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APPLE (COMPUTER) INC.: WHITHER THE MAC?

A Double Whammy

It was August 30, 2011. James Rollins, a product development manager at Apple Inc., reread Steve Jobs's resignation letter and leafed through some news coverage regarding the Hewlett-Packard (HP) announcement. He felt as though he was in the center of a maelstrom. Six days earlier, Jobs had announced his resignation as CEO of Apple. Jobs had said in a brief letter: "I have always said if there ever came a day when I could no longer meet my duties and expectations as Apple's CEO, I would be the first to let you know. Unfortunately, that day has come."[1]

Six days before that, HP CEO Leo Apotheker had announced that HP would spin off its industry-leading personal computer (PC) business—including all its desktops, laptops, and even touchpads and smartphones—in favor of investing resources in the areas of enterprise software and information management solutions. In support of this strategy, HP also announced its intention to purchase Autonomy, a British enterprise software company, at a premium.[2] Apotheker said on an analyst conference call, "We believe this bold action will squarely position HP in software and information to create the next-generation information platform…This is about a transformation to position HP for a new future and driving shareholder value."[3]

HP's decision was surprising for a number of reasons, not the least of which was that HP's software business made up only 2% of the company's sales in recent quarters. John C. Dvorak, a popular *PC Magazine* columnist, was among those who were skeptical of HP's decision and critical of the lack of what he termed "excitement" about desktop computing:

[1] "Text: Letter from Steve Jobs Resigning as Apple CEO," Reuters, August 24, 2011.
[2] David Goldman. "HP Kills Touchpad, Looks To Exit PC Business," *CNNMoney,* August 18, 2011.
[3] Goldman.

This case was prepared by Rebecca Goldberg (MBA '03), case writer, Michael Lenox, Samuel L. Slover Research Professor of Business Administration, and Jared D. Harris, Assistant Professor of Business Administration. It was written as a basis for class discussion rather than to illustrate effective or ineffective handling of an administrative situation. James Rollins is a fictional character; any resemblance to a real person, living or dead, is purely coincidental.

> OK, so this [the PC industry] is not the business it once was when we were forced to buy a brand new machine every 18 months. Now we use machines for five years. Nobody cares about upgrades because the entire industry has dropped the ball on keeping things exciting. Only Apple has a clue…
>
> Meanwhile, the last time I went to Fry's Electronics, the entire sales floor was covered with HP machines. They owned the department. They locked up the channel. All that work, for what? Well, good luck in the printer and ink business, HP. Nice knowing you.[4]

Rollins wondered what all this meant for Apple's Mac line of desktop and laptop computers. What was the future of the PC world? Why were the likes of HP exiting the market? Apple had been a pioneer of the personal computer. For 30 years, it had been in the vanguard of high-quality computers for work and home. While it had long been a niche player in the overall PC market, capturing only single-digit market shares, Apple's desktop and laptop computers had commanded large price premiums and a dedicated following.

Ironically, Apple may have hastened the demise of the PC as traditionally conceived. With the iPhone and iPad, Apple had advanced and refined the form and function of personal computing and essentially "transformed the PC into a fashion accessory."[5] The release of the iPad had already had a huge impact on mobile computing, winning converts from laptop users to business-class road warriors to users looking for an e-reader that was lighter and more compact than a laptop. The practical and business applications of mobile computing in 2011 seemed to be only scratching the surface of what was possible.

Yet demand for desktops and laptops seemed likely to persist for the foreseeable future. Smartphones and tablets were generally used as complements, not substitutes, for traditional PCs. Business users still relied heavily on their desktops and laptops. Media producers—consumers who created content as part of their daily activities, such as writing, video production, graphic layout, and web design—still required a PC and not a mobile device. Entire industries, including advertising, video production, the arts, and education, had come to rely upon Macs.

Rollins contemplated the forces at work within the industry. What form would personal computing take in the future? Without Jobs as CEO, how would the Mac fit into Apple's expanding suite of products?

[4] John C. Dvorak, "HP Looking to Exit the PC Business," *PC Magazine*, August 18, 2011.
[5] Larry Claasen, "Computer Design. Only the Beginning," *Financial Mail*, June 11, 2010.

The Rise of Wintel

The age of the PC began with the introduction of the Altair 8800 in 1975. Primarily a hobbyist machine, the Altair was significant for a number of reasons. First, it used mass-produced Intel 8080 chips—which served as the technological basis for the later emergence of the "Wintel" standard, which married Microsoft's Windows operating system (OS) with Intel-produced microprocessors. Second, the Altair was based on an open systems architecture, which "inspired Bill Gates and Paul Allen to develop a version of BASIC, the first language program for a PC." Finally, the Altair prompted "a rash of introductions of other personal computing devices, including…the Apple II from Steve Wozniak and Steve Jobs."[6]

With the 1981 release of the IBM PC, the personal computing market began to rapidly expand:

> The PC not only brought computers to a broader customer base, it also was one of the first IBM products to adopt an "open architecture," in which IBM revealed the instructions and specifications. This enabled other companies to develop their own PC "clones" that would be compatible with IBM's machine, as well as peripheral devices, such as external storage, printers, and video and sound devices, among others.
>
> This open architecture quickly evolved into a de facto industry standard. It included a microprocessor from Intel and the Windows operating system from Microsoft Corp. with its graphical user interface, which eliminated the need for users to remember the arcane commands required by its predecessor operating system, MS-DOS. Once computer makers were able to clone IBM's PC based on its open standard of architecture, PC sales took off and prices came down. This effectively began the "commoditization" of the PC, which is still a major force in the economics of the industry.[7]

This basic industry architecture continued to persist 30 years later. Most PC manufacturers were commonly called original equipment manufacturers (OEMs), defined as assemblers of parts purchased from other suppliers. Leading OEMs of PCs included Dell, HP, Lenovo, and Acer. In recent years, unbranded "white box" manufacturers had gained significant traction in non-U.S. markets such as China. These "white boxes" used the same components as the leading OEMs but did not market or brand their machines. The component parts sourced by OEMs to produce machines—a power supply, motherboard, memory, and drives—were all manufactured by third-party suppliers. In addition, most PC systems included a display (e.g., a monitor) and input devices such as a keyboard and mouse. Finally, and most critical, OEMs

[6] Thomas W. Smith, "Computers: Hardware," *Standard & Poor's Industry Surveys*, October 28, 2010, 22.
[7] "Computers: Hardware," 22.

purchased processors and operating systems from companies such as Intel and Microsoft. See **Figure 1** for U.S. PC market share data.

Figure 1. U.S. PC market shares.[8]

Firm	2Q 10	2Q 11	Unit Growth
HP	25.5%	26.6%	–0.9%
Dell	23.7%	22.4%	–10.0%
Apple	9.0%	10.7%	11.6%
Toshiba	8.6%	9.3%	3.5%
Acer	11.1%	8.9%	–24.0%
Other	22.0%	22.1%	–4.4%

The computer processor was the heart of the PC and largely determined the speed and capacity of the machine. Intel was the dominant supplier of microprocessors and had an 81% market share by the end of 2010. Advanced Micro Devices, Inc., was the number two supplier with only an 11% market share. Intel had built its dominance in processors from a combination of technological leadership and savvy marketing. Microprocessors for over 30 years had followed "Moore's Law," named for Intel founder Gordon Moore, which referred to the doubling of processing capability roughly every 18 months. Intel had been able to stay on the leading edge of Moore's Law, often by having the most sophisticated products on the market. Furthermore, Intel had been able to successfully attribute the values of consistency and quality to its processors through its "Intel Inside" marketing campaign. This branding strategy resulted in "preferred" status for the company's products.

The operating system (OS) helped to brand the user experience by providing a visual interface between the PC's data manipulation and storage capabilities and the user's needs. Microsoft was a nearly exclusive supplier of operating systems to PC OEMs—the Windows OS commanded a 92% share of the market by summer 2011.[9] Microsoft collected revenue, not only on the sale of new computer systems, which were typically bundled with the OS, but also on the sale of upgrades to existing PC owners. The cost of an upgrade was roughly $100 per license. Significant Windows OS upgrades occurred approximately five years apart and typically cost over $1 billion to develop. Windows Vista, for example, cost $6 billion to develop.[10] Typically,

[8] Chris Foresman, "Apple Sells 11 Percent of all U.S. Computers Last Quarter, Takes Third Place," Ars technica, July/August 2011, http://arstechnica.com/apple/news/2011/07/apple-now-3rd-in-us-market-share-as-overall-pc-market-remains-soft.ars (accessed October 4, 2011).

