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The promise of open mobile:
Capturing value in
a brave new world

Contents

Foreword

Today's wireless sector is fraught with rumor, innuendo and uncertainty. New trends emerge then disappear only to reappear down the road in new shapes and forms and the whole cycle begins once more. To some, *open mobile* seems more like hype than substance; a trend pushed more by Silicon Valley than by established telecom giants. But one thing is certain, mobile Internet usage is on a steady upward march, and data services, rather than voice, are fueling future wireless growth forecasts. In tandem, the smartphone sector is reaching new levels of intensity, the mobile platform wars are heating up, and open source technologies are once again in the spotlight. By 2012, Linux-based mobile platforms could command a significant share of the U.S. wireless market. In addition, advances in next generation wireless broadband will also play an important role and provide the infrastructure to finally recreate the desktop Internet experience on a mobile device. With so much change in the air driven by shifts in technology and consumer demand, the regulatory environment is responding. Carriers' "closed" business models have never been under so much scrutiny and pressure to change. As a consequence, the prospects for open mobile as a disruptive force for change grow stronger.

With this study, Deloitte Research takes an in-depth look at the effect open mobile is likely to have, building on new insight from leading executives in the wireless sector and detailed in the accompanying survey report, *The Democratization of Wireless: Assessing The Impact of Open Mobile*. The study also offers strategic guidance for those making the transition through the disruption and highlights the importance of platform leadership and value capture with open source technologies as pathways to future growth.

Phil L Asmundson

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Vice Chairman, U.S. Technology, Media and Telecommunications Leader

Executive summary

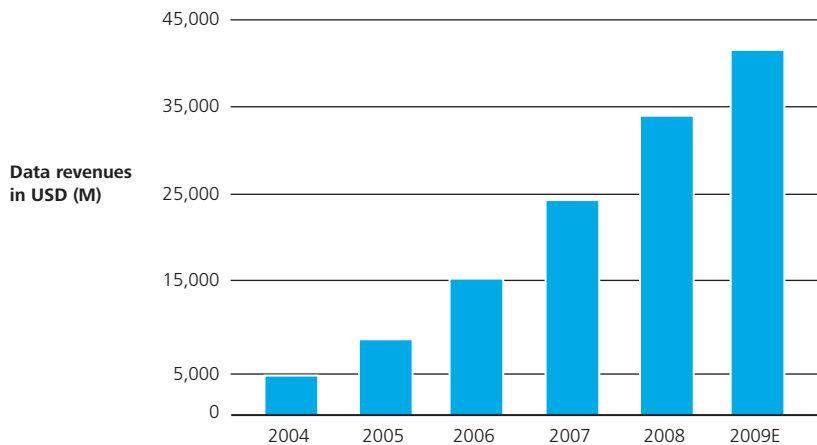*Aldous Huxley's dystopian Brave New World portrays a society where science and technology converge toward a terrifying outcome for humanity. Fast forward nearly eight decades later, another brave new world is afoot- this time in the U.S. wireless sector.*

Thankfully, however, the scenario is not so apocalyptic and technology has accelerated toward a positive outcome — one that has brought a fully realized mobile Internet experience to reality and laid the path for the emergence of open mobile to reshape the wireless landscape. But despite these developments, the U.S. wireless sector still finds itself at a fork in the road: embrace the future of a more "open" world or cling to the "closed" business models of the past? Perhaps it is less of a choice than many realize. Given the rising consumer voice and accelerating technological evolution, the open road less travelled may be the only path available in an increasingly disrupted wireless landscape.

An expanding Internet is the impetus behind the broader industry shift. Demand for ubiquitous, low-cost access to the web is driving the push toward open mobile in tandem with the Internet's steady, swift decoupling from the desktop. Validation of this trend is noted with the number of U.S. mobile subscribers using the Internet to browse news media and information on their phones having doubled in the last 12 months. In January 2009, 22.3 million used the mobile Internet daily, up 107 percent from 10.8 million in 2008. [1]

Furthermore, the growth potential in this mobile service area is evidently significant; consumers tracked on Internet usage still only account for roughly 25 percent of the 250 million mobile subscribers in the United States. Moreover, as smartphone sales continue to rise and mobile web browser technology evolves and drips into mid-range and lower-feature devices, mobile Internet usage seems set to sustain its explosive uptick. All this is good news for those behind the call for a wide open landscape in wireless.
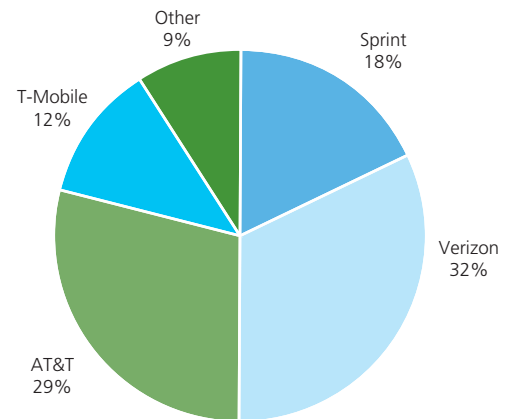
Figure 1. US Wireless Data Revenues

Source: Gartner; InformationWeek; Chetan Sharma Consulting.

Proponents rightly cite two salient trends: growing consumer demand for free, unfettered choice in networks and devices, and the push for a mobile Internet experience equivalent to the desktop experience. Given these moves, the onset of open mobile seems likely to gain traction. Recent regulatory actions also favor a balanced market environment that could dislocate the broader wireless value chain.[2]

The combination of shifts in policy and technology raise a number of interesting questions for today's dominant players in the U.S. wireless market. For instance, the likely value impact of mobile device platforms integrating open source software technologies remains difficult to forecast but is likely to be substantial. Adding to the uncertainty is search giant Google's strategy of freely distributing products such as its browser, applications, and the entire *Android* operating system for smartphones. Of course, anything that increases Internet use ultimately enriches Google by virtue of more "eyeballs" on the Web leading inevitably to more ad sales. But how must traditional telecom companies and organizational models change to compete? The answer lies with how well they can make the transition from the "closed gardens" that have generated huge profits in the past to the open business models needed to support a more egalitarian market. Only then can telcos fend off the threat from Silicon Valley.

These issues and more continue to be top-of-mind for telecom executives grappling with never-ending volatility. To address them, Deloitte presents this in-depth study of the impact open mobile is likely to have in the wireless sector. Building on the findings from the accompanying Deloitte *The Democratization of Wireless* survey of the wireless field's dominant players, we present new thinking and insights, which suggest that change is around the corner. Guidance is then offered on dealing with this change, in particular assessing how the twin strategies of platform leadership and open source value capture can offer a pathway for growth amid the turmoil of transition.

