

CASE 20

MICROSOFT: FROM GATES TO SATYA NADELLA



INTRODUCTION

On February 4, 2014, Satya Nadella became CEO of Microsoft. Nadella, a native of Hyderabad, India, was only the third CEO in Microsoft's 39-year history. Cofounder Bill Gates was CEO from Microsoft's establishment in April 1975 through January 2000 when he passed the reins to Steve Ballmer. Gates remained chairman though until February 2014. The Gates years were characterized by dramatic growth as Microsoft expanded from a small start-up to become the largest and most dominant software company on the planet, in the process making Gates the world's richest man. The foundations of Microsoft's success during this period were its two monopolies: the Windows operating system, which at its peak was used on 95% of the world's personal computers (PCs), and Office, which had a 90% market share in 2012.¹

Microsoft continued to expand both revenues and profits under the leadership of Steve Ballmer. During his tenure, revenues expanded from \$25 billion to \$70 billion while net income grew 215% to \$23 billion. One area that did particularly during the Ballmer years was the Windows server business, a division that Nadella ran prior to becoming CEO.

Servers sit at the center of networks of PCs, and are used to perform a variety of functions including database hosting, file services, Web services, print services, and applications services. Microsoft makes a version of Windows, Windows Server, which runs servers. The Windows server business was a \$20-billion division by 2014. Microsoft gained share from competitors such as IBM, which promoted the rival Linux operating system. By 2014, 75% of servers built around Intel microprocessors used Windows Server as their operating system, as did around 50% of all servers.² The Linux and Unix operating systems took the number 2 and 3 spots.

Despite impressive growth, Microsoft's stock price stagnated during the Ballmer era. This reflected a growing concern that Microsoft had lost its leadership in the computer industry to three firms, Google, Apple, and Amazon. Google had grown dramatically during the 2000s on the back of its dominant Internet search business. Along the way, Google had developed an operating system for smartphones (Android) and laptops (Chrome) that were now challenging Windows on computing devices, a category that had expanded beyond traditional PCs to include smartphones and tablets. Google was also offering a "cloud-based" suite of productivity tools, Google Docs, which competed directly with Office.

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Apple, a firm that was nearly bankrupt in 1997, had done more than any other company to expand the definition of computing devices to include smartphones and tablets. Apple had introduced the first version of its smartphone, the iPhone, in 2007. Differentiated by elegant design and ease of use, two Apple hallmarks, the iPhone was a sensation that redefined what a smartphone should look like and do. Apple followed the iPhone with the 2010 introduction of the iPad, a tablet device that created an entirely new computing category, and one that cannibalized sales of laptop PCs. Both devices ran Apple's iOS operating system, further reducing the relevance of Windows.

As smartphones and tablets gained popularity, more and more computing was being done using these mobile devices—accessing applications and data stored on servers “in the cloud” rather than on a traditional PC. According to Microsoft's own estimate, by mid-2014, while 90% of traditional desktop and laptop PCs still used Windows, only 14% of *all* computing devices (a definition which included PCs, smartphones, and tablets), used Windows.³ Although under Ballmer's leadership Microsoft had tried to grow its share by introducing a Windows smartphone and the Surface tablet, these offerings failed to gain traction. By 2014, Windows Phone had less than 3% of the global smartphone operating system market, while Apple's iOS held 15.2%, and Android 81.1%.⁴ In the tablet market, Android had a 65.8% share, Apple's iOS had 28.4%, and Windows tablets had 5.8%.⁵ Microsoft was assumed to be losing significant amounts of money on its phone and tablet businesses. To compound matters, after three decades of sustained growth, PC sales were declining: PC sales fell by 4% in 2012 and by 9.8% in 2013, although demand stabilized in 2014.⁶

Amazon, the world's largest Internet retailer, was challenging Microsoft from another direction. By the mid-2000s, tens of thousands of servers were being grouped together into “server farms” located in the cloud to host high-traffic Internet websites. Google had built server farms to host its Internet search business, Microsoft likewise had server farms for its Bing search business and MSNBC Web offerings, and Amazon had built server farms to host its large online retail business. In 2005, Amazon leveraged the knowledge and capacity it had accumulated building server farms to start a new business, Amazon Web Services

(AWS). AWS hosted data, Web services, and applications for paying customer. These data, services, and applications could be accessed from anywhere by a user with a computing device and an appropriate wireless or hardwire connection. By 2014, AWS was viewed as the market-share leader in the emerging cloud-computing business.

