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How Companies Become Platform Leaders

Under the right circumstances, companies of any size can grow to become platform leaders. And particular business and technology decisions can help platform-leader wannabes achieve their goals.

Annabelle Gawer and Michael A. Cusumano

In recent years, many high-technology industries, ranging from "smart" cell phones to social networking Web sites such as Facebook Inc. and MySpace.com, have become platform battlegrounds. These markets require distinctive competitive strategies because the products are parts of systems that combine core components made by one company with complements usually made by a variety of companies. If a platform leader emerges and works with the companies supplying complementary products and services, they can together form an "ecosystem" of innovation that can greatly increase the value of their innovations as more users adopt the platform and its complements. However, companies often fail to turn their products into industry platforms.

Our previous research focused on understanding the levers or strategic mechanisms that existing platform leaders use to maintain their positions. (See "About the Research," p. 31.) This article focuses on the special problems of companies that want to become platform leaders — "platform-leader wannabes." Many companies do not succeed in becoming platform leaders because their strategies fail to tackle adequately both the technology and business aspects of platform leadership. The technological challenges involve designing the right architecture, designing the right interfaces/connectors and disclosing intellectual property selectively, in order to facilitate third-parties' provision of complements. The business challenges include either making key complements or introducing incentives for third-party companies to create the complementary innovations necessary to build market momentum and defeat competing platforms.

Our strategic recommendations consist of two basic approaches. (See "Strategic Options for Platform-Leader Wannabes," p. 32.) One strategy, "coring," addresses the challenges of creating a new platform where one has not existed before. The second strategy, "tipping," tackles the problem of how to win platform wars by building market momentum.[1]

The Platform Vs. Product Strategy Choice

There is an important difference between a product and an industry platform. Put simply, a product is largely proprietary and under one company's control, whereas an industry platform is a foundation technology or service that is essential for a broader, interdependent ecosystem of businesses. The platform requires complementary innovations to be useful, and vice versa. An industry platform, therefore, is no longer under the full control of the originator, even though it may contain certain proprietary elements.

Managers sometimes underestimate the importance of deciding early on between pursuing a product or a platform strategy. This decision matters because the industry conditions

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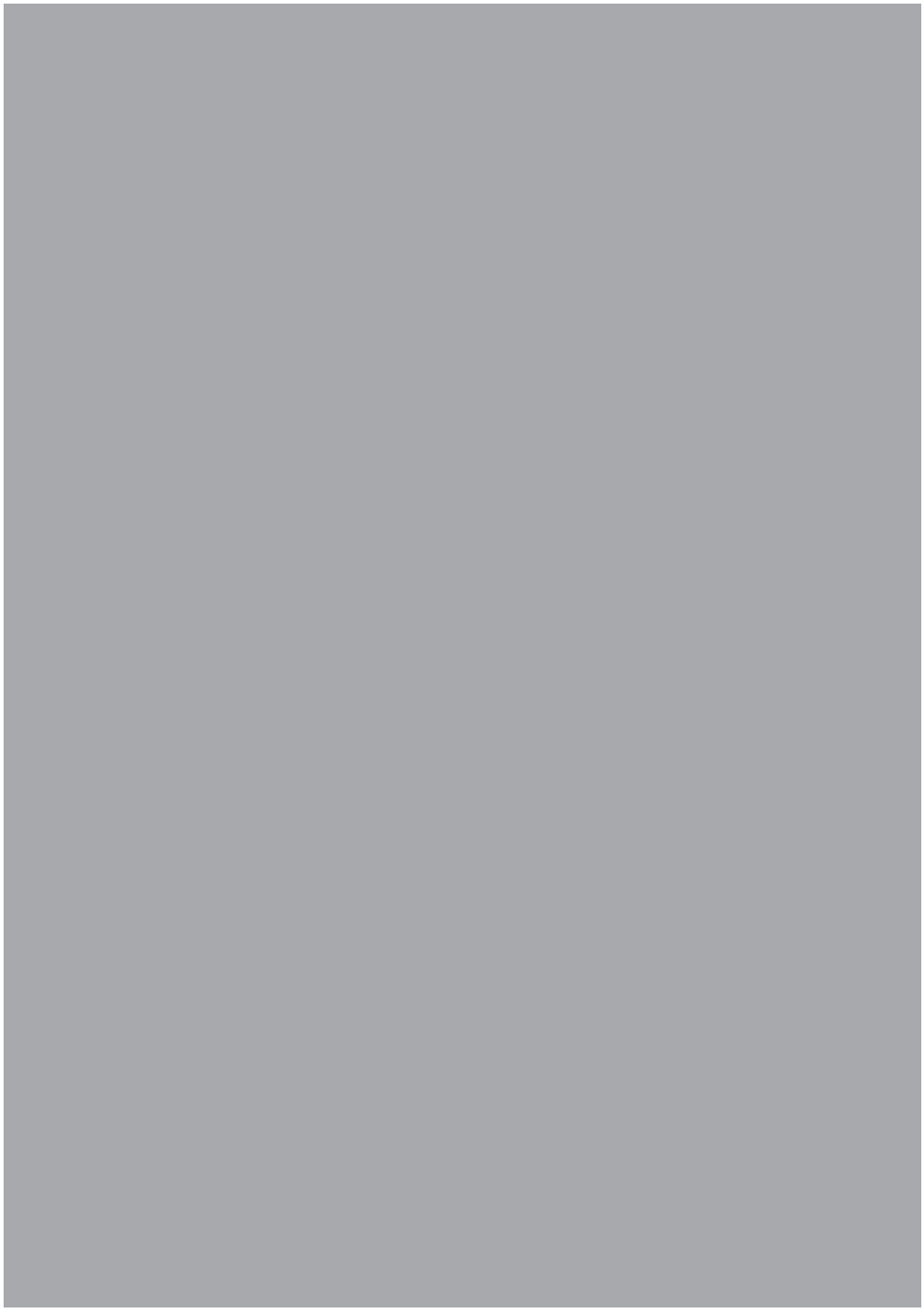

and business choices that favor a platform can differ from those that favor a product — creating differing incentives for owners of industry platforms than for companies that assemble proprietary products. In particular, owners of industry platforms benefit from lots of innovation in complementary products as well as from competition at the overall system level that would bring its price down. Thus, Microsoft Corp. benefits from competition among personal computer manufacturers that use its operating system, but they, in contrast, benefit when customers perceive their products as unique and therefore do not want cutthroat competition at the product or system level at which they compete. PC makers would probably rather see Microsoft face tough competition in computer operating systems so that they could bargain for better prices on the operating system they will load onto their PCs.

Failure to decide early on between a product or platform strategy can result in dangerous strategic confusion. Achieving platform status requires specific decisions that govern technology evolution, product and system design and business relationships within the ecosystem — and they are different decisions than those made when pursuing a product strategy. Another common mistake is that managers can simply overlook the platform potential of their products. For example, Apple Inc.'s Macintosh personal computer was the leading product when it was introduced but didn't become the dominant personal computing platform, primarily because Apple did not open the Mac's architecture and software to third-party complementors and licensees.

While the benefits of becoming a platform seem clear, not every market has to have a platform leader. In some large markets, such as video game consoles or Web portals, several platform companies can persist without one clear winner. For that scenario to occur, it seems important that the market contain enough room for differentiation in user needs so that multiple companies can persist in specific niches or segments, particularly if it is not too difficult for users to switch among more than one platform.[2]

Nor can every product become a platform.[3] To have platform potential, however, research suggests that a product (or a technology or service) must satisfy two prerequisite conditions: (1) It should perform at least one essential function within what can be described as a "system of use" or solve an essential technological problem within an industry, and (2) it should be easy to connect to or to build upon to expand the system of use as well as to allow new and even unintended end-uses.

It is possible to test for these conditions. For the first, one can evaluate whether the overall system could function without the particular product or technology. If the system cannot operate, then the product does indeed perform an essential function. For example, Microsoft's Windows operating system and Intel's microprocessor were both essential platform components of the original IBM and IBM-compatible personal computers. For the second condition, the challenge is to test whether a product or a

technology is easy to connect to or to build upon. One way to do this is to see whether external companies have succeeded in developing complementary and interoperable products, or at least have started to do so. Unless these two conditions are fulfilled, the strategic game of platforms cannot begin. But they are far from sufficient to win the platform game.