Figure 2. US Wireless Carrier Market Share (Q12009)

Source: Gartner.

Open mobile today:
A shifting locus of innovation

Recently, the clarion call for a balanced playing field in the U.S. wireless sector has grown significantly louder. As a consequence, the locus of innovation in wireless has shifted.

Silicon Valley is once more poised at the forefront of discovery, although this time, its leading players are setting their innovation sights squarely on the telecom industry establishment. The momentum behind this shift has its origins in the growing consumer demand for freedom to choose between devices, software applications and networks. Indeed, the definition of open mobile, in its purest form, is driven from this demand and calls for wireless users to have unrestricted access to all types of handset devices and all types of mobile web applications. Unsurprisingly, open mobile evangelists dream of leaving the traditional carrier "closed gardens" (carrier-controlled network platforms) in favor of independent handsets that operate on any network and run software applications without restrictions or limitations. But what seemed to be little more than pie-in-the-sky notions a few years back might be closer to reality today than some would like to acknowledge.

Certainly, network carriers remain slow to react, wary that open mobile will open the doors to commoditization and turn them all into the dreaded, proverbial "dumb pipe". Part of this fear is a concern over prospective revenue sharing with content and applications providers, which some think could benefit the interests of "Internet companies" more than the carriers. However, this apprehension is likely to ease as open mobile drives growth in not only the U.S. mobile industry, but also the broader global mobile Internet and information markets. Nonetheless, the fear of commoditization has to some extent stymied the current growth of mobile Internet and data services, even though the significant increase in traffic expected with data and Internet applications continues to grow with every market forecast.

The power of open platforms

From a strategic perspective, the drivers of change in favor of open mobile revolve around the emergence of dominant *platform leaders*. Here, companies adept at developing mobile platforms — designed to rally the industry's leading companies around particular operating system (OS) technologies, from which they can launch new products and services — are making significant gains. A prime example is Google, which has been forceful in entering the wireless industry via its recently launched, open source *Android* platform. At the heart of this platform is a mobile device operating system built on the foundations of *Linux* open source software code.[1] Android is available for anyone to use, build, and develop without incurring license or royalty payments. As a consequence, the company believes the opportunity for rapid innovation in mobile web applications that are designed to run on Android is significantly higher compared to the proprietary, closed platforms that currently dominate the sector. Google believes demand for the best mobile web experience will push consumers to platforms that offer the closest wireless approximation to a desktop Internet experience. The company's expectations are that handsets powered with the Android OS will become a force to be reckoned with in the competitive landscape — the mantra being that Android can deliver rapid mobile web innovation through open source economies of scale. To support this, Google's growing ecosystem — self-organizing networks of developers who voluntarily and collectively develop applications for the Android platform — presents a compelling case for the power of distributed innovation in sourcing new ideas and expertise outside a company's boundaries.[3]

[1] Open source, in this instance, refers to the "free" nature of the software and the type of license under which it is made available.

Apple uses a similar approach when delivering web-based innovation to the wireless sector on its iPhone mobile device, albeit via a closed, proprietary operating system. The company successfully built its iPhone platform utilizing its expertise garnered from the development of the popular Mac OS platform. It is also steadily growing an accompanying ecosystem of (albeit preselected), external software developers. This ecosystem feeds innovative mobile web applications that run on the iPhone OS, which Apple sells exclusively through its tremendously popular iPhone App Store. To date, there are some 65,000 iPhone applications available – a measure of the power of its innovation network - and Apple is making impressive gains in the highly competitive consumer wireless market[4]. The popularity of the iPhone's design, functionality, and innovative web applications seems set to solidify their position as innovation leaders in the near term.

Consequently, network carriers and mobile device manufacturers are responding to the moves made by the likes of Apple and Google over the last two years. Nokia, in particular, has embraced the concepts and culture of open source. In 2008, the company assumed outright control over Symbian, its smartphone operating system partner. It plans to open up and distribute the Symbian software code (under the royalty-free Eclipse Public License) to volunteer developers in a move similar to Google's Android strategy. The company is also developing a broad coalition of leading wireless handset manufacturers and network carriers, the Symbian Foundation, to garner support and make Symbian the most widely used wireless software platform. This is a major step in the company's bigger push into mobile services, which it hopes will drive broader growth despite diminishing margins in handset sales.[II]

Proponents of open platform operating systems believe these technologies have several benefits: reduced costs associated with applications development; cheaper handset devices; lower royalty payments for third party intellectual property; and finally, a significant increase in the rate of innovation of mobile web applications. All of these advantages are critical elements in the open mobile playbook. Furthermore, in market terms, the corollary to open source gaining traction in mobile is a potential shake-out in the OS market. With approximately 35 mobile OS versions currently available across wireless, the highly balkanized OS marketplace presents a difficult and expensive hurdle to developing software applications. With the advent of open mobile, this number would be expected to shrink to a handful of dominant platforms with open source being prominent among the few remaining. Hence, in the aftermath of this consolidation, open mobile could finally bring the freedom for application developers to create and market their concepts independent of direct carrier control.

[II] Indeed, by 2010, when Symbian goes open source, handsets are expected to reduce in price because manufacturers will no longer have to pay $10-15 per device for proprietary licensed operating systems. See: Nokia's Symbian deal rewrites the smartphone rules; *Information Week*, July 2008.

The regulatory landscape

Much has changed in the U.S. wireless regulatory landscape of late to lay the ground for a shift towards open standards. Mounting pressure on the Federal Communications Commission (FCC) for a more open playing field began when a petition from Skype, the voice-over-IP (VoIP) service provider, made waves across the industry in 2007. With its action, Skype protested that too much control had fallen into the hands of the carriers who dictated what devices were allowed to be used on their networks and also limited consumer access to particular mobile web services and applications. The petition failed, but the subsequent FCC investigation found that network carriers indeed strictly controlled multimedia portals, restricted handsets on their networks, immobilized particular handset functions, and blocked access to certain websites.

The resulting auction of the "C Block" spectrum license in 2008 stipulated that licensees would not be allowed to continue such restrictive practices. Subsequently, Verizon and AT&T acquired 83 percent of the 700 MHz auction on offer between them, with Verizon winning the "C Block" bid. Both carriers now have adequate spectrum to roll-out 4G networks in the 700MHz range, and operate within the guidelines set by the FCC. Verizon's open development initiative (ODI) is considered a step toward compliance with the new regulations. However, this has not stopped Google from pressuring the FCC to closely monitor the market's leading carriers and maintain the spirit of the open access provisions. Indeed, since its high profile interest in acquiring "open access" spectrum in the same 700 MHZ auction (which heightened the FCC's focus on open mobile). Google has steadily increased its regulatory influence.[5]

VHS – Betamax redux?

