not possible with today's grid. Growth opportunities are significant; forecasts suggest the U.S. smart grid market will grow from \$21.4 billion in 2009 to \$42.8 billion in 2014.⁸ By 2014, 88 percent of this market is projected to consist of device and hardware manufacturers, software developers, and providers of communications infrastructure and equipment.

The healthcare sector is also set to gain from increased adoption of mobile technology, which should benefit carrier service revenue in the United States where the market for wireless home-based healthcare applications and services is estimated to grow at a five-year CAGR of 80 percent and become a \$4 billion industry by 2013.⁹ Mobile Health, or mHealth, is emerging as a significant growth opportunity for companies looking to capitalize on advances in wireless healthcare utilizing M2M technology. Analyst forecasts estimate the potential value of the mHealth market to be approximately \$4.6 billion as early as 2014.¹⁰ The driving forces behind this expected uptick are numerous. Mounting pressure to cut burgeoning costs in the U.S. healthcare system is a government-mandated objective; in particular, preventable readmissions cost an estimated \$12–17 billion per year.¹¹ On top of this lies the trend of an aging population, exacerbated by the size of the baby

boomer demographic. Americans aged 60 or older represented 18 percent of the U.S. population in 2009, and this segment is expected to grow to 27 percent by 2050.¹²

Wireless healthcare solutions offer a way to deal with these and other pressing issues. Advances in the area of remote patient monitoring (RPM) are expected to have a big impact across targeted disease areas where chronic conditions are a leading cause of the readmissions problem. RPM can equip healthcare providers with timely information about patients' health while improving the speed and accuracy of diagnoses. Wearable body sensors and remote monitoring can keep chronic patients out of hospitals and improve their quality of life while significantly reducing admission expenses. Continuous remote monitoring of patients through wireless sensors and wireless networks also allows caregivers to detect and respond to intermittent problems and improve medical providers' abilities to schedule visits. This, in turn, helps alleviate pressures pertaining to resource planning, especially problems related to unnecessary call-outs.

Improving disease management, despite an increasing incidence of chronic diseases, is a particularly promising avenue, considering seven out of 10 deaths among Americans each year are the result of chronic diseases; heart disease, cancer and strokes account for more than 50 percent of all deaths each year. In 2005 alone, 133 million Americans—almost one out of every two adults—had at least one chronic illness.¹³ Given this situation, the numbers are stark. Costs associated with chronic disease management accounted for more than four-fifths of the total healthcare expenditure, or \$2 trillion annually by 2009, and are expected to increase 6.1 percent per year over the projection period 2009–2019.¹⁴ But, if as expected, adoption of such RPM technology becomes suitably widespread, savings are expected to reach \$197 billion over the next 25 years.¹⁵

With these opportunities only set to grow bigger, many mobile technology and wireless companies are planning to collaborate in high profile alliances with counterparts across the energy, healthcare and life sciences sectors. The immediate benefit will come from combining resources and knowledge to push the growth of wireless technology in these industries to the next level. The key challenge for wireless incumbents will be to position themselves at the center of new ecosystems and create differentiated platforms for growth that will allow them to exploit new business models in the process. But unlocking value in nascent markets will require sustained collaboration, a problem area for many mobile incumbents.

One solution could be to learn from the software-driven “open” development tactics used by mobile's new elite, which could help establish a roadmap to growth for traditional incumbents.

SOFTWARE, THE GREAT DISRUPTOR

Perhaps the biggest element of mobile hypercompetition is the impact that so-called “Web companies” continue to have in transforming the traditional competitive landscape. A majority of Deloitte’s Open Mobile survey respondents, who were not affiliated with network carriers, believe Web-based companies are likely to have an increasingly dominant role in mobile over the short term. Google and Apple in particular continue to be the keystones of the new-wave vanguard in mobile that also sees the likes of Facebook, Amazon and Twitter—all giants of the Internet economy—exert more and more influence over the design and utilization of Web-enabled mobile devices and services. Google provides a prime example. Much of Android’s growth in mobile is driven by the one-two punch of its mobile search and advertising platform, which has increased revenue by more than 500 percent since 2009.¹⁶ Not to be outdone, key competitor Apple has aggressively pursued its own double whammy of leading-edge consumer hardware design, combined with world-class software development, to carve out its own commanding presence. Driven by the rapidly evolving iOS operating system platform and an expanding portfolio of mobile devices and tablets, the results have been overwhelmingly positive, leading to the July 2011 announcement that the company is now the number one global smartphone producer.¹⁷