Our research explores the issue of platform leadership in information technology industries such as computing and telecommunications because these industries not only have visible demarcations between platforms and complements but also have strong "network effects" between the two, leading to clear interdependencies. However, companies can pursue platform strategies in many different industries. For example, new energy sources, such as hydrogen fuel cells or hybrid gasoline-electric systems, may become platforms for powering a variety of devices made by different companies. Banks, credit card companies and Internet services companies all are competing to develop a platform for micropayments and other specialized financial services. In biology, the human genome database has become a platform for many companies and research laboratories. Pharmaceutical and chemical manufacturers develop certain compounds that can become the basis for a variety of drugs or other products made by themselves and many partner companies.

Coring: How to Create a New Industry Platform

"Coring" is the set of activities a company can use to identify or design an element (a technology, a product or a service) and make this element fundamental to a technological system as well as to a market. An element or component of a system is "core" when it resolves technical problems affecting a large proportion of other parts of the system. Coming up with platform-like technologies may well be easier than coming up with business strategies that encourage partners and customers to adopt a particular technology.

Platforms open the overall system in which they operate to new usage possibilities. These different uses are essential to the growth of an installed base, but one question arises: Who will develop these new uses? How can platform-leader wannabes successfully encourage other companies to join their ecosystems and develop essential complementary applications? Answering that question is one of the two essential business aspects of coring. The platform leader must create economic incentives for ecosystem members to invest in creating complementary innovations and to keep doing so over time. In addition, platform-leader wannabes need to protect their ability to profit financially from their innovations, just as any innovator company should. The balancing act — protecting one's sources of profit while enabling complementors to make an adequate profit and protect their own proprietary knowledge — is perhaps the greatest challenge to platform leadership. There is no simple framework for how to accomplish this, but looking at successful and unsuccessful companies can provide ideas on what to do and what not to do.

Google: Coring in Internet Search Google Inc. is a particularly well-known and clear example of successful coring in Internet search technology. The company, founded in 1998, started off as a simple search engine company and went on to establish its proprietary search technology as a foundation for navigating the Internet. First, Google improved upon existing solutions to an essential technical problem: how to find anything in the maze of the Internet, with millions of Web sites, documents and other online content. Google's improved search function became an essential technology for fully using the Internet. Second, Google distributed its technology to Web site developers and users as an embedded toolbar, making it easy to connect to and to develop upon. It also allowed different uses, such as combining a search with different kinds of information or graphics.

But where Google really won the platform leadership battle for Internet search was on the business side. Google solved a fundamental problem, which was that it was not initially clear how companies could make money from using the Internet. Google found a way to link focused advertising to user searches. Ads appear only along with specific searches, meaning that users should have some interest in the advertisers. In effect, Google revolutionized the advertising business by rearchitecting the relationships between advertisers and Internet users. Today, Google's market value is over $200 billion, many times that of the largest advertising agencies.

Of course, Google had competition. In the mid-1990s, Digital Equipment Corp. created a powerful search engine tool for the Internet, AltaVista; several other companies created powerful search engines, such as Yahoo! and Inktomi. But Google proved to be much more effective than its competitors at the business aspect of market coring, even though Internet search and Web portals are a broad enough market that more than one company is likely to persist. As of April 2007, Google accounted for about 55% of Web searches, compared to about 22% for Yahoo! and 9% for MSN/Windows Live Search, according to a Netratings Inc. survey.[4]

Google continues to extend and promote its platform. In June 2007, Google held its first developers' conference, with 1,000 programmers in attendance and another 5,000 at 10 other locations around the world. The agenda included presentations on Google's application programming interfaces to enable developers to embed Google applications such as search, maps and calendars on Web sites or to develop custom search engines. Google also presented APIs for the Web 2.0 social networking site YouTube Inc., which it purchased in 2006. Google has increased the amount of free online software it provides, ranging from e-mail to word processing.

About the Research

Over the past decade, we have investigated dozens of companies that have attempted to formulate and implement platform strategies. These companies operated in a variety of industries including computing, telecommunications, electronic appliances, semiconductors, enterprise software, data storage, automobiles, Web portals and electronic payment systems. The major companies we studied in the first phase of our research included Intel, Microsoft, Cisco, Palm, and NTT DoCoMo, the Tokyo-based mobile communications company. We interviewed hundreds of managers and engineers and complemented the interviews with analysis of companies' archival records and company and industry data. This first research stage aimed at uncovering the drivers of success at established platform leaders. The results of that work were published in *MIT Sloan Management Review* in 2002, as well as in our book *Platform Leadership* (HBS Press, 2002).