Wireless network infrastructure will play a pivotal role in open mobile.

As demand for a desktop-like web experience on mobile Internet devices increases, an "attention economics" war to attract more "eyeballs" will emerge to increase online advertising revenues. This is significant, given the vast potential to reach new online customers via mobile devices.[III]

Underpinning this move is a leap in wireless broadband network technology. The evolution of technologies such as WiMax (Worldwide Interoperability for Microwave Access) and LTE (Long Term Evolution) is set to provide the long-awaited infrastructure to support the uptick in data services and web activity from open mobile. Progress in this area will undoubtedly accelerate the transition of the desktop Internet experience into wireless. Faster speeds for web access will also attract more consumers and those platforms with the best mobile web applications will come to dominate.

Various leading telecom companies are involved in the development and roll-out of this next generation wireless network technology. Consortiums and industry groups have been formed to sponsor and support the two emerging dominant technologies. For example, Google's strategy to promote the Android operating system and its supporting ecosystem is bolstered by an investment in Clearwire — the 4G broadband company at the center of WiMax development. Sprint Nextel, which owns 51 percent of Clearwire after merging its 4G broadband unit Xohm with the original Clearwire company, is the dominant force behind the new joint venture. Other partners involved in supporting WiMax development include Intel, Samsung, Time Warner Cable and Comcast. This is perhaps a clear indication that

WiMax chips will be embedded in more than just mobile devices and smartphones, expanding to include a broad range of consumer electronics products that have wireless capability. Google's involvement is also evidently more than just financial backing with Android positioned as the network technology's operating system of choice.

Currently, Clearwire is trying to establish itself as the leading 4G wireless network and extend its WiMax service to 80 cities nationwide by the end of 2010. However, the company will undoubtedly have a battle on its hands; the development of LTE network technology is quickly progressing. Although some view both technologies to be similar, there are notable differences, particularly in relation to deployment. WiMax is based on IEEE standards while LTE is supported by the 3GPP group — 3rd Generation Partnership Project. WiMax requires an entirely new network built from scratch while LTE is an evolution of existing WCDMA/HSPA networks. This could be the deciding factor in this 4G standards war. Most analysts predict LTE will eventually become the logical upgrade choice of wireless carriers such as AT&T and Verizon who have already given their backing. Others are quickly falling in line with the likes of Nokia and Research in Motion (RIM) declaring their support for LTE. Without the backing of major device manufacturers and carriers, Clearwire could become the equivalent of Betamax in a rerun of the video standards war of the 19070s and 80s — a factor that could impact Android's market penetration over the long term.[6]

[III] In 2008, total global ownership of personal computers was estimated at 1.1 billion while in that year alone, 1.3 billion mobile phones were shipped. (Source: *Forecast: PC Installed Base 2008*, Gartner Report 2008; ABI Research). Consequently, the mobile web is seen as the next frontier in online revenues, enticing the likes of digital giants Apple and Google into the fray. And with advertising revenues through fixed line web already diminishing, this channel will steadily grow in strategic significance.

Wireless value chain perspectives

At first glance, open mobile will significantly impact the wireless value chain[IV]: carrier operating models and infrastructure, handset devices, operating platforms, and software development are all likely to be affected.[7]

Carrier operating/infrastructure models

The emergence of next generation mobile Internet could result in significant challenges for the network carriers. Firstly, existing carrier business models will come under increasing pressure to operate as before. But in an open mobile world, the ability to charge premium fees for voice, and in particular, for data services could be severely diminished. Currently, data services such as text messaging can account for a significant part of carriers' profits.[V] Industry-wide voice revenues are in serious decline. Therefore, as voice ARPU (average revenue per user) continues to decline, increases in data ARPU will become critical to maintaining carrier economics. Cheaper VoIP services could proliferate with new broadband technologies providing faster, more powerful infrastructure. A move into managing mobile web data services in a more efficient manner will certainly be required.

Secondly, the potential threat of no longer controlling devices available for purchase/operation on a carrier-controlled network could become tangible in the near future. Consumers may wish for the opportunity to purchase devices through retail channels that are independent of the carriers' influence. If/when this occurs, carriers will have to quickly adapt despite their fears of a changing profit mix. Any moves considered akin to holding back the growth of mobile Internet much longer may result in the knock-on macro effect of sector-wide growth stalling.

With this in mind, some firms are already beginning the transition. Verizon Wireless's *Open Development Initiative* (ODI) marked a switch from its traditional business model — perhaps in response to the conditions set out for those successful in the "C" Block auction. ODI is also viewed as a means of diversifying from a rapidly saturating voice market; Verizon already announced that it will allow more devices and applications increased network access.[8] This move is viewed by the industry as a nod towards recognizing high-end consumers are increasingly demanding mobile access to familiar PC applications, services and content. Confining these users within the current "closed gardens" risks to losing significant data ARPU. Moreover, new market entrants and carriers trailing in market share may pursue open mobile as a means of differentiation versus more established carriers. But embracing open models could also offer carriers the opportunity to share costs associated with technology/platform development and maintenance.

Handset devices & operating systems

Smartphones and other mobile Internet devices will be the category of handsets most affected by open mobile. Currently, Nokia dominates the global smartphone market, and RIM leads the U.S. market with a focus primarily on the corporate enterprise sector. Apple is also making impressive inroads in the consumer end of this market with its iPhone device forcing Nokia and RIM to respond with a more consumer-focused approach to the smartphones market — an acknowledgement of the iPhone's impending threat to overall market share. This has resulted in a greater emphasis on the design of handsets, content and applications as a means of competing directly with the threat posed by Apple's mobile web capability.
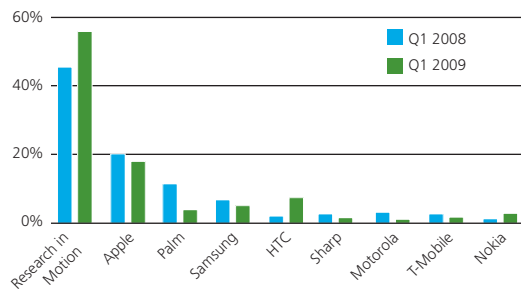

[IV] It should be noted that at this early stage, where the open mobile trend profile is still emerging, generalized quantitative forecasting is somewhat limited and when appropriate is best done on a case-by-case basis.

[V] Carrier revenues generated from text messaging are thought to be almost 100% profit. Source: *What Carriers aren't eager to tell you about texting, New York Times*, 26th Dec. 2008.