[9] Anson Alexander, "Operating Systems Market Share (Infographic)," August 31, 2011, http://ansonalex.com/infographics/operating-systems-market-share-infographic/ (accessed October 4, 2011).

[10] Marius Oiaga, "Vista—A $6 Billion Dollars Operating System," Softpedia, January 10, 2007, http://news.softpedia.com/news/Vista-a-6-Billion-Dollars-Operating-System-44096.shtml (accessed October 4, 2011).

new OS releases spurred consumers to upgrade hardware as well, in waves called "upgrade cycles."[11] See **Figure 2** for 2011 OS market share data.

Figure 2. 2011 OS market share data.[12]

Windows	92.44%
Mac	6.45%
Linux	1.10%
SunOS	0.00%

Lastly, PCs required application software, some of which was proprietary to the manufacturer and most of which was created by external software houses or smaller companies for use on specific OS platforms. A symbiotic relationship existed among PC manufacturers, the independent software houses, and the industries and target market segments that the PC's OS tended to support (i.e., the typical consumer of the associated hardware/OS). Because Wintel-based PCs quickly took over the corporate and government markets as well as much of the individual PC customer base, many of the applications supporting these functions were developed for the Windows OS.

Application software was of additional importance because of the effect of "killer apps"—so named because they tended to drive the need for technological advancements in processing power, memory, data delivery speed, or some other facilitating hardware-based solution. In other words, instead of software developers lagging behind hardware and OS capabilities and building to suit what already existed, new software was designed that became a leading driver of change in some other part of the system. Hardware developers rushed to accommodate the needs of the software. Examples of these "killer apps" over time have ranged from early text and data processing software to Internet apps, video production, and gaming software.

Sales and distribution were approached differently by various OEMs and ranged from full, ongoing, personalized support (like could be found in an Apple retail store) to limited support Internet sales. HP, Lenovo, Acer, and Toshiba tended to rely on a mix of sales through electronic retailers such as Best Buy and direct Internet sales. Dell assumed a low-cost producer role by reducing inventory and incremental margin costs along a traditional retail-sales channel by selling customized machines via the Internet or phone orders placed directly with the company. An additional benefit to this sales model was that Dell—which was not only an assembly-and-sales company but was also an enterprise charged with reading and responding to

[11] "Computers: Hardware," 20.

[12] NetMarketShare, September 2011, http://www.netmarketshare.com/operating-system-market-share.aspx?qprid=8&qpcustomd=0 (accessed October 11, 2011).

market trends—had the ability to decipher end-user feedback and behavior more quickly than a PC producer that outsourced those distribution functions to others.[13]

The Apple's Core

Apple had been a pioneer in the PC industry. It had always been focused on innovation and advancing the concept of what was possible for the user experience of personal computing. Having introduced the mouse, the concept of windows, and the Firewire and Thunderbolt connections,[14] Apple had always had invention and innovation at the forefront of its company culture and lore. Apple had consistently designed products that emphasized consumer ease of use. In addition, Apple had consistently focused on design and aesthetics. Not only were Apple products easy to use from a technical standpoint, but they all possessed the enigmatic Apple "look" and "feel." Apple devices embodied a certain minimalist approach that was somewhat unusual in consumer electronics, minimizing buttons and controls and maximizing sleekness in appearance and form. This identifiable Apple "look" made Apple products easily identifiable and added to the mystique of the brand. As a result of Apple's focus on user-friendliness and innovative style, consumers were willing to pay a premium.

Early on, Apple had strategically decided to reject the Wintel platform. In order to deliver the quality and user experience its customers wanted, Apple vertically integrated its consumer product offerings by developing its own OS and the software to go with it. Apple worked with other microprocessor providers such as Motorola to develop chips for its machines that were unique to the company and the processing needs of its machines. Apple had, by and large, persisted with this strategy up to the present day with the exception of a brief, disastrous foray into the licensing of clone Macs in the early 1990s. Consumers had been so unhappy with the performance of the cloned Macs that Apple exited this venture. Another significant change occurred in 2006, when, for the first time, Apple began using Intel processors in its machines. This opened up the possibility for Macs to run both Apple and Microsoft operating systems.