The focus of our initial work was on how Intel, Microsoft, Cisco and other companies had been able to drive industry innovation and sustain positions of platform leadership. We identified four "levers" or mechanisms through which successful platform leaders were able to "architect" or influence external innovation. The first lever was company scope: the choice of what activities to perform in-house versus what to leave to other companies — in particular, whether the platform leader should make at least some of its own complements in-house. The second lever was technology design and intellectual property: what functionality or features to include in the platform, whether the platform should be modular and to what degree the platform interfaces should be open to outside complementors and at what price. The third lever covered external relationships with complementors: the process by which the platform leader manages complementors and encourages them to contribute to a vibrant ecosystem. The fourth lever was internal organization: how and to what extent platform leaders should use their organizational structure and internal processes to give assurances to external complementors that they are genuinely working for the overall good of the ecosystem. Taken together, the four levers offer a template for sustaining a position of platform leadership.

This article presents findings from the second stage of our research, which draws heavily on public information. It has been inspired primarily by several consulting engagements (such as with Nokia, EMC, Tokyo-based information technology company NTT Data and e frontier, the 3D computer graphics developer based in Santa Cruz, California), contacts with managers at organizations using our original framework (such as enterprise resource planning software provider SAP, the Internet Home Alliance and Siemens Automation) and numerous MIT master's theses and Ph.D. dissertations, as well as class projects.

Qualcomm: Coring in Wireless Technology Another company that has done very well in the technological aspects of coring is Qualcomm Inc. in the wireless technology industry. It has been extraordinarily successful in terms of profitability, although the business side of its ecosystem shows some signs of instability due to opposition from a number of its licensees. Founded in 1985, Qualcomm started out designing communications technology for satellites and military applications and went on to establish its proprietary wireless communications technology as a platform for the cellular phone industry.[5]

Qualcomm solved a basic technical problem of the late 1980s and early 1990s: incompatible and inefficient wireless cell phone technologies. This problem negatively affected other industry players such as telecom operators and handset manufacturers. Qualcomm invented the code division multiple access technology, which breaks phone calls into small bits and then reassembles them, much as the Internet does with data packets. Key industry players such as AT&T (later Lucent) and Motorola licensed Qualcomm's technology. By addressing an essential technological problem in its industry, Qualcomm satisfied the first condition for platform potential.

It was also easy for other companies to connect to and build upon Qualcomm's technology — the second prerequisite condition for platform potential. To facilitate third parties' adoption of its technology, Qualcomm invested in chipset designs embedding its technology and made CDMA widely available for licensing. The chipsets were compact integrated circuits with physical connectors that made it easy to plug them inside cell phone handsets, and Qualcomm's licensing of its patents made it possible for operators to use CDMA protocols. This strategy enabled dozens of companies to include Qualcomm technology in most second-generation and many third-generation cell phones, as well as in hundreds of other wireless devices.

Qualcomm has a more checkered performance in its relationships with other companies in its ecosystem. In the company's business model, an important source of revenue is from licensing its intellectual property. Qualcomm therefore filed thousands of patents and regularly and aggressively challenged any potential violators in court. Its customers may not always have appreciated this litigious approach. However, since Qualcomm owned approximately 80% of the patents for CDMA and CDMA2000 technology, they had little choice for many years. Also, Qualcomm lessened the conflicts with some of its key ecosystem members in the late 1990s by selling its cell

phone handset business, which had competed with its own handset-maker customers such as Nokia, Ericsson and Motorola.

In fiscal 2006, Qualcomm reported an astounding net income of $2.5 billion on sales of $7.5 billion, both selling chipsets as well as licensing its patents. However, as the technology and market continues to evolve, Qualcomm's position could weaken. To avoid paying high license fees, European companies led by Nokia Corp. and companies sponsored by the Chinese government have been developing or exploring alternatives to Qualcomm patents. In 2007, Qualcomm only owned 20% of the patents for the newer Wideband Code Division Multiple Access standard, popular in Europe. Nokia also has gone to court to challenge Qualcomm's high licensing fees, and integrated circuit maker Broadcom Corp. has filed multiple suits against Qualcomm. Qualcomm might have avoided this situation in the cell phone market by investing more of its profits earlier into research and development in order to become the indisputable leader for the next-generation technology; it could also have made more aggressive efforts to work with, not against, customers such as Nokia and Broadcom. Qualcomm is trying to diversify. It is attempting a similar coring strategy for mobile broadband connectivity on laptops, with 70 models embedding Qualcomm chipsets as of May 2007.[6]

Coring Challenges: EMC's WideSky Not every attempt to establish an industry platform through coring succeeds. Consider the case of EMC Corp.'s WideSky. EMC, a market leader in data storage technology, based in Hopkinton, Massachusetts, launched a strategy in the early 2000s that aimed to establish its hardware and software technology, known as WideSky, as a new industrywide platform. WideSky was a middleware software layer that made it possible to integrate and manage third-party hardware. By doing so, it solved an important technical industry problem that affected all IT customers: the efficient management of a growing assortment of heterogeneous information systems that store more and more mission-critical data.