Microsoft entered the cloud-computing business in 2010 with Azure (later renamed Microsoft Cloud). Azure was founded within the Windows Server division that Nadella ran prior to becoming CEO. In addition to hosting data and websites, Azure allows clients to build and run applications that reside on Microsoft's cloud. By 2014, Azure was thought to be number two in the emerging cloud business, with Google and IBM rounding out the top four. Industry wide, the cloud-computing business generated \$16 billion in sales in 2014, but it was growing very rapidly and was thought by many to represent the future of computing.⁷

Commenting on Microsoft's overall competitive position in 2014, the general manager of one business unit noted that: “I think we have about 18 to 24 months to get it right. If we don't, Microsoft is finished.”⁸ This statement reflected a widespread belief within the company that the computer industry was undergoing a massive paradigm shift, away from the client-server world based on PC architecture in which Microsoft had been so dominant, and toward a world of mobile devices and cloud computing in which Microsoft faced significant competitive challenges. Nadella was as cognizant of this as anyone. By March 2014, he had already honed his vision for the company. Microsoft, he said, was competing in a “mobile-first, cloud-first” world.⁹ The task facing Nadella was deciding what actions to take to ensure that Microsoft survived and prospered in this brave new mobile-first, cloud-first world. He knew he had to act fast.

BILL GATES AND THE EARLY HISTORY OF MICROSOFT

Bill Gates and Paul Allen established Microsoft in 1975. Gates was a 19-year-old Harvard dropout.¹⁰ Allen, who was 22, had dropped out of Washington

State University to work as a programmer at Honeywell in Boston. Gates and Allen had both attended Seattle's elite Lakeside high school, where they had bonded over their common interest in computers.

By all accounts, the young Bill Gates was extremely intelligent, hypercompetitive, ambitious, hardworking, and a gifted programmer. One of his former teachers at Lakeside described him as the most intelligent student she had ever had. He could also be dismissive of people who lacked his technical acumen, abrasive, and hypercritical. One story widely circulated in Microsoft is that if he disagreed with the technical or product presentations of Microsoft employees, he would interject with sharp comments along the lines of "that's the stupidest thing I have ever heard" or that the idea was "brain damaged." Legend has it that on more than one occasion Gates reduced a presenter to tears, although Gates would argue that it was never the person he criticized, just the idea. Gates respected people who were smart and hardworking like him, who marshaled their facts, and who stuck to their guns when challenged by him if they knew they had the facts on their side. Gates ultimately relied upon such people to lead projects and businesses within Microsoft.

In 1975, Allen persuaded Gates to drop out of Harvard and start Microsoft to write a version of the computer programming language, BASIC, to run on the world's first commercially available PC, the MITS Altair 8800, which used an Intel 8080 microprocessor. Gates and Allen met with the founder of MITS and demonstrated their version of BASIC for the Altair 8800. This resulted in a deal under which MITS distributed Microsoft BASIC for the Altair 8800, making Microsoft the first company to sell software to run on a personal computer. Microsoft subsequently wrote versions of Microsoft BASIC that ran on other PCs of the time, including Apple's first successful offering, the legendary Apple II, introduced in 1979.

In June 1980, Steve Ballmer joined Microsoft. Ballmer had been a friend of Gates at Harvard, and was the only person who had outscored Gates on mathematics and microeconomics classes at Harvard. Ballmer had worked at Procter & Gamble after Harvard, and then moved on to Stanford Business School. Gates persuaded Ballmer to drop out of Stanford and manage business operations at Microsoft. He was employee number 30.

In July 1980, IBM approached Microsoft about using a version of Microsoft BASIC for the IBM

PC, which was then in development. Gates persuaded IBM to adopt a 16-bit Intel processor (originally, IBM had been considering a less-powerful, 8-bit processor). Gates was also instrumental in pushing IBM to adopt an open architecture, arguing that IBM would benefit from the software and peripherals that other companies could make.

Initially, IBM was intent on licensing the CP/M operating system, produced by Digital Research, for the IBM PC. However, the current version of CP/M was designed to work on an 8-bit processor, and Gates had persuaded IBM that it needed a 16-bit processor. In a series of quick moves, Gates purchased a 16-bit operating system from a nearby company, Seattle Computer, for \$50,000. Gates then hired the designer of the operating system, Tim Paterson, renamed the system MS-DOS, and offered to license it to IBM. In what turned out to be a masterstroke, Gates persuaded IBM to accept a nonexclusive license for MS-DOS (which IBM called PC-DOS). MS-DOS had a command-line, text-based interface and could only run one program at a time, but, for 1981, it was state of the art.

To drive sales, IBM commissioned developers to build a number of applications for the IBM PC. In addition to Microsoft Basic, these included a version of VisiCalc, an early spreadsheet that was a popular application for the Apple II, a word processor, EasyWriter, and a well-known series of business programs from Peachtree Software. Introduced in August 1981, the IBM PC was an instant success. Over the next 2 years, IBM would sell more than 500,000 PCs, seizing leadership from Apple, which had dominated the PC market with the Apple II. IBM had what Apple lacked—an ability to sell into corporate America. As sales of the IBM PC mounted, more independent software developers started to write programs to run on the IBM PC. These included two applications that drove adoptions of the IBM PC: word processing (WordStar and WordPerfect) and a spreadsheet (Lotus 1-2-3).

The success of IBM gave birth to clone manufacturers who made "IBM-compatible" PCs that also utilized an Intel microprocessor and Microsoft's MS-DOS operating system. The "clone" industry was born when engineers at Compaq Computer reverse engineered the BIOS chip in the original IBM PC. The BIOS chip converted the operating system into machine language, and was integral to the operation of the PC. It was the only key component of the IBM PC that IