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RULES FOR VALUE CAPTURE IN
WIRELESS — AND BEYOND

BY SCOTT WILSON AND PHIL ASMUNDSON
> ILLUSTRATION BY STERLING HUNDLEY

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Capturing value from innovation is tricky business in this “flat” and increasingly open world. Responding strategically to changing marketplaces can be uncertain and perilous, especially for firms that are reluctant to overhaul the “closed” business models that made them successful in the first place. But the ever-quickening pace of innovation is beginning to outstrip the capabilities of any lone organization.

Nowhere is this more apparent than the U.S. wireless telecom sector, which is on the verge of a seismic shift. The root causes seem unstoppable. Surging consumer demand for a sophisticated mobile web experience and a resurgence of open source technologies are chipping away at the “walled gardens” of carrier-owned services, devices and applications. Increasing regulatory pressure and a voracious consumer appetite for mobile Internet services are steepening the wireless innovation curve, while reducing already aggressive product and service innovation lifecycles to all-time lows. Capturing value and remaining competitive in this disrupted sector will be challenging for many established telecom players. Indeed, those companies best positioned to take advantage of the disruption may well be the ones that are causing it. But in this instance, they are not traditional telcos; they are the formidable giants of the digital economy such as Google and Apple.

Google, in particular, has been forceful in its approach to 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. Open source, in this instance, refers to the “free” nature of the software and the type of license under which it is made available. Android is available to anyone to use, build and develop without incurring license or royalty payments. Android development, like all open source software development, is then carried out via Internet-based communities of developers who voluntarily collaborate to develop software that they or their organizations need. When executed properly, the potential innovation advantages using this model are significant in many ways.

THE POWER OF OPEN PLATFORMS

Google continues to actively promote Android as the future standard mobile platform in the global wireless sector through its Open Handset Alliance (OHA). OHA is an industry trade organization with a growing membership of high profile telecom companies that wants to be involved in the evolution of a potentially far-reaching platform standard. The company believes the opportunity for rapid innovation in mobile web applications that are designed to run on Android is significantly higher in comparison to the proprietary, closed platforms that currently dominate the sector. Google envisages demand for the best mobile web experience will push consumers to platforms that offer the closest wireless approximation to a desktop experience. Expectations are that handsets powered with the Android OS will naturally come to dominate the competitive landscape — the mantra being that Android is the only platform that can deliv-

er rapid mobile web innovation through open source economies of scale. Google points to its growing ecosystem — self-organizing networks of developers who volunteer their time and experience to collectively develop applications for the Android platform — as proof of the power of distributed innovation in sourcing new ideas and expertise outside the boundaries of the company.

Apple has a similar view on delivering web-based innovation to the wireless sector, albeit via a closed, proprietary operating system on its iPhone mobile device. The company has embraced the idea of building an iPhone platform utilizing its expertise with its popular Mac OS platform and is steadily growing an accompanying ecosystem of (preselected) software developers who operate outside of the company. This ecosystem feeds innovation in mobile web applications designed to run on the iPhone OS and sold exclusively through its tremendously popular iPhone App Store. To date, the iPhone has made impressive gains in the highly competitive consumer wireless market through the popularity of its design, functionality and applications.

Network carriers and mobile device manufacturers are being forced to respond to the moves made by 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. Nokia is also developing a broad coalition of leading wireless handset manufacturers and network carriers, the Symbian Foundation, to garner support to make Symbian the most widely used wireless software



platform. This is a major step in the company's broader push into mobile services rather than relying on the diminishing margins of handset sales to drive growth. Expectations are that by 2010, when Symbian goes open source, hand-

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 asset positions for Google.

sets will reduce in price with manufacturers no longer having to pay \$10-15 per device for proprietary licensed mobile operating systems.¹

In addition to its Symbian strategy, the firm is rapidly developing a mobile platform called “Ovi” (Finnish for “door”) as the gateway for harnessing and deploying its new service-focused innovation. Investments to the tune of \$10 billion in 2008 have expanded and fueled Nokia’s services strategy. Interestingly, carriers such as Verizon and T-Mobile have agreed to allow Ovi onto their own handsets for a cut of any revenue generated. To some industry observers, this signals a more *laissez-faire* attitude on the part of the carriers who previously had little success with their own closed services platforms and portals. Time will tell if Nokia can use Ovi to supercharge its growth from e-

commerce, advertising and subscriptions and if its Symbian strategy can trickle from smartphone sales down to its mid-range and basic phone markets.²

Companies wondering how to take advantage of this shift toward an open platform strategy need to understand the tactics involved in capturing value from technology that is freely available to anyone to use (and develop) essentially for the public good. This eliminates the traditional route taken by manufacturers investing in proprietary technologies and generating returns in the usual way by exploiting their intellectual property. Instead, companies must learn to adapt and find indirect pathways to generating profit from open source projects. In tandem, organizational strategies focused on developing ecosystems of user innovation communities to support an emerging platform are essential for those planning the transition to an open platform.