Potentially the biggest impact will be made at the OS platform level where the fiercest battle for handset dominance will be fought. Currently, this area remains highly fragmented with a number of different operating systems in use across a broad spectrum of devices and manufacturers. These systems are predominantly run on proprietary/closed platforms — such as Microsoft's Windows Mobile, RIM's Blackberry OS, and Apple's iPhone OS — or on a variety of open source, Linux-based systems. Although Linux-based devices have been in use for a number of years — Motorola and Samsung are two manufacturers that have long used Linux OS platforms (as well as multiple ODMs in South East Asia) — they have yet to reach the market growth potential that many analysts predicted almost a decade ago. This would seem likely to change with the move toward open mobile again pushing open source technologies to the forefront.

Google also established an industry consortium, the Open Handset Alliance (OHA), to attract a wide range of wireless companies to collaborate across the industry's value chain. To date, the OHA has 47 members with high profile technology and mobile companies, including Intel, Sprint Nextel, NTT DoCoMo and Qualcomm who back Android as the potential winner of the mobile platform wars. However, the OHA may have a fight on its hands to emerge as the wireless sector's leading open source consortium. Competition stems from the Linux Mobile (LiMo) Foundation, another consortium of leading telecom and technology companies that back Linux mobile as the preferred open source wireless platform.[vi] Similar to OHA, LiMo has the support of major players such as Verizon Wireless, LG Electronics and Panasonic as the de facto open standards war slowly begins to shape the consolidation of the fragmented OS landscape.
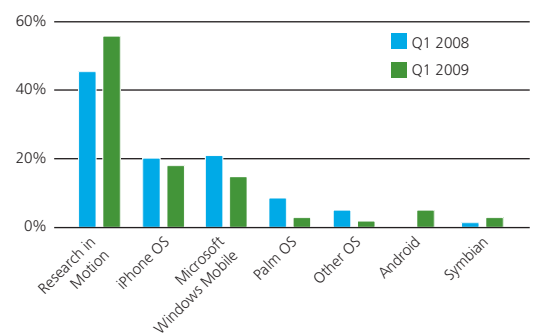
Figure 3. Smartphone Market Share North America 2008-09

Source: Gartner

Figure 4. Smartphone Market Share North America – Operating System 2008-09

Source: Gartner

As noted, leading the new charge in this area is Google with the launch of their Android platform. Already adopted by the likes of T-Mobile (on HTC manufactured devices), Samsung and soon-to-be adopted by Motorola, Sony, LG and Toshiba, Android is viewed by many to be well-positioned to carve out strong market share at the expense of proprietary platforms in the short-term. To support the development and roll-out of Android,

Both LiMO and the OHA will also face a strong open source challenge from Nokia whose majority takeover in 2008 of long-term OS partner Symbian marked the company's move to an open source technology architecture that will complement their OVI mobile platform by 2010. Nokia's decision to open up Symbian software code to the developer community is a strong response to Android, RIM and Apple as they try to improve their consumer-focused, mobile web capabilities. The Symbian OS is also expected to trickle into Nokia's basic and mid-level product portfolio to challenge Android, which has similar flexibility across the multiple handset segments.[9]

[vi] The LiMo foundation is more focused on reducing the fragmentation of operating systems across the wireless sector while the OHA is perhaps more broader in out-look looking towards embedding the concept of open mobile into enabling open source software, open handset devices and the use of open ecosystems to prevail as the future standard. The predicted use of Android as the OS of choice for PC Netbook manufacturers is another example of the broad range of consumer electronics Android could infiltrate.

Software development

Software developers frequently have an onerous role in the wireless sector. More often than not, many hurdles have to be overcome to provide innovation in areas such as mobile web applications. Access to networks, user devices and operating platforms can be formidable hurdles. Then there are the "closed gardens" of the carriers to navigate to provide sufficient financial incentive for the developer to innovate. Not surprisingly, this is often difficult to achieve with carriers currently taking big slices of revenues earned through applications. Developers hope open mobile will redress the balance via improved access. Furthermore, a reduction in development costs to boost product margins is hoped for – this by virtue of fewer operating systems to deal with after the probable OS shake-out. Cost reduction with open source will also occur when license royalty payments to proprietary platform owners are eradicated (the same value appropriation can be expected to accrue to the device manufacturers).

Perhaps most of all, developers expect the emergence of multiple open source platforms to boost revenue, allowing for mobile web applications to finally migrate from the closed control of the carriers. Should this occur, carriers will be pressured to remain the dominant channel for applications — without the sizeable cuts of revenue share from developers. Explosive growth in innovative web applications and services is a reasonable expectation, given the open source development model's ability to exponentially increase the sources of innovation.

Until this happens, the closed model will remain the governing paradigm in the carrier-dominated wireless sector. Unsurprisingly, network carriers are in no rush to transition from this model preferring instead to control data and mobile services much the same way they have controlled voice services. Collaboration with service providers and device manufacturers within the confines of the closed gardens will therefore continue to be the dominant model – with the offer of a captive audience of consumers acting as the main incentive for collaboration. Carriers have, of course, traditionally built major market share this way via deals bundling phone and mobile services and heavily subsidizing the costs of handsets, which in turn can influence device makers in their decisions to open up to new applications. Hence, carrier controls over mobile web applications accessed via their networks mean handset developers are unlikely to consider new applications unless the developer has carrier approval.[10]

The flip side of the argument, however, suggests that firms using proprietary operating systems will find it difficult to keep pace with those utilizing open technologies. As demand for an open mobile web builds momentum among consumers, the bar on applications and services innovation will inevitably be raised.