The significance of this shift in the balance of power toward firms that leverage software and media content at the core of their mobile strategies cannot be overestimated. One of the biggest drivers of value generation in the open mobile era is the development and proliferation of mobile software applications, or simply “apps,” which rapidly blossomed into a multimillion dollar industry of their own. The app economy is booming and likely to be worth in excess of \$2 billion by 2012 with fortunes undoubtedly being made and lost in the process.¹⁸ Significantly, some analysts estimate software innovation outpaces network innovation by a factor of five to one, meaning new product introduction lifecycles for mobile software can average three to six months while network service innovation can take 18–24 months.¹⁹ Not surprisingly, network services are often left playing catch-up with software innovation.

The incumbent challenge

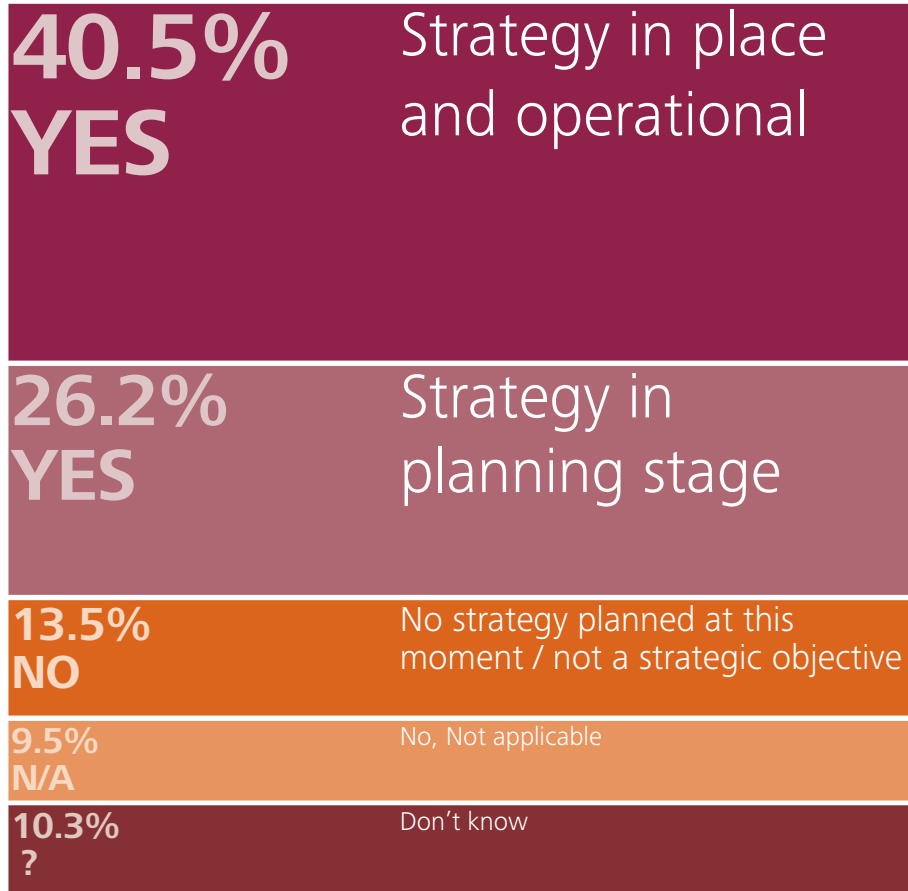
From a carrier perspective, the rise of software in their network-dominated world poses interesting questions for the wireless incumbents, especially with regard to how they leverage collaboration to take advantage of growth opportunities in adjacent industries. With the “content is king” mantra ringing in their ears, there is little doubt that software innovation is driving platform innovation,

which in turn is driving device adoption that ultimately helps fuel the growth of network data services. The challenge for incumbents will be to exert their still-powerful presence and compete in an area in which they have traditionally lacked expertise, allowing them to carve out new business models that extend beyond the boundaries of the traditional wireless sector. Responses from the mobile executives in our recent Open Mobile survey suggest this is a priority—a large majority believe carriers must make the transition from the walled gardens of the past to new organizational forms built around open ecosystems to enable enhanced collaboration with developers. Others suggest that the most likely route to sustained success may come from a managed open strategy—where carriers retain prioritized control over premium applications and assets but allow third parties access to core network functions.