With WideSky, EMC succeeded at the technological aspect of coring, but not at the business side of creating an industrywide platform. EMC was unable to convince its competitors — principally IBM, Hewlett-Packard, Hitachi, and Sun Microsystems — to adopt WideSky. Non-EMC customers were also reluctant to adopt a proprietary standard. EMC's competitors decided to create their own open-standards platform and manage this through an industry group, the Storage Networking Industry Association. The number of companies and users supporting this open technology eventually forced EMC to abandon its platform-leadership effort and adopt the SNIA standards.[7]

Tipping: How to Win Platform Battles By Building Market Momentum

As the case of WideSky versus SNIA demonstrates, many platform battles involve competition among technical standards and incompatible technologies. A current standards battleground pits

Strategic Options for Platform-Leader Wannabes

Two principal strategies for becoming a platform leader are (1) coring (creating a new platform) and (2) tipping a market toward your company's platform. To become a platform leader, companies need to address both the business and technology aspects of platform strategy.

Strategic Option	Technology Actions to Consider	Business Actions to Consider
Coring How to create a new platform where none existed before	• Solve an essential "system" problem • Facilitate external companies' provision of add-ons • Keep intellectual property closed on the innards of your technology • Maintain strong interdependencies between platform and complements	• Solve an essential business problem for many industry players • Create and preserve complementors' incentives to contribute and innovate • Protect your main source of revenue and profit • Maintain high switching costs to competing platforms
Tipping How to win platform wars by building market momentum	• Try to develop unique, compelling features that are hard to imitate and that attract users • Tip across markets: absorb and bundle technical features from an adjacent market	• Provide more incentives for complementors than your competitors do • Rally competitors to form a coalition • Consider pricing or subsidy mechanisms that attract users to the platform

When battling to become a platform in a standards war, companies should try to gain control over an installed base, broadly license their intellectual property and facilitate partner investments in complementary innovation.

Toshiba Corp.'s HD DVD against Sony Corp.'s Blu-ray Disc for high-definition media storage. Some earlier well-known examples include JVC's Video Home System versus Sony's Betamax for videocassette recording and Microsoft's Windows versus Apple's Macintosh for personal computer operating systems. For a dominant standard and a platform leader to emerge from such standards wars, the markets have to "tip" in favor of a particular technology standard or platform embodying that standard. "Tipping" is the set of activities or strategic moves that companies can use to shape market dynamics and win a platform war when at least two platform candidates compete. These moves cover sales, marketing, product development and coalition building. As with coring, successful tipping requires actions taken from both the technology and the business sides of the platform.

When battling to become a platform in a standards war, companies should try to gain control over an installed base, broadly license their intellectual property and facilitate partner investments in complementary innovation.[8] Platform-leader wannabes should also invest in building brand equity as well as manufacturing, distribution or service capabilities to signal support of the platform. For example, Matsushita Electrical Industrial Co. publicized its large investment in mass-production facilities as an argument to convince developers of videotapes to adopt the VHS standard, which had been developed at its much smaller Victor Company of Japan Ltd. subsidiary. Intel Corp., when trying to convince motherboard makers in the early 1990s to adopt its new interface for connecting peripheral devices, committed to developing it themselves in large quantities. Such approaches are helpful to master the business aspect of tipping.

Pricing is another useful strategic weapon in platform battles, but it is more complex to use than in simpler product markets. Platforms can be understood as "double-sided" markets, and it may be necessary for platform leaders and wannabes to subsidize one side of the market (for example, software application developers) in order to bring on the other, paying side (for example, software end-users). But there is no simple formula to tell managers how much to subsidize one side of the market over the other. Moreover, the price that maximizes short-term profits for a stand-alone hit product may not encourage a global ecosystem of complementors to develop over the long term.