Figure 5. Strategic challenges and management priorities across the wireless value chain

	Market segment		
	Carriers	**Handset/device manufacturers**	**Software developers**
Strategic challenges	• U.S. open access regulations • Platform leadership • Sustain and grow data revenues and ARPU • Transistion from "closed gardens" busniess model	• Open platform development • Open vs. proprietary OS • Ecosystem development • Web services/content strategies	• Platform/OS alliance strategy • Ecosystem development • Content, applications payment model
Management priorities	• Increased efficiency in mobile web services • Increased partnering with providers of open platforms and technologies • Alternative retail channel alliances	• Platform/ecosystem governance • IP management • Alternative retail channel alliances • Product development cost reduction	• Ecosystem governance • Open source value capture • Managing move to standardized technologies, platforms

Strategizing amidst the disruption

With the advent of open mobile, the evolution of product competition may evolve across the multiple attributes upon which wireless companies currently claim competitive advantage.[11]

Broadly speaking, these attributes fall under the categories of differentiation and cost leadership and include criteria such as product functionality, reliability/brand, convenience of use and supply and pricing. All are all likely to be affected in stages by the emergence of open platforms and the increase in use of open source technologies in mobile devices. The basis of competition for handsets with open platforms can then be expected to change as the impact and penetration of open source begins to rise. The key to further understanding this shift lies in the emergence of powerful platform strategies across the industry and the need for building a supporting platform community. This coupled with the underlying push to harness open source technologies contributes to the shift in competition.
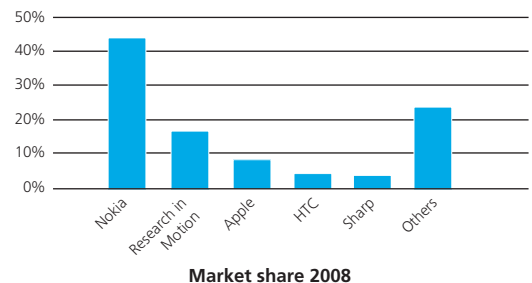
Platform battlegrounds

Wireless companies competing at the platform level face a series of challenges. First, they must understand the distinctive capabilities required to separate straightforward product strategies from more intricate platform strategies. To be clear, platform strategies drive coalitions of firms who form communities to innovate around a platform. Platform leaders can then expect significant influence over competitors, together with those that make supplementary products that expand the platform's market (termed complementors[VII]) and customers – all of which help them influence the evolution of their industry.

As discussed, mobile device operating systems such as Google's Android, Nokia's Symbian and Apple's iPhone OS are stand-alone platforms that help drive industry-wide innovation. Each of these platforms successfully integrates separately developed technologies and attracts third parties to add their own product innovations. Here, the parallels between the emergence of open mobile and the evolution of the personal computer (PC) industry are self-evident. The explosive growth of the PC industry over the last two decades could not have occurred without a broad supporting cast of various companies' products. Operating systems; hardware such as keyboards, monitors, and disk drives; software applications; and developer kits all helped fuel the stellar growth of the PC industry.

On a similar level, the same evolution can be forecast for the wireless industry. The operating system platform is a core technology architecture around which layers of hardware and software will be integrated by platform developers and the ecosystem of complementors. The developer's objective is to become a leader by driving and sustaining innovation around the core platform technology at the broader levels of the industry. To this end, they must leverage network effects to increase the number of people using the platform product. The presence of more users implies more opportunities and incentives for complementor firms to introduce products and continually develop the platform.[12]

Figure 6. Smartphone World Market Share 2008

Market share 2008

Source: Gartner

[VII] The term *Complementors* was initially developed by A. Brandenburger and B. Nalebuff. See *Co-Opetition* (Broadway Business,1997).

Recent studies highlight patterns of "success" criteria associated with platform leaders such as wireless communications company Qualcomm, which experienced explosive growth on the back of its core technology development in the late 1980s and early 1990s.During this period, the company successfully solved a recurring technical problem in the industry that culminated in incompatible and inefficient wireless cell phone technologies. By pioneering the use of code division multiple access (CDMA) technology for commercial wireless service, Qualcomm eliminated a problem that affected the industry's carriers and handset makers equally. The technology facilitated the breaking-up and reassembling of phone calls into smaller "bits", which became a great benefit to the likes of AT&T and Motorola who quickly licensed the technology. By developing CDMA and making it easy for other companies to use, connect, and build on the technology, Qualcomm effectively laid the foundations for a platform strategy.[13]

The company went on to invest further in chipset designs with integrated circuits that embed CDMA technology. This made for easy integration into cell phones via physical connectors that allowed the circuits to be "plugged in" to the internal workings of the handsets. To further exploit the advances made in the technology development, Qualcomm's astute licensing of the CDMA patents made it possible for a growing contingent of wireless companies to use the CDMA protocols and embed the technology across multiple generations of wireless devices. The company is now looking to build on its previous platform success with CDMA technology by investing in the development of mobile broadband connectivity on laptop computers. It hopes chipset designs in this area will have a similar effect on the laptop market that CDMA had on the wireless sector.

Although Qualcomm is a prominent example of how profitable a well-executed platform strategy can be, the downside of such an approach is the potential for a standards war to erupt. Companies failing to plan for both the technological and the business aspects of a platform strategy will face severe challenges. Major technology issues include designing the appropriate platform architecture and interfaces to allow users and the supporting ecosystem of innovation communities to develop new product complements to the platform. A robust technology and intellectual property plan must then be in evidence to guide decisions on managing the platform technology interfaces. At this stage, companies need to decide how much modularity (ability to separate into independent and discrete pieces) is required in the technology platform. Modularity can greatly enhance the ease of use and compatibility of the core platform technology across multiple product generations. Qualcomm's CDMA integrated chip sets embrace the concept of platform modularity being used to great effect across a wide range of the wireless industry's products and services.[13a]

In tandem with the decisions on architectures, companies should also pay close attention to how much of their intellectual property should be made available to the market and its complementor firms. Not all platforms may need to be completely open. If too much IP is given away, firms face the risk of complementors becoming competitors.[14] Conversely, companies that hoard too much of their IP run the risk of severely diminishing the potential for innovation that in turn can sustain platform momentum. Therefore, knowing what to protect versus what to disclose in order to stimulate third party innovation is vital. Companies should begin this process by evaluating their core capabilities to understand exactly where their strengths and weaknesses lie in the context of their functional and value chain activities. The decision to open-up proprietary technology to weaken the opportunity for rivals to capture value from the same technology only works if strengths in other business areas are sufficient to generate competitive advantage. This is a critical decision when considering open source technology.

[VIII] In addition to its Symbian strategy, Nokia's development of the "Ovi" mobile platform (Finnish for "door") as a gateway for harnessing and deploying its new service-focused innovation is already advanced. Investments to the tune of $10 billion in 2008 have expanded and fueled its services strategy. Nokia intends to use Ovi to supercharge its growth from ecommerce, advertising, and subscription plans.

An interview with Annabelle Gawer, leading author on platform leadership

Dr. Annabelle Gawer is an award-winning Assistant Professor at Imperial College Business School, London. She is the author and co-author of several publications on high-tech strategy and platform leadership, including Platform Leadership: How Intel, Microsoft and Cisco Drive Industry Innovation (Harvard Business School Press) co-authored with MIT Prof. Michael Cusumano.

Scott Wilson, Deloitte (SW): Can you describe what platform leadership means to your average technology or telecom firm?

Annabelle Gawer (AG): Platform leadership is a business strategy that firms pursue to establish their products or their service as a platform. That means the firm envisions itself as part of a larger technological system and community. We can also say a platform is a building block, a core component. I'm not necessarily speaking about components in terms of hardware. It could be hardware; it could be software; it could be something physical or not. It could be even a service or a process, but the important part is that it becomes an essential part of a larger entity.

What's important to understand about platform leadership is that it encompasses both technology and business. For firms to become platform leaders, they need to either identify a piece of technology they already have or design the piece of technology that has certain characteristics that can be further elaborated. But that's only half the story. They also need to think very carefully about the business relationship they entertain with what we can call an ecosystem of firms, which is basically a loose network coalition of firms. It's not a supply chain in the sense that the relationship between these firms does not necessarily involve transactions between these firms. But each of these companies would provide a piece of a jigsaw puzzle. That essentially defines what a platform is. And the word leadership means that those firms who achieve this status or position of platform leaders are those in the driver's seat of that whole coalition of firms, those that then have a greater influence on the direction of innovation of the overall system.

SW: Can you give me some examples of platform leaders today that you think exhibit that kind of strategy particularly well?

AG: Yes, well I think the archetypal example that is still valid is Microsoft. It's still a platform leader in the sense that there are lots of developers whose livelihoods depend on Microsoft and developing for Microsoft. I think that the open source movement with Linux is also a platform leader. Even if it's not one firm, it's an organization, a collective if you wish. I think Google is certainly a platform leader if you look at the intensity of innovation on products, be they widgets, mash ups or applications that are trying to invent themselves within the Google platform.

Also in telecoms, Nokia's Symbian platform is currently battling it out with Microsoft's Windows Mobile, each trying to become platform leaders. And they certainly go about it in a similar way in the sense that they both try to rally developers of complementary applications. They're both sensitive to the fact that they're only providing one piece of a larger system. I think one way to interpret Symbian's recent move toward open source is to directly counter Microsoft, especially as Google has made clear attempts to enter this industry with Android.

SW: What capabilities would you say are required to become a platform leader and how should companies develop them?

AG: One capability is vision. Somebody somewhere that has clout in the organization has to have a certain vision or a certain way of framing the problem. This is in terms of asking 'what part of a larger system are we a part of?' or 'what part of a larger system could we be a part of?' So there is an exercise in imagination here as well. I think that for companies that have a systems group, systems capability may be useful here — people who think of technology in terms of systems. What I saw, for example, during my research at Intel, is that most of the people who were directing their inter-architecture lab, which is a fundamental part of the puzzle, all come from what they call a systems group.

Another capability would have to do with an ability to manage two different types of strategies at the same time. To be a successful leader, you have to be able to be multifunctional. All the platform leaders that I've studied — and I've studied quite a few —had groups that were involved in the collaboration strategy. To try to establish their product as a platform, they had to open up the intellectual property and consider external potential complementors. In other words, they play a collaborative game with external companies. But at the same time, the company does not want to become a charity, and you must have other parts of the organization focusing squarely on being competitive. And what it creates, then, is unmistakable. I've seen that every time; it creates conscience within the organization because organizations make decisions about how to organize. Some firms decide to have different groups taking care of these two different strategies, what Intel used to call Job One and Job Two. And then, what's absolutely essential in terms of capability is to have a process in place to acknowledge these tensions and to resolve these tensions and to learn from these tensions. The tensions are a necessary evil, but at the same time, you learn a lot from them. So to summarize, I would say vision, systems thinking and an ability to manage tension.

SW: In your research, you talk a lot about complementors being important in the platform leadership strategy. Can you explain what a complementor is and what a complementor does?

AG: First of all I think we should give credit to the first people who coined this term, and it wasn't me. That would be Adam Brandenburger and Barry Nalebuff, in their book called Co-opetition. A complementor is simply an economic actor; it could be an individual; it could be a firm; it could be a group of firms that develops a product or a service that is a complement to another service. So if we're talking from the perspective of a platform leader, a complementor is a firm that will develop a product that is complementary in use and complementary in demand to the platform product. What does that mean? Well, it's a very simple economic term that means that the demand for the platform product is going to grow if there

is availability of the complement. It's the razor and blade argument. The blade is a complement to the razor, the film, in the old days of analog cameras, was a complement to the camera, the VCR tape was a complement to the VCR, Windows Office applications are a complement to Windows operating system. So complementor is simply the economic actor that develops those complements.

SW: How do firms who are platform leaders tackle the issue of intellectual property?

AG: It's a critical question, a fundamental question. The management of intellectual property is at the heart of successful or unsuccessful platform leadership strategies. There are some parts of the technology that the platform leader uses that need to be closed and other parts that need to be open. To cut a long story short, if you can imagine the platform as a piece of a jigsaw puzzle, I would suggest that the technologies that are relative to the contours of the technology or the interfaces of the technology or the connectors around the technology, those would have to be open because those are the "hooks" by which complementors can then connect their own product or service into your product. There has to be some opening up of the intellectual property on those interfaces: connectors, hooks, contours, whatever you want to call it. And whether we're talking about a product or a service, this can have a different meaning. If you think about it this way, it's almost as if you're preparing a dinner party and what you want is to have as many people at your dinner table as possible. What do you do? You bring out a lot of chairs, you make it easy for people to connect to you. In the world, for example, of mobile telecommunications and software, this can get expressed by the publishing of software developer's kits, application programming interfaces, running a developers conference without asking for a fee to train developers. So it has to do with facilitating the development of "stuff" that connects to the platforms.

Also, the internal core of the technology is an important element to consider. To use the example of Intel, the knowledge used to develop the core of a microprocessor should not be given away unless, of course, you are part of the open source movement where you're more likely to give everything away by principle. But if you are not within that movement, if you are in a more traditional firm setting, you should fearlessly protect the inside of the technology. Of course, this is just a guideline because where does the outside begin and where does the inside start; you're going to have gray areas there, and that has to be analyzed on a case-by-case basis.

SW: Where do you draw the boundaries and how do you protect the core value generation technology in a platform?

AG: As with any business decision, there is a certain amount of risk and uncertainty involved because it's very hard to know accurately when you have a new technology coming out of your lab; whether you should compete in the product market; or whether you're going to end up benefiting more if you give that technology away or part of it away to help others develop, market on top of it, or next to it. That kind of choice has to be coherent with several things. One, the long-term strategy of the firm, which space does this firm see itself moving into? It also has to do with the capabilities that the firm has. Do they know anything about this? Are other people in a better position to cheaply, quickly and efficiently develop an innovative product? And it also depends on the existing capabilities of other firms. Is this a completely uncharted territory? You'd like other people to do the job, but guess what, there's nobody out there that has even identified the technology. So there are different factors that enter into these choices. It depends on your capabilities; it depends on the extent of competition there; it depends on how you assess the demand for this product and your ability to appropriate the returns on whichever investment you're making.