The good news for incumbents is that this message seems to be hitting home. Only a few years ago, U.S. carriers were virtually impenetrable for the majority of software developers, but this is starting to change. Today, each member of “the big 3” is making a bigger effort to attract more developers to collaborate and build out their ecosystems. For instance, both Sprint and AT&T have recently launched new initiatives focused on building out new centers of innovation and processes to facilitate co-development with third parties.²⁰ This should help build platforms that could see new apps and services launched in areas such as messaging, geolocation and M2M. Beyond this increased network access, carriers are also looking to develop new app storefronts that will cater to multiple third party platforms and handsets directly linked to new external developer channels. This will offer developers a range of economic, technical, sales



Figure 3. Does your company have an open mobile strategy in place?



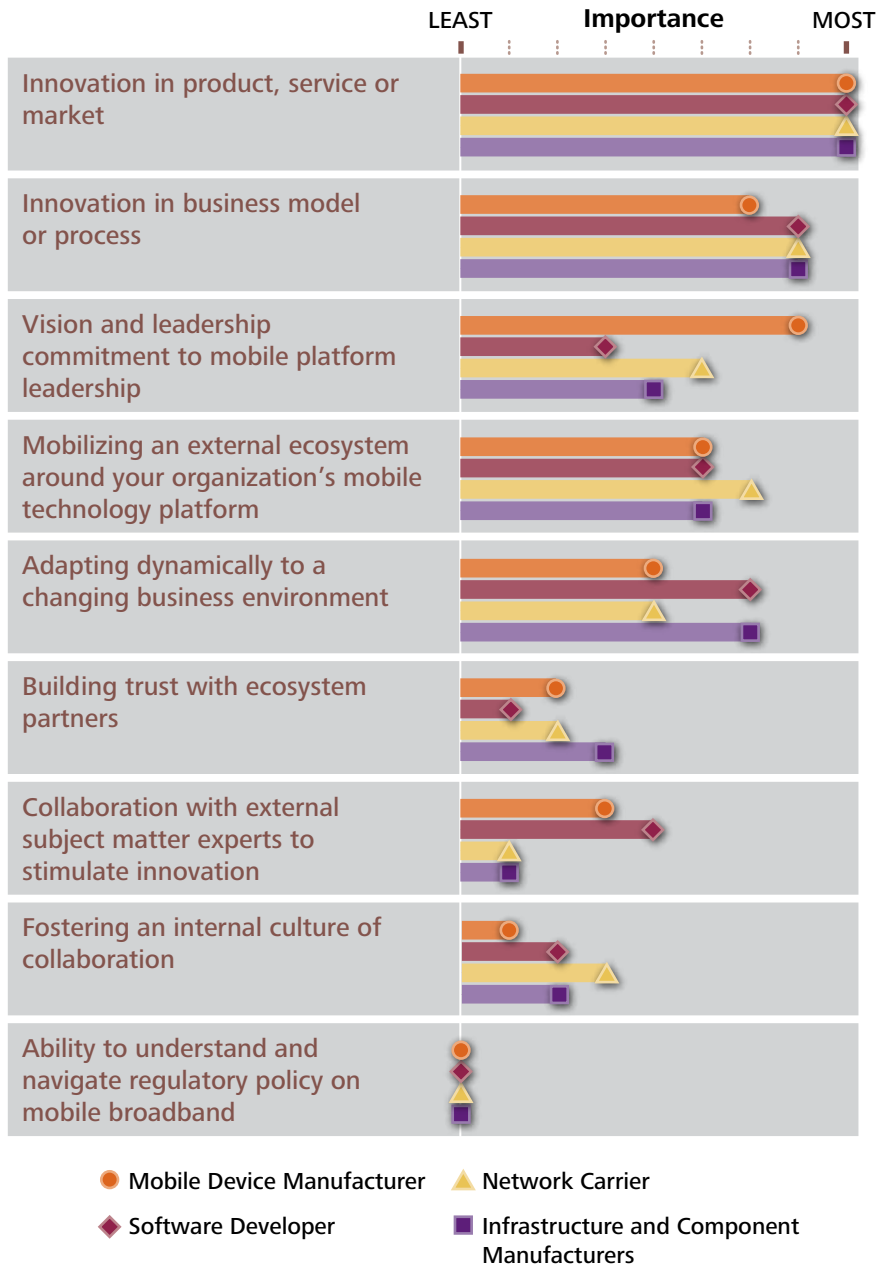
Source: Deloitte Open Mobile Analysis, 2011

and marketing benefits in return for creating the apps with the best revenue potential to run on their networks. And perhaps in a nod to the likes of Apple's WWDC program, each of the big 3 now hosts its own annual developer conference with the goal of growing a sustainable developer community to foster more collaboration. All of these steps suggest carriers are beginning to follow a collaborative product and services strategy to keep pace with threats from the likes of Google and Apple and win the prized developer mindshare. But in order to get there, an increased focus on developing appropriate capabilities is critical.

NAVIGATING THE PATH TO GROWTH

Against the backdrop of change in mobile, the twin strategies of platform leadership and ecosystem development are central to capitalizing on emerging growth opportunities. Our surveyed executives agreed, and most indicated that their organizations were on track with planning and investing for the open mobile era despite the lingering effects of the recent economic downturn. The broader role

Figure 4. Ranking the importance of organizational capabilities to compete in the 4G era (by industry).

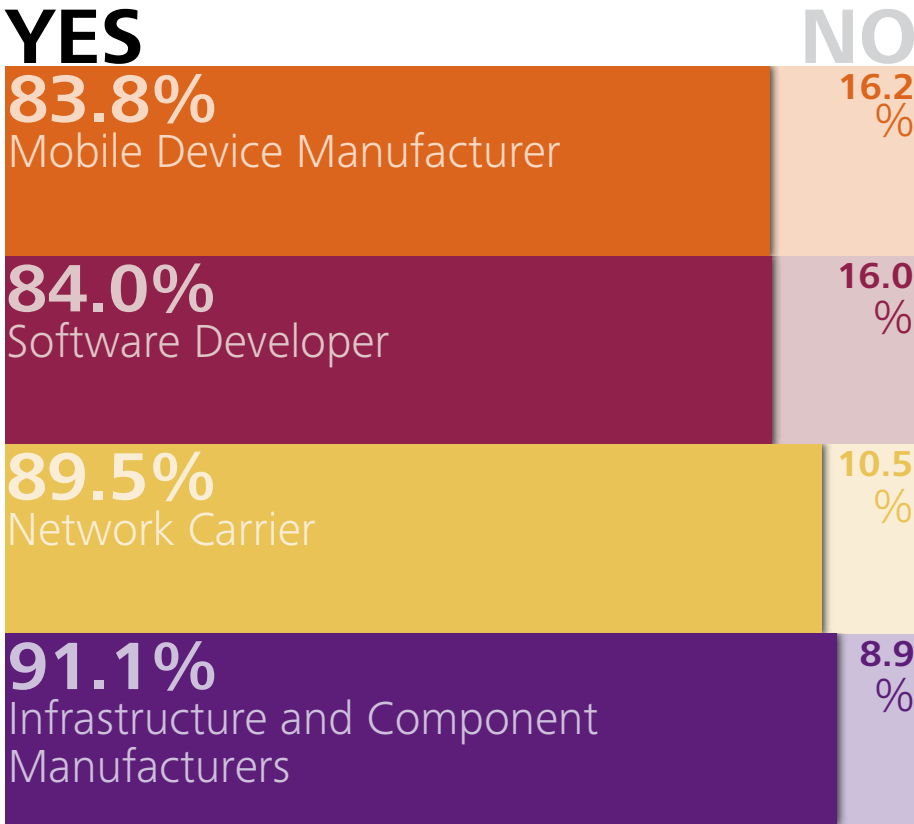


Source: Deloitte Open Mobile Analysis 2011

of platform leadership within organizations planning for mobile growth seems to be taking hold. Digging deeper, the simplicity of applications development and user experience, cross-industry potential, open interface access and modular technology architectures, and the use of a vibrant ecosystem to support and develop the platform are considered the most critical elements for platform success.

The effectiveness of the formation and deployment of a platform-based ecosystem

Figure 5. Will carrier competitiveness in the 4G era be dependent on transitioning from “walled gardens?”



Source: Deloitte Open Mobile Analysis 2011

can differ between various sectors of the mobile value chain, but the building block capabilities of alliance formation, knowledge management, trust-building and collaboration in general are seen by respondents as the keys to developing platforms and ecosystems to stimulate innovation. Competence in each of these areas should be a top priority.

Follow the mobile elite

The call for incumbents to move toward a more open form of market competition has been a consistent theme throughout our research. Studying the strategies and tactics of the Silicon Valley elite may prove useful in constructing the path forward. Most surveyed executives seemed to believe that carrier competitiveness in the 4G era will be dependent on dismantling the closed platforms of the past and replacing them with more open forms of organization (see figure 5). This is considered essential to stimulate business model innovation beyond the walls of the traditional wireless industry and ensure new platforms will gain sustainable foot-

holds amid market turbulence. In this market era, innovation in software drives OS and device utilization and boosts network asset utilization. Incumbents prone to exerting restrictive control and access over software applications, content, media and network applications should realize the risks to market share in doing so.

Despite a growing recognition that the move to open platforms is necessary, transitioning away from closed, proprietary business models is not easy. Winners in this era will be the ones who can astutely mobilize new ecosystems, manage highly distributed network alliances, build trust with new partners in the innovation process and generate value from mobile technology platforms that, in turn, will form the core of new business model development. Companies that fail in these key areas may struggle to compete.

Run to where the money will be

For incumbents, finding new, nontraditional sources of wireless growth will become imperative to sustaining their leading positions. Companies active in areas such as wireless healthcare, smart grid energy management, financial services and retail are set to experience significant growth in the use of mobile technology. New business models with wireless technologies at the core of their platforms will drive value generation. Top-line growth will become increasingly dependent on how well incumbents, particularly carriers, can organize to collaborate with players in adjacent industries where they do not possess leading knowledge or prior experience.

Go toe-to-toe with the new wave

The art of innovation lies at the core of the incumbent challenge in mobile. The question becomes how to balance the daily grind of defending hard-won market share with the need to find unexplored opportunities. Our research highlights the strategies used by successful new entrants—the mobile elite—to focus on two main tactics: the development of astute open platform leadership and the mobilization of flexible innovation ecosystems. To seize the moment with emerging growth opportunities, incumbents should consider similar tactics to reenergize their innovation process.

The first step will be to focus on areas of the value chain that are still underserved by new entrants. Survey insights point to targeting innovation at the services level, across the adjacent vertical industries where wireless technology is set to disrupt established markets. By following a managed open strategy, wherein careful targeting of open platform development is balanced with retaining proprietary control of core value-generating assets, incumbents can go toe-to-toe with the new wave. Tactics should include extending third party developer collaboration in areas



of promising value generation such as M2M in the health-care and energy sectors. Fostering innovation in areas such as mobile cloud computing and mobile commerce, combined with making bold plays in the ever-expanding field of mobile social media, could also pay dividends.

By developing supporting innovation communities that use dispersed networks of development partners, drawn together from disparate geographies, companies can reconfigure talent, resources and capabilities to serve and feed their platforms and ensure innovation is regenerated beyond their own four walls, thus allowing incumbents to reach beyond the boundaries of their established footholds and strike out into new frontiers. **DR**

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Endnotes

1. *Hypercompetition*, as described by Prof. Richard D'Aveni, denotes hyper-inflated market competition that can emerge in sectors prone to rapid technological disruption with competitive advantage often difficult to sustain. See D'Aveni, R. (1994): *Hypercompetition: Managing the dynamics of strategic maneuvering*, New York: The Free Press
2. Charles S. Golvin, "A rebirth of competition in mobile connections," *Forrester Research*, September 20, 2010; Thomas Husson and Julie A. Ask, "2011 Mobile Trends," *Forrester Research*, January 24, 2011.
3. For more on LTE see Next Generation Mobile Networks (NGMN) < <http://www.ngmn.org/home.html>>; Also, GSMA <<http://www.gsmworld.com/technology/lte.htm>>.
4. ABI Research "LTE Services in the US Will Generate More than \$11 Billion in 2015," *ABI Research*, December 16, 2010; Francis Sideco, "LTE Momentum Expected to Easily Overcome WiMAX Head Start," *iSuppli*, February 3, 2011.
5. Jenna Wortham, "Skype-Style Calls Force Wireless Carriers to Adapt," *The New York Times*, May 15, 2011.
6. "Embedded Mobile & M2M Connected Devices to rise to 412 million globally by 2014," *Juniper Research*, January 19, 2010; "Embedded Mobile and M2M Device Revenues to Rise to \$19 Billion by 2014," *Cellular News*, February 9, 2010.
7. Michele Pelino, "The M2M Market Is A Blossoming Opportunity," *Forrester Research*, March 16, 2010.
8. ZPryme Research "Smart Grid: Hardware & Software Outlook," *ZPryme Research & Consulting*, December 2009.
9. "Wireless Home Healthcare to be \$4 Billion Industry by 2013," *Park Associates*, August 5, 2009.
10. Sophia Yan and Christopher Flavelle, "Boeing Blocks GE, Philips Wireless Spectrum for Patient Monitoring Device," *Bloomberg*, July 22, 2010.
11. Stephen F. Jencks, M.D., M.P.H.; Mark V. Williams, M.D., and Eric A. Coleman, M.D., M.P.H., "Rehospitalizations Among Patients in the Medicare Fee-for-Service Program," *The New England Journal of Medicine*. 360; 14, April 2, 2009, pp. 1418–1428.
12. Philip Seligman, "Industry Surveys Healthcare: Product & Supplies," *Standard & Poor's*, August 20, 2011. See also United Nations, World Population Ageing 2009, Department of Economic and Social Affairs, United Nations, December 2009 <http://www.un.org/esa/population/publications/WPA2009/WPA2009_WorkingPaper.pdf>
13. Chronic Diseases and Health Promotion, Centers for Disease Control and Prevention, <<http://www.cdc.gov/chronicdisease/overview/index.htm#ref1>> updated July 7, 2010; HC Kung et al., "Deaths: final data for 2005." National Vital Statistics Reports 2008;56(10) <http://www.cdc.gov/nchs/data/nvstr/nvstr56/nvstr56_10.pdf>.
14. Laurence C. Baker, Scott J. Johnson, Dendy Macaulay and Howard Birnbaum, "Integrated Telehealth And Care Management Program For Medicare Beneficiaries With Chronic Disease Linked To Saving," *Health Affairs*, 30:9, Sept. 2011, pp. 1689–1697; Centers for Medicaid and Medicare Services, National Health Expenditure, <https://www.cms.gov/NationalHealthExpendData/25_NHE_Fact_sheet.asp>.
15. Robert E. Litan, "Vital Signs via Broadband: Remote Health Monitoring Transmits Savings, Enhances Lives," October 24, 2008, Kauffman Foundation/Brookings Institution report. Available at: <<http://www.corp.att.com/healthcare/docs/litan.pdf>>.
16. Additionally, the company reports 550,000 Android devices activated per day, while the Android Market has seen more than 6 billion apps installed. As of October 2011, Google had a cash reserve of \$42.56 billion (Source: Google Inc, Q3 2011 Earnings Conference Call).
17. "Apple Becomes World's Number One Smartphone Vendor in Q2 2011," *Strategy Analytics*, July 29, 2011.
18. Strategy Analytics, "Strategy Analytics: Apple Dominates Mobile App Space with Content while Android Aims for Numbers," *Businesswire*, July 21, 2011 <<http://www.businesswire.com/news/home/20110721005072/en/Strategy-Analytics-Apple-Dominates-Mobile-App-Space>>
19. "Developer Economics 2011," *VisionMobile Research*, June 2011.
20. Dan Hesse, Sprint CEO, *Delivering on the Sprint Promise: Enabling the Developer Ecosystem*, presented at the 2010 Sprint Developer Conference, Santa Clara, CA, USA, October 26–28, 2010; See also, E.B. Boyd, "Why AT&T is opening itself up to app developers," *Fast Company*, September 14th 2011 available at <<http://www.fastcompany.com/1779967/why-att-is-opening-itself-up-to-app-developers>>; and, "AT&T ups the innovation ante with new collaboration center in the heart of Silicon Valley," *Fierce Mobile*, September 15th, 2011, available at: <<http://www.fiercemobilecontent.com/press-releases/att-ups-innovation-ante-new-collaboration-center-heart-silicon-valley>>