By forsaking the Wintel standard, some would argue that Apple had destined itself to perennial niche status within the industry. During much of that time, Apple's share of the PC market was less than 5% of machines sold. But this strategy had allowed Apple to build a differentiated, higher-end product with a loyal following. Macs typically sold at a premium over comparable Wintel-based machines. Apple did not historically produce any lower-end Macs to compete with the pared-down Wintel PCs. Some analysts, however, argued that feature for feature, Macs were "surprisingly on par" with a comparable Windows machine in the higher-

[13] "Computers: Hardware," 23.

[14] *Thunderbolt* was a data-transfer format, released in 2011, that transferred data at speeds up to 10 times that of Firewire.

performance brackets.[15] Macs were known for their ease of use, low risk of viruses and crashes, and proficiency with graphics and multimedia.

Apple had a history of taking a step back to examine the totality of the user experience and adapting (or internally developing) the best of what was possible, given current technology across the board, to positively influence that experience. This included scrutinizing hand controls, displays, processor speed and solid-state memory, OS stability across multiple threads (processing activities), visual organization and interface functionality, video applications and various higher-speed connection and data transfer formats. In a 2003 interview, Jobs revealed his attitude toward innovation when he was asked whether he thought consciously about it:

> "We consciously think about making great products. We don't think, 'Let's be innovative!'" He waved his hands for effect. "'Let's take a class! Here are the five rules of innovation, let's put them up all over the company!'"
>
> Well, I said defensively, there are people who do just that.
>
> "Of course they do." I felt his annoyance shift elsewhere. "And it's like…somebody who's not cool trying to be cool. It's painful to watch. You know what I mean?" He looked at me for a while, and I started to think he was trying to tell me something. Then he said, "It's like…watching Michael Dell try to dance."…"Painful," Jobs summarized.[16]

Back from the Dead

Despite Apple's reputation for high quality and innovation, the history of Apple was not without struggle. By 1985, Apple was in a pitched PC-standards battle with IBM and its Wintel platform. Frustrated by Apple's progress, Steve Jobs was asked to step down as Apple's CEO by Apple's board of directors. Over the next 12 years, Apple experienced periods of success but generally struggled to find its footing. Apple's board cycled through three CEOs and its leadership invested resources in a variety of failed initiatives. By 1997, many were predicting Apple's demise.

On June 9, 1997, Steve Jobs was brought back as CEO and given a second chance to take control and get Apple's ship back on course. Jobs immediately went back to Apple's fundamentals: innovation and design. In 1999, Apple launched the iMac series of desktops and laptops to wide acclaim. Yet, despite the return of buzz around Apple's products, its financial

[15] Scot Finnie, "Mac vs. PC Cost Analysis: How Does It All Add Up?," *ComputerWorld*, June 8, 2007.
[16] Rob Walker, "The Guts of a New Machine," *New York Times*, November 30, 2003, 7.

footing remained tenuous. By 2001, Apple was posting losses and concerns were raised that bankruptcy was in its future.

Then, in 2001, Apple introduced a novel product called the iPod. The iPod was not the first digital music player on the market, but its bold styling and simple customer interface redefined the sector. By 2005, iPods had become a cultural phenomenon, having sold over 42 million units—at a rate of one per second for that entire year.[17] Apple's iTunes music store had sold over half a billion songs by July 2005.[18] By 2007, the iPod had overtaken the Mac in contribution to Apple's revenue. The iPhone followed in June 2007, selling six million units in the first 12 months.[19] On January 9, 2007, Apple officially dropped the word "Computer" from its name, changing from Apple Computer Inc. to Apple Inc., so as to "reflect Apple's transformation from a computer manufacturer to a full-fledged consumer electronics company."[20] The iPad debuted in April 2010 and became the quickest-selling consumer electronics device in history, reaching 14.8 million units by the end of 2010[21] and almost three times that by August 2011.[22] Along the way, Apple had not only redefined the portable music device sector, but also (perhaps inadvertently) redefined the music industry itself via the iPod and iTunes. In August 2011, Apple was the largest vendor of mobile computers (smartphones, netbooks, tablets, and notebooks), and it was significantly ahead of HP in terms of market share (**Figure 3**).[23]

Figure 3. Mobile computing hardware market share, 2011.[24]

Brand	Units (millions)	Share
Apple	13.6	21.10%
HP	9.7	15.00%
Dell	7.5	11.60%
Acer	7	10.90%
Lenovo	4.8	7.50%

[17] Damon Darlin, "The iPod Ecosystem," *New York Times*, February 3, 2006.