EXPLOITING OPEN TECHNOLOGIES

Leveraging the power of open source technologies requires being comfortable with the resultant shift in the conventional business model. Tradi-

tional product or service development is based on proprietary methods, and developers do everything possible to prevent innovation from being imitated or used in an uncompensated manner. This is usually done through a variety of legal mechanisms such as patents and copyrights or through trade secrets/confidentiality. However, with open source, the reverse holds true. Open source technology leads to a commonly shared base of technology, normally produced and distributed for free (utilizing various open source licenses) via the web. The important thing to remember is that the technology is in the form of software and is essentially information rather than a physical product.³

However, products like mobile phone handsets that use embedded, open source software as part of the core functionality 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.⁴ 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 its intellectual property regime (a term used to describe how rigorously intellectual property laws are upheld in industries). If the potential value from an intellectual property regime 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 ensure strong capabilities in business functions such as manufacturing, sales, marketing and supply chain operations in order to compete.

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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 regime may depend on their capacity to develop new capabilities and strengthen existing functions previously not considered core. Failure to do so could leave them vulnerable.

This strategy is evident in other areas of the technology sector where open source has made an 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 due to an influx of open source server software was ultimately beneficial to IBM's competitive position. This was due to the company's preexisting strong capabilities in applications development, hardware and services. Conversely, it 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 regime by actively contributing free code and operating systems to the market, thereby destabilizing those competitors who zealously guard their proprietary systems. This begs an obvious question: how will companies with

proprietary platforms respond? One step is to begin building an innovation community to support the platform.

COMMUNITY BUILDING FOR THE COMMON GOOD

The experience gained in the organization of open source software development has led to significant changes in the organization of innovation across many diverse industries and sectors. One big effect has been the emergence

of communities of “lead” consumers or users. These users of new technology voluntarily self-organize and collaborate in loose network coalitions, freely sharing innovations for the benefit of collaborative development. Groundbreaking research at Massachusetts Institute of Technology in the early part of this decade illustrated the power of early-stage innovation communities in diverse fields



such as extreme sports (in this case, windsurfing). Windsurfers would develop and share new innovations among communities of participants with the end goal of making improvements to their equipment and techniques. Participants in the community have sufficient incentive to share when the benefits of collaboration exceed the costs. The overriding ethos of such networks is “if you want something done right, do it yourself.”

Similarly, organization of such communities has occurred in other industries such as the semiconductor sector. Here, some companies distribute “user kits” to customers in order to develop bespoke circuits that are designed exactly to meet their needs and are easy to produce. The core research and development function is effectively outsourced, resulting in significant cost benefits normally associated with talent management and the identification and development of skilled resources.⁵

In the wireless sector, communities of innovation providers have already emerged and are beginning to have an impact on the competitive landscape.

The Android developer community is drawing on traditional open source development strategies with networks of lead programmers collaborating across the code’s core software interfaces. Google distributes free software developer kits and application programming interfaces (APIs) to facilitate the 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. Greater exposure of the Android platform will likely arise and heighten its potential for becoming a *de facto* wireless standard. The network effects of distributed collaboration can therefore be significant. Developers enjoy a sense of community, enhanced status and accomplishment from their involvement with Android. In this setting, new ideas are peer reviewed, and learning can be accelerated through social integration in the network.⁶

Nokia’s open source strategy for its Symbian community is similar in operation and organization. Networks of developers link together using Symbian

Having an innovation community in place is just one piece of a broader puzzle in capturing value with open standards. Becoming dominant in “platform battlegrounds,” such as the wireless sector, requires a wider-reaching ecosystem strategy that in turn will enable companies to become platform leaders.

developer kits to integrate across multiple platform architectures. However, Nokia's take on building its community 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. This may signal a move toward a more corporate partnership development community rather than a traditional open source developer community. Nokia's transition from proprietary to open is therefore being tempered by prior and existing business relationships, which are strong in all areas of the wireless value chain.

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PLATFORM LEADERSHIP

Companies competing in industries where platform battles are commonplace face a number of hurdles to overcome. The biggest challenge is to understand the distinctive capabilities required to separate straightforward product strategies from more intricate platform strategies. Platform strategies drive coalitions of firms who in turn form communities to innovate around a platform. Platform leaders can then expect significant influence over competitors, complementors (companies that make supplementary products that expand the platform's market) and customers — all of which helps them shape the evolution of their industry.



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 integrates separately developed technologies and attracts other third parties to add their own product innovations. The par-

allels to 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 other 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 as we know it today.

The same evolution may be anticipated for the wireless industry. The operating system platform will be the core technology architecture around which layers of hardware and software will be integrated via the platform owner and the ecosystem of complementors. The platform owner's objective is to then become a platform 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.⁷

Recent studies have described the success criteria associated with platform leaders such as wireless communications company Qualcomm, which experienced great success on the back of its core technology development in the late 1980s and early 1990s.⁸ During this period, the company successfully solved a technical problem that had resulted in incompatible and inefficient wireless cell phone technologies. By inventing CDMA (code division multiple access) technology, 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 proved to be of 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 of a platform strategy. The company went on to invest further in chipset designs with integrated circuits embedding the CDMA technology. These 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 exploit the

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.

advances made in 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 its 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 salient 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 technology and business aspects of a platform strategy will face severe challenges. The major technology issues include designing the appropriate 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. Questions on how much modularity (ability to separate components) is required in the technology architecture need to be answered at this stage. Modular architectures and interfaces can greatly enhance the ease of use and compatibility of the core platform technology across multiple product generations. Qualcomm's CDMA integrated chipsets are an example of a modular architecture being used to great effect across a wide range of the wireless industry's products and services.

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 the complementor firms. If too much is given away, firms risk complementors becoming competitors. Conversely, if not enough is shared, the potential for innovation to sustain platform momentum will be severely diminished.

Knowing what to protect versus what to disclose in order to stimulate third party innovation is therefore vital. Companies should evaluate their functional capabilities and understand exactly where their strengths and weaknesses lie in the context of their value chain activities. The decision to free-up proprietary technology in order to weaken the opportunity of rivals to capture value from the same technology works only if strengths in other business areas are sufficient to generate competitive advantage. This is a critical decision to take when considering open source technology.

Another decision is the "make versus buy" issue with complementary products that will build platform momentum. Firms can either choose to make their

own platform complementary products, let the market produce them via third parties, or follow a hybrid approach. Crucial at this juncture are careful considerations of incentives to assist and attract complementor firms and investors to the platform. 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 ecosystem partners.⁹

Recent moves by Nokia and Google that embrace open source technology architectures suggest they believe the battle for competitive advantage in wireless will hinge on open platforms rather than proprietary ones. Both companies are making freely available mobile device operating system technology interfaces to broadly stimulate innovation in mobile web applications and services. Of course, the success of these moves to create a sustainable complementors network rests on the ability to execute an appropriate incentive strategy. Nokia and Google will have to strike the right balance between being platform leaders and industry enablers, helping the complementor communities to make their platforms more innovative. Only then will they build the momentum needed to sustain platform leadership positions.

GUIDELINES FOR CAPTURING VALUE

The impending disruption in the wireless sector's competitive landscape illustrates the challenges faced by incumbents attempting to transition into a more open business era. However, observing leading companies such as Google, Nokia, Apple and Qualcomm points to a number of strategies that can be employed across a wide variety of industries. For instance, companies in multiple manufacturing industries can leverage the organizational aspects of open source software development. By developing innovation communities wherein lead users are networked together to develop cutting-edge technology, firms can effectively enhance their research and development function at low cost.

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.

It is clear that the underlying approach of moving to a more open, platform-based strategy can help firms capture value in industries subject to constant disruption and change. Companies looking to capitalize on making the transition from closed business models may find value in the experiences gleaned from the wireless sector as they focus on three fundamental steps to begin the journey:

Harness the power of communities

Companies should become proactive in developing their own communities of innovation providers, much like those witnessed in the fields of extreme sports technology. By providing support and incentives to bring together loose networks of lead users and suppliers of new ideas, they can greatly enhance the innovation capability of an organization. Companies such as Nokia, Google and Apple are adept at organizing communities of users, partners, suppliers and developers, all motivated to improve the product innovation process for their own benefit.

Exploit technologies that are open

Many companies can benefit from technologies whose core information is open in the market. Cost reduction and increased potential for innovation are two immediate advantages. 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 taking 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 will be irrevocably weakened.

Become a platform leader

Platform leaders drive innovation in their industry, motivating others to form ecosystems 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 solve an industrywide business problem that affects a large number of firms in their industry. They should then facilitate a community of complemen-

tors to supply the add-on products and create momentum around the platform. Once again, 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 larger strategic decisions to be made for the next decade or longer.

Scott Wilson is a senior manager and the U.S. lead for Technology, Media and Telecommunications research within Deloitte Research, Deloitte Services LP.

Pbil Asmundson is a partner with Deloitte & Touche LLP and leader of Deloitte LLP's Technology, Media and Telecommunications industry group.

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