SW: How does this differ from a straightforward product strategy? What are the main differences between the two approaches?

AG: I think the main difference is you have to take into account complementors — that is, firms that are neither your clients nor your suppliers necessarily. And when you're planning a plain vanilla product strategy all you have to care about is how to compete better than everybody else in this market. With a platform strategy, you have to both compete on your market better than everybody else and collaborate better than everybody else with your complementors.

SW: What do you think about Google's Android strategy?

AG: One thing with Google's strategy is that it has scared a lot of incumbents in wireless …and it's okay to scare the incumbents if you can rally a sufficient number of people who want to be competing with the incumbents anyway. However, problems arise if you scare off just about everyone, who do you have left to play with? The idea of coming up with an operating system like Android is a great idea. But then the question is which form factor do you put it on? Which kind of handset are you going to put it on? It turns out that firms like Nokia had already preempted a Google strategy in the sense that they themselves took control of the Symbian operating system. If Nokia had stayed just on the side of being an assembler and didn't have any viable alternative to Microsoft, they would have been only too happy to join up with Google. But a few years before, they had already invested into Symbian and developed a complementor network of firms with the likes of Ericsson and Motorola and others who joined a Symbian coalition. So they were also obviously threatened by Google. So the fundamental point about a platform strategy is that you cannot succeed as a platform-leader wannabe if you don't have the backup of all the companies you need to collaborate with in order to have the best product. The challenge for Google will be to draw firms with the design confidence of an Apple and the user interface capability of a Nokia to its complementor network.

Nokia and Google's platform strategies suggest the battle for competitive advantage will be won using open rather than proprietary platforms. Both companies are making freely available OS technology interfaces to broadly stimulate innovation in mobile web applications and services.[VIII] An important element to consider with these moves to create a sustainable network of complementors is the ability to execute an appropriate incentive strategy.[15] Companies will have to strike the right balance between being platform leaders and industry enablers, assisting the complementor communities make their platforms more innovative. Only then will they build the momentum needed to sustain platform leadership positions. Apple, on the other hand, is maintaining its proprietary approach. The company is perhaps banking on superior internal design capabilities for handsets and applications to promote open mobile platform standards based on Apple products, services and systems.

Community-building for the common good

Along with the emergence of open platforms, companies need to develop supporting innovation communities that reconfigure talent, resources and capabilities to serve and feed the platforms. Dispersed networks of development partners, drawn together across disparate geographies, are mimicking the mechanisms of the open source development model, which has traditionally linked self-organizing talent quickly and efficiently to develop code. The same process is now being used to boost product and service innovation, focused on enhancing the platform that coordinates their activities.

To date, a number of variations on this model are in operation in the U.S. wireless sector. This includes the development of a more controlled community (or "ecosystem") by the likes of Apple and RIM to progress their mobile Internet strategies.[16] In this instance, mobile operating systems, software applications and device architectures etc. remain proprietary. Tightly controlled, explicit, transactional arrangements are in place with preapproved suppliers and developers. Product development is progressed through traditional routes and innovation on and around the platform occurs at a pace and direction dictated by the ecosystem leader. Although these ecosystems have self-imposed limits that control which third parties are allowed to contribute to the

platforms' product portfolios, this has not stopped Apple's iPhone Apps Store from offering approximately 65,000 mobile web applications from a wide range of preselected ecosystem partners.[17]

Google's Android community is an example of a more flexible, free-ranging form of network partnership – one which draws on traditional open source development strategies with networks of lead programmers who collaborate across the code's core software interfaces.[18] Software developer kits and application programming interfaces (APIs) are distributed freely to facilitate community-based development. The more users and program usage there is, the more innovation will occur and the more likely that quality issues will be resolved quickly and efficiently. As a consequence, greater exposure of the platform will likely arise and heighten the potential for Android becoming a de facto wireless standard. The network effects of this distributed collaboration are significant. In this setting, new ideas are peer reviewed, and learning can be accelerated through social integration in the network.[19] Developers also enjoy a sense of community, enhanced status among their peer group and greater sense of accomplishment from their involvement with Google.

Nokia's operational and organizational strategy for its Symbian community similarly links contributors using Symbian developer kits to integrate across multiple platform architectures. Its take on building this community, however, may be more corporate-centric

than developer-centric. Interestingly, the choice of license used with the open Symbian code will be the Eclipse Public License rather than the Apache license used with Android's Linux open source code. The Eclipse license allows users who develop and submit new code to keep their submissions proprietary and may signal a move toward a more "corporate" cultured development community. This transition is noticeably influenced by Nokia's prior and existing business relationships, which are strong in all areas of the wireless value chain.[20]

Capturing value from open source

As a result of the shift in wireless competition, the predicted use of open source technologies in a much broader capacity will have far-reaching economic and strategic implications throughout the sector. Initially, those leveraging the power of open source technologies will have to be comfortable with the resultant shift in conventional business model. Traditional product or service development is usually based on proprietary methods, and developers do everything possible to prevent innovation from being imitated or used in an uncompensated manner (mainly through a variety of legal mechanisms such as patents and copyrights or through trade secrets and confidentiality). However, the reverse holds true with open source. Open source technology leads to a commonly shared base of technology, normally produced and distributed for free via the web utilizing various open source licenses. With this model, the important thing to remember is that the technology is in the form of software and is essentially information rather than a physical product.

Nevertheless, mobile devices that use embedded, open source software as part of the core functionality still require strategies that focus on traditional manufacturing value chain activities as pathways to profit. Physical products must be produced and physically distributed. They will, therefore, incur significant economies of scale.[21] Adopting open source technology in such products requires a company to first evaluate the strength of its capabilities in other functions of its operations. It also requires a solid understanding of the strength of the intellectual property environments in which they operate. (i.e. how rigorously intellectual property laws are upheld

in various markets and geographies). If the potential value in a market is intentionally weakened by the emergence of a freely available open source platform such as Android, companies in this area may have to look elsewhere to remain competitive. They should therefore ensure strong capabilities in business functions such as manufacturing, sales, marketing, and supply chain operations in order to compete.

In the case of Android, Google is essentially commoditizing the mobile operating system and stripping it of value as a source of proprietary competitive advantage. If adoption of Android then becomes ubiquitous, competitors could be forced to compete on areas such as web services, software applications, and marketing, all of which are strong functional assets for Google. This may create a new competitive landscape for wireless firms who have relied on proprietary operating systems and services in the past to secure customers and generate significant profits. Their ability to compete in a newly weakened value capture environment may depend on their capacity to develop new capabilities and bolster existing functions not previously considered a core competence. Failure to do so could leave them vulnerable.

This strategy is evident in parts of the technology sector where open source has made a significant impact. For example, IBM has embraced open technologies and actively promoted their use with a wide range of products for many years. A weakening of the value capture regime, beset by an influx of open source server software, was ultimately beneficial to IBM's competitive position. This was due to the company's perennial strength in applications development, hardware and services. Additionally, this strategy damaged competitors who held strong positions in proprietary server operating systems. As the server operating system becomes commoditized, the opportunities to capture value migrate to other areas of the value chain. For firms with strong capability positions in a broad range of core functions, it then becomes logical to deliberately weaken the value capture environment by actively contributing free code and operating systems to the market, thereby destabilizing competitors that zealously guard their proprietary systems.[22]

Advice for making the transition

For many established telecom firms, the journey to open mobile will pose a serious challenge.

The industry is on the cusp of a period of flux across all areas of its value chain. The maps that have guided executives to past successes cannot be relied upon in a newly destabilized market. Intuition alone will be insufficient to craft the appropriate strategic routes to growth. But there are fundamental steps that can be taken to remain on the right path. From a capabilities perspective, companies making the transition from closed, proprietary business models to open models should focus on the three distinct elements previously detailed: platform leadership; organization of supporting platform resources; and value capture in environments where intellectual property is often developed and transferred without restrictions for the public good. Doing so will enable competitive footholds to emerge in this brave new world. This holds true for both new entrants and incumbents, be they carriers, device makers or software providers. Winners in this new marketplace will astutely carve out and deploy new capabilities to boost competitive advantage in periods of sustained uncertainty.

Summary

This report begins the process of identifying those capabilities required to make a successful transition, although the details of how best to manage them against a backdrop of future uncertainty is beyond the scope of this research. Nevertheless, wireless companies should keep several key points firmly in mind as they begin the march toward open mobile:

Figure 7. Capabilities Overview for Open Mobile

- **Become a platform leader.** Moving to a more open, platform-based strategy can help firms capture value in sectors that are subject to constant disruption and change.[IX] Platform leaders drive innovation in their industry, motivating others to form communities to supply innovation and support their core product platforms. Companies adept at platform leadership wield tremendous influence and help shape the evolution of their industries. Firms looking to become platform leaders should attack the big problems in their fields and try as much to solve industry-wide business problems that affect a large number of firms. They should then facilitate a community of complementors to supply add-on products and services that create momentum around the platform. Careful consideration of what to make open and what to protect, in terms of core intellectual property, is a critical factor – and possibly one of the defining strategic decisions of the next decade or longer. In parallel, decisions on promoting modular technology are important. Modularity can be beneficial if the platform leader builds competence and retains control over its systems integration function. This is especially vital to consider since modularity promotes outsourcing. Conversely, a breakdown in systems integration at the core of the platform technology would render the value of modularity and outsourcing obsolete.

[IX]The power of platform leadership is also evident beyond the confines of the high tech and telecom industries. Strong network effects and visible separation between platforms and complements are apparent in industries such as the energy sector, where new developments in the area of fuel cells and biofuels promise to become platforms for powering a wide range of devices from a broad sweep of companies. In finance, banking services are undergoing significant developments in the digital era, with a number of banks, Internet companies, telecom companies and credit card firms all collaborating and competing to develop new platforms that will transform the process of banking as we currently know it. Similarly, in the life sciences sector, pharmaceutical and biotech firms utilize the human genome database as a platform for new compounds and drugs made in collaboration with many partner firms. See A. Gawer and M. Cusumano, How Companies become platform leaders, Sloan Management Review (2008).

- **Decide on "make versus buy".** Platform leaders can either choose to make their own complementary platform products, let the market produce them via third parties, or follow a hybrid approach. Careful considerations of incentives to assist and attract complementor firms and investors to the platform are crucial at this juncture. Using third parties to act as complementors as a means to defeat competing platforms may help reengineer the entire industry architecture. Significant industry partners with plentiful resources can also help alter the shape of an industry through corporate investments in platforms and through co-investment with community partners.[23]

- **Harness the power of communities.** Companies should become proactive in developing their own communities of innovation providers. By providing support and incentives that bring together loose networks of lead users of technology and suppliers of new ideas, organizations can greatly enhance their innovation capability. Platform leaders such as Nokia, Google and Apple are adept at organizing communities of complementors, users, partners, suppliers, and developers, all motivated to improve the product innovation process for their own benefit and for the benefit of the platform. Shrewd incentive strategies are critical at this stage to manage the best performance from the platform's networks of complementors.

- **Exploit technologies that are open.** Wireless companies can benefit from leveraging technologies whose core information is open and freely available in the market. Immediate advantages include cost reduction in product development and licensing payments and increased potential for innovation. However, careful analysis of the surrounding value capture regime must precede any decision to make technologies free in the hope of stimulating innovation and weakening rivals' competitive proprietary technologies. In parallel with this analysis,

firms who are making the decision to open up their core technologies should do so only if they have strong capabilities in other business functions to command competitive advantage. Otherwise, their competitive positions may be irrevocably weakened.

- **Get the governance right.** Platform leadership in the open mobile era will predominantly call for shared, open platforms to be developed and governed appropriately. However, proprietary platforms can also offer advantages when a single platform can serve an entire market and large investments are required to mobilize the supporting networks.[24] Both types of platform can and will co-exist but will call for differing approaches to governance, particularly with regards to alliance building, conflict resolution and IP management across open platforms. An open, shared platform will require governance processes that bring into equilibrium the tension between firms cooperating and competing with each other.

These are merely the high level elements of an initial open mobile capability strategy. For now, those attempting the transition into the open world would do well to look to the opportunities of competing in a rapidly changing industry and use the key lessons in this report to establish the foundations for a successful journey.

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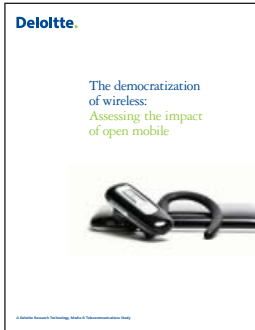
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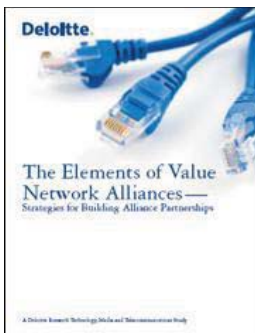Deloitte USA LLP
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