[18] "iPod + iTunes Timeline," Apple.com, www.apple.com/pr/products/ipodhistory/ (accessed October 4, 2011).

[19] Tom Krazit, "The iPhone, One Year Later," CNET News, June 26, 2008.

[20] Rachel Konrad, "Apple CEO Steve Jobs Unveils New Name, Long-Awaited Phone," Associated Press Newswires, January 9, 2007.

[21] "Apple Reports Third Quarter Results," Apple Inc. press release, July 20, 2010.

[22] Don Reisinger, "Tablet Shipments Jump 304 Percent in Second Quarter," CNET News, September 14, 2011, http://news.cnet.com/8301-13506_3-20106090-17/tablet-shipments-jump-304-percent-in-second-quarter/ (accessed October 11, 2011).

[23] Brian Cooley (CNET editor at large), interviewed by Rebecca Roberts, "How Steve Jobs Ran Apple," *Talk of the Nation*, NPR, August 25, 2011.

[24] "Apple Retakes Top Mobile PC Market Share Position from HP in Q2'11," August 18, 2011, http://www.displaysearch.com/cps/rde/xchg/displaysearch/hs.xsl/110818_apple_retakes_top_mobile_pc_market_share_position_from_hp_in_q2_11.asp (accessed October 11, 2011).

Between 2001 and 2011, Apple went from nearly dead to becoming one of the most powerful businesses in the world. Steve Jobs—always a tech darling—became widely celebrated and recognized for his technical genius and business acumen. Apple's financial performance had reversed substantially, posting earnings of $4.31 billion in 2010. Apple's stock price went from $15 in August 2002 to $400 by August 2011. In May 2011, Apple was briefly the largest market-capitalized firm in the world (ExxonMobil soon retook that honor).

Central to Apple's success was design. Many had remarked that the clean lines and "good design" of the products were what made them attractive to a higher-end market segment. One CNET News columnist asserted that it was not design per se as it was an element of style that made this aspect of Apple's products successful; it was the emphasis on the design of customer *experience*:

> The truth is that what sets Apple apart—the thing that really led to perhaps the most remarkable corporate turnaround in history—is that focus on experience design. The iPhone, for example, didn't soar simply because it looked cool. It thrived because of the seamless integration with iTunes, allowing users to easily download the specific applications they want to create a personalized experience.[25]

Brian Cooley, editor-at-large at CNET, was interviewed on NPR on August 25, 2011. He spoke about Apple's history of innovation and its orientation toward what he termed the "ecosystem of technology." He advanced his theory that Apple's recent success was in large part attributable to its willingness to work with big players in related industries:

> Interviewer: …there is kind of a chicken-and-egg question about, "Do people use things the way Apple wants them to now because Apple built them well or…was Apple ahead of the curve knowing and anticipating what people would want and supplying the products for them?"
>
> Cooley: Increasingly, Apple is, shall we say, playing ball with the overall ecosystem of technology in our lives, and that started with the iPhone. That was the first time Apple had to partner with someone publicly. They had to go to AT&T and work with a carrier, and carriers have a lot of sway over the phones that they offer…And they've also had to work with Hollywood and that's been a prickly relationship, because they have seen how Apple took over the music industry digitally. And the movie studios and television production companies are saying, "You're not going to come in and run the visual space." And that's where, right now, Apple and many companies are trying to unlock the vaults of

[25] Jay Greene, "For Jobs, Design Is About More Than Aesthetic," *CNET News*, August 24, 2011.

> Hollywood and of television to be available on all these digital devices—I mean, really, truly available.[26]

Contributing to Apple's recent success was its retail operations. Apple maintained 293 retail stores through which a variety of sales and services were performed. For example, the "Genius Bar" featured online appointment scheduling for hardware troubleshooting. In addition, Apple offered a "1-to-1" membership that entitled the purchaser to one year of unlimited access to personalized computing advice and assistance with the full range of Mac OS features as well a variety of third-party applications. Retail sales at Apple stores far outstripped any other retailer in sales per square foot. In 2010, Apple stores commanded over $4,000 of sales per square foot compared with $2,666 for top luxury retailer Tiffany's.

Mac, Circa 2011

Rollins's thoughts turned toward the PC segment once again. He wondered: Why were the giants in the PC world pulling out? Would mobile computing play out the same way the PC wars had in previous decades—with rounds of lowered prices and decreasing margins? Apple as a company had always focused on a higher-end customer base, especially with the Mac—compressed margins on products with a lower sales volume could be fatal.

Before leaving his post, Jobs had asked Rollins to direct his focus toward the desktop/laptop market segment and provide some recommendations to the incoming CEO. Apple's current line of Macs all featured Thunderbolt connections, Intel i5 or i7 processors, a new AMD graphics card that produced graphics up to three times faster than the previous generation, and high-definition cameras on displays for videoconferencing. This product line included the following:[27]

- Mac Pro ($2,499–$17,268): four- to twelve-core towers that were many times faster than the Mac Pros that had been featured several years prior; displays (monitors) were purchased separately for an additional $999 each; up to three could be used simultaneously with the new Thunderbolt connection.
- iMac ($1,199–$1,999): a monitor/computing combination featuring a quad-core processor
- Mac Mini ($599–$999): a small, 7-inch square computer that could attach to any monitor

[26] *Talk of the Nation*, NPR, August 25, 2011.
[27] Case writer research.

- MacBook Pro ($1,199–$4,448): full-size laptop in 13, 15, and 17 inches, weighing 4.5, 5.6, and 6.6 pounds, respectively
- MacBook Air ($999–$1,999): smaller, lighter laptop with a full-size, backlit keyboard in 11.6 and 13.3 inches, weighing 2.38 and 2.96 pounds, respectively, and measuring less than three-quarters of an inch deep

The current lineup was impressive, but Apple had long been a small player in the overall PC marketplace. Was the type of branding and functionality that had been so successful for the iPod, iPhone, and iPad less useful for PC consumers because the product might not integrate with consumers' social lives as powerfully? If so, which direction should the company take the flagship Mac brand? And what strategic approach should Apple pursue to gain market dominance and escape niche status in PCs?

The technology world was evolving quickly. The Internet data-search and browsing platform that people used to conduct their online lives had come to dominate both traditional PC usage as well as mobile computing. Google's newly released Chrome OS envisioned a world where computing took place largely in the "cloud," which reduced the PC to nothing more than a so-called dumb box. And, as far as mobile computing went, Google was pushing its Android OS on tablets, netbooks, and smartphones, which generated revenue via customized advertising based on user data (such as Internet destinations) but allowed open media consumption when available. In contrast, the iPhone and iPad generated media-derived revenue via iTunes and the App Store, which charged users a one-time purchase fee.[28] Which model would become the de facto standard—and how did that play in to what should be done about the Mac? Was Google to mobile computing what Microsoft had been to PC operating systems? And if so, what could Apple do about it?

The Future of Mac

Rollins concluded that the future positioning of the Mac product line would depend on several factors. He would have to take into account the Thunderbolt data connection format and other technological advances in processing power and graphics capability that Apple was touting in the Mac lineup. He would also have to consider the relationship of the Mac line to the rest of Apple's product portfolio—mobility-oriented products including the iPhone, iPad, and iPod Touch. Part of the success of these hardware formats depended on the future accepted platform standards for mobile computing, including the OS and browser standard (i.e., Android and Google versus iTunes, iOS, and Safari).

[28] Claasen, 2.

Ultrabooks (such as the MacBook Air) were beginning to combine the lightness and portability of the iPad with some of the processing power of the laptop, making them an attractive choice for consumers wanting the functionality of a full keyboard but the mobility of a tablet. Windows-enabled ultrabooks were making an appearance in Germany and were rumored to be arriving soon in the United States:

> Coming "soon" to these shores the Ultrabook is a new class of ultrathin, fast and efficient Windows 7 laptops, all built around a reference design developed by Intel and thus having many features in common…the Ultrabooks, representing a logical and still timely response from the "Wintel" (Microsoft/Intel) community, are aimed to head off said defectors [to the iPad and MacBook Air] at the pass.[29]

Rollins would need to consider the entire ecology of the personal computing industry before making a recommendation to the incoming CEO about what, where, and how many of Apple's resources should be directed toward the varying functional elements of the Mac product line. As in years past, hardware features were not the only factor—operating systems and applications were an integral part of the equation. The new Mac OSX Lion had recently been released with mixed reviews:

> There's no question that, technically, Lion is the best release of the Mac operating system ever. But, being a person who dislikes change for the mere sake of change, I'm left underwhelmed at best by many of the latest tweaks to the supporting applications and user interface. Apparently, the goal was to make the Mac UI look more like that of an iPhone or iPad, and Apple has succeeded, for better or worse.[30]

The most obvious and useful change from the previous OSX, called "Snow Leopard," was the use of complex manual controls that were executed on a trackpad. For example, four fingers drawn together revealed the Launchpad, which sported application icons in a display remarkably similar to the iPhone or iPad. Additional top-line new features included the Air Drop, which listed all other Apple PCs within range of the user's network and allowed instant drag-and-drop capability for documents and other files. The delivery of the new OSX Lion was itself revolutionary: It was only available via iTunes, and the one-time $30 purchase fee entitled the user to unlimited installs on his or her machines.

Another factor Rollins had to consider was the future of cloud computing. Cloud computing services—centrally maintained and managed repositories of information—had already been successfully offered by Google and Microsoft and had become critical to enterprise

[29] Jonathan Takiff, "Next Big Thing: Ultrabooks," *Philadelphia Daily News*, September 7, 2011.

[30] P. J. Connolly, "'Lion' Leaves Us Flat," August 1, 2011, http://www.eweek.com/c/a/Apple/Lion-Leaves-Us-Flat-399147/ (accessed October 4, 2011).

(including federal government) information management services. Rollins knew Apple was planning to release its iCloud service in late 2011. In June 2011, Jobs had described the iCloud at Apple's Worldwide Developer Conference (WWDC). *InformationWeek* provided the following coverage in anticipation of the event:

> [The] iCloud is critical to Apple's future. Cloud-based services have become hugely important, but Apple has yet to field a compelling offering in this area. The company needs to show that it can compete as effectively in the cloud as it does in hardware and software, particularly given Google's cloud competency. Apple is said to have signed deals with four major music companies and Jobs is likely to highlight these partnerships to underscore the value of an ecosystem with broad industry support, something neither Google's nor Amazon's cloud music services enjoy…
>
> What will iCloud do? It's likely to allow subscribers to store music and, eventually, video files from their iTunes libraries on Apple's servers and access them via streaming from iOS, Mac OS X, and (presumably) Windows PCs with iTunes. It should also provide generic file storage, a revised version of MobileMe e-mail, a more flexible online calendar, revamped photo sharing capabilities, and comprehensive backup and file synchronization.[31]

The WWDC event confirmed what Apple enthusiasts had suspected about the iCloud and its functionality and not much more.[32] As of September 2011, the iCloud and iOS5 (Apple's OS for its iPad, iPhone, and iTouch devices) still hadn't been released.

Rollins knew the PC game was taking a new turn, and it wasn't all about the hardware; it hadn't ever been. But now the rest of the technological ecosystem was about even more than just operating systems and word-processing capability. The 2011 PC game was about retailing and smart advertising and media consumption and media production—and even about the change in the U.S. economy and labor markets since the last round of Macs had been designed and marketed. Apple was also sitting on quite a bit of liquidity—$76 billion—due mostly to the popularity of its more "mobile" computing devices. That was more cash and marketable securities, in fact, than was currently in the United States Treasury—which, going into August 2011, topped out at $74 billion.[33] Some investors and analysts were clamoring for dividend payouts for the $300 shares, while others claimed not to want one, preferring instead for Apple to utilize its resources in the service of its current strategic trajectory—whatever that was, or might

[31] Thomas Claburn, "Apple WWDC: Will Jobs Answer Big iCloud Questions?," *InformationWeek*, June 4, 2011.

[32] "Cloud Details Revealed," YouTube video, 2:01, from Reuters video coverage, posted by ReutersVideo on June 15, 2011, http://www.youtube.com/watch?v=REKfV9nhFas (accessed October 11, 2011).

[33] David Sarno, "Apple Has More Cash Than the U.S. Treasury," *Los Angeles Times*, July 29, 2011.

become.[34] Once again, Rollins returned to the question he had been charged with responding to: The Mac was Apple's flagship brand, that much was certain—but what place would it have in two years' time?

[34] Paul R. La Monica. "Apple: $76 Billion in Cash. Still No Dividend?," The Buzz, *CNN Money*, September 15, 2011.

Exhibit 1

APPLE (COMPUTER) INC.: WHITHER THE MAC?

Comparative Company Analysis—Operating Revenue
(in millions of U.S. dollars)

Computer Hardware Company							
	2009	**2008**	**2007**	**2006**	**2005**	**2004**	**1999**
Apple	42,905	32,479	24,006	19,315	13,931	8,279	6,134
Avid	629	845	930	911	775	590	452
Dell	52,902	61,101	61,133	57,420	55,908	49,205	25,265
Diebold	2,718	3,170	2,965	2,906	2,587	2,381	1,259
HP	114,552	118,364	104,286	91,658	86,696	79,905	42,370
NCR	4,612	5,315	4,970	6,142	6,028	5,984	6,196
Stratasys	98	126	112	104	83	70	38
Other Companies with Significant Computer Hardware Operations							
	2009	**2008**	**2007**	**2006**	**2005**	**2004**	**1999**
Cisco Systems	36,117	39,540	34,922	28	24,801	22,045	12,154
Fujitsu	50,101	47,332	53,389	43,221	40,605	44,512	49,576
IBM	95,758	103,630	98,787	91,424	91,134	96,293	87,548
Oracle	26,820	23,252	22,430	17,996	14,380	11,799	10,130
Toshiba	68,619	67,903	76,680	60,308	54,218	54,543	54,239

Data sources: *S&P Industry Surveys*, April 2011, Volume 1; "Computer: Hardware," October 14, 2010.

Exhibit 2

APPLE (COMPUTER) INC.: WHITHER THE MAC?

Comparative Company Analysis—Net Income
(in millions of U.S. dollars)

Computer Hardware Company

	2009	2008	2007	2006	2005	2004	1999
Apple	8,235	4,834	3,496	1,989	1,335	276	601
Avid	(68)	(198)	(8)	(43)	34	72	(138)
Dell	1,433	2,478	2,947	2,583	3,572	3,043	1,666
Diebold	73	102	40	87	83	184	129
HP	7,660	8,329	7,264	6,198	2,398	3,497	3,104
NCR	(33)	231	171	382	529	290	337
Stratasys	4	14	14	11	11	9	2

Other Companies with Significant Computer Hardware Operations

	2009	2008	2007	2006	2005	2004	1999
Cisco Systems	6,134	8,052	7,333	5,580	5,741	4,968	2,096
Fujitsu	997	(1,134)	482	868	581	298	403
IBM	13,425	12,334	10,418	9,416	7,994	8,448	7,712
Oracle	6,135	5,593	5,521	4,274	3,381	2,886	6,297
Toshiba	(206)	(3,365)	1,274	1,165	668	430	(264)

Data source: *S&P Industry Surveys,* April 2011, Volume 1; "Computer: Hardware," October 14, 2010.

Exhibit 3

APPLE (COMPUTER) INC.: WHITHER THE MAC?

Application Developers, 2009

Online	22%
Native iPhone	20%
Traditional gaming	19%
Retail	17%
Traditional media	17%
Mobile	5%

Data source: *Market Share Reporter*, 2010, 778.

Exhibit 4

APPLE (COMPUTER) INC.: WHITHER THE MAC?

Leading IT Service Firms Worldwide, 2009

IBM	7.20%
HP	4.50%
Fujitsu	3.10%
Accenture	2.70%
CSC	2.10%
Other	80.40%

Note: The industry generated total revenues of $763 billion.

Data source: *Market Share Reporter*, 2010, 781.

Exhibit 5

APPLE (COMPUTER) INC.: WHITHER THE MAC?

IT Spending Firms Worldwide, 2009

Telecom	60%
IT Services	24%
Hardware	10%
Software	7%

Data source: *Market Share Reporter*, 2010, 781.

Exhibit 6

APPLE (COMPUTER) INC.: WHITHER THE MAC?

Worldwide PC Market Share

	2Q 2010	2Q 2011	Unit Growth
HP	17.7%	17.8%	2.9%
Dell	12.6%	12.7%	3.1%
Lenovo	10.1%	12.1%	22.7%
Acer	13.2%	10.9%	–15.6%
Toshiba	5.4%	5.2%	–1.9%
Other	40.9%	41.4%	3.2%

Data source: Foresman.