At the opposite extreme, trying to stimulate demand through low or zero pricing for all or part of a platform system can destroy the business model for complementors. Intel made this mistake when it tried to enter the PC videoconferencing market with a line of products that competed with higher-end systems made by PictureTel Corp. and other companies. Customers suddenly stopped paying for expensive videoconferencing equipment and services, forcing most of the companies that offered them out of existence and probably delaying the adoption of the PC as a device for video communications.[9]

But there is another powerful way to accomplish tipping: "tipping across markets," which others have called "platform envelopment."[10] Tipping across markets occurs when a company crosses over the boundary of its existing market to absorb technical features from an adjacent market and bundle them to extend the company's platform. Tipping across markets seems particularly important in the context of technological convergence, which is pervasive among computers, telecommunications equipment and digital appliances. For example, Sunnyvale, California-based Palm Inc., originally known as a dominant company in personal digital assistants, has added cell phone, media player and handheld computer functions to its platform. In turn, cell phone manufacturers have added PDA, media player and handheld computer functions to their "smart" cell phones. Companies that tip across markets by bundling new features can leverage existing market power, technology or reputation to help them move into adjacent markets.

Another effective tipping behavior is when competitors or users band together in a coalition as a defense mechanism to fight entry by a platform-leader wannabe. This can be seen not only in the EMC WideSky example but also in cellular telephony, with Nokia teaming up with competitors to support Symbian Ltd.'s Symbian OS in order to build a viable alternative to Microsoft's mobile operating system. Similarly, Linux users and service providers have worked together to limit the positions of both UNIX and Windows in the server operating system market.

Companies tend to encounter common obstacles and make similar mistakes when attempting to help a market tip toward their platform. Of course, established platform leaders with powerful positions in a particular market must take care not to violate antitrust laws. In addition, however, problems sometimes occur because tipping strategies dependent on narrow technical standards are effective only as long as platform boundaries remain relatively fixed and predictable. Companies that dominate

One dominant platform can be a distribution mechanism for entering other platform markets — if there are ways to bundle the technologies legally, use the same distribution channels or create unique complementarities.

in one market may fail to maintain their positions when converging technologies create opportunities to extend other platforms. Another problem can occur when opening a platform's inner workings to encourage the supply of complementary innovations: Too much openness can expose the company to imitation. International Business Machines Corp. made this mistake when it asked Microsoft and Intel to provide key components of its PC platform and did not contractually retain rights to the operating system or the microprocessor design.

Linux: Tipping the Market for Web Server Operating Systems In the market of Web server operating systems, Linux provides an excellent example of successful market tipping. This operating system was first introduced in 1991 by the Finnish graduate student Linus Torvalds and was based largely on the UNIX design. Linux has subsequently evolved through a formal and informal community of open-source programmers and users around the world. Linux's interface and installation requirements continue to limit its popularity among average consumers; as a result, there is an ongoing shortage of everyday desktop applications for Linux, compared to Microsoft Windows, the dominant software platform for the PC. However, Linux has managed to become the fastest-growing operating system used in the back office, particularly for Web servers.

From about 20% of the installed base for server software in 2005, Linux grew to about 50% of the market by 2006.[11] Its largest competitors in that market are UNIX, whose main distributor is Sun Microsystems, and the Windows server from Microsoft; both tend to be more expensive than a nominally free product, although nonexpert Linux users generally have to purchase more support services, such as installation and training, than Windows users do. Intel also adapted its microprocessors to run Linux, and this reduced hardware costs. Even Microsoft signed an agreement with Novell Inc. in 2007 to make sure that Windows interoperates with Linux in the future.

Several factors contributed to the success of Linux for back-office applications.[12] Linux offered not only a seemingly low cost of ownership but also very high quality, at least for skilled IT professionals. Without software applications, an operating system is of very limited utility. But the open-source community made sure that Linux worked exceptionally well with what may be considered the "killer" application for webmasters: Apache Software Foundation's free and open-source Apache Web server. Still, we believe that Linux would not have become widely accepted as an enterprise software platform without the decision of numerous powerful companies, led by IBM and Hewlett-Packard Co., to provide support services for it and bundle it with their hardware servers and other software products. Linux is a case study that illustrates the ability to accomplish tipping through the power of a large, and still growing, coalition of service provider companies as well as users.

Tipping in the Internet Browser Market Another well-known example of tipping took place in the Internet browser market.[13] Netscape Communications Corp. introduced the first mass-market browser in 1994 and dominated the segment for several years. Microsoft designed its own browser, Microsoft Internet Explorer, and bundled this "for free" with Windows from 1995 on. As hundreds of millions of new PCs shipped with Internet Explorer over the next several years, and as Microsoft steadily improved its browser technology, Netscape's browser dropped from around an 80% market share to a negligible presence.

The Microsoft-Netscape example is complicated by the questions of whether the browser is a separate product from the operating system and how a company with a monopoly in one market must behave when bundling across markets. By bundling a product for free that competitors often offered for sale, Microsoft violated antitrust law because it engaged in several anti-competitive practices while it had a monopolistic share in operating systems. For example, Microsoft pressured PC manufacturers and service providers not to bundle the Netscape Navigator Web browser.

Apart from the antitrust story, however, there are other lessons from Microsoft's strategy. One dominant platform can be a powerful distribution mechanism for a company that wants to enter other platform markets — if there are ways to bundle the technologies legally, use the same distribution channels or create unique complementarities between the different products. Windows could have served these functions for Internet Explorer even if Microsoft had avoided antitrust problems by offering Windows with and without the browser at different prices and by not pressuring PC manufacturers to avoid the competing product. Microsoft had much greater resources to continue investing in browser R&D. Netscape's management, however, also made a series of strategic and technical errors.

How might Netscape have maintained its early lead and prevented the market from tipping toward Microsoft? For one thing, Netscape managers misunderstood how to keep a market from tipping in a different direction. Once a comparable product is free, competitors have little choice but to reduce their prices to zero and find other ways to make money, such as through services or advertising. Netscape made the mistake of continuing to charge customers such as Dell Inc. and AOL as well as corporate users for the Navigator browser even after Microsoft began bundling a competitive browser for free. Netscape was also late to see that it could generate enormous advertising revenues from its highly popular Web site.

But perhaps Netscape's greatest mistake was to challenge Microsoft too directly and present the browser as an alternative computing platform before it had enough of a user base and ecosystem of complementors (Web site designers, Web application developers and Internet service providers, as well as PC assemblers who were licensing Navigator) to sustain its position.[14] Navigator initially was a wonderful complementary application to Windows and might have remained so, at least for several more years. In retrospect, Netscape managers should have thought more carefully about how their early lead could quickly erode with a competitor such as Microsoft, which shipped hundreds of millions of copies of Windows each year.

Platform Leadership and Company Size

As the Microsoft-Netscape example suggests, size can sometimes be an advantage for companies seeking to tip a market. In fact, one issue that has surfaced in discussions with managers is the question of whether small or medium-sized companies can truly become platform leaders, or whether platform leadership is only an option for large companies like Microsoft, Intel or Cisco. We believe that coring is a possible option for any company because technology and architectural leadership do not directly depend on the size of the company. Qualcomm, for example, was little more than a startup company when it introduced its technology for wireless devices. JVC and even Microsoft and Intel were small companies when they first became platform leaders. And Linux was the product, at least initially, of a lone graduate student working in a remote corner of Europe. At the same time, though, smaller companies are likely to have a harder time negotiating with large enterprise customers. They may also find it difficult to tip markets on their own and generally will need to establish ecosystem partnerships or coalitions of providers and users — as JVC, Microsoft, Intel and Linux have done.

In general, becoming a platform leader requires a compelling vision of the future as well as the ability to create a vibrant ecosystem by evangelizing a business model that works both for the platform-leader wannabe and potential partners. It can sometimes be hard to convince others to follow a particular direction, for example, when an industry is undergoing transition and its contours are ill-defined, or when technology is evolving too rapidly. But these are the very conditions when companies that want to become platform leaders can stand out — precisely because they are so badly needed.

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1. Since we published our work on platform leadership in 2002, a number of students at MIT and elsewhere have inspired us to continue this research and, in particular, to investigate market or business factors that help platform-leader wannabes succeed. In particular, we would like to thank Ray Fung for his master's thesis, "Networking Vendor Strategy and Competition and Their Impact on Enterprise Network Design and Implementation" (MIT System Design and Management Program, 2006) and Makoto Ishii for his master's thesis, "A Strategic Method to Establish Sustainable Platform Businesses for Next-Generation Home-Network Environments" (MIT Sloan Fellows Program, 2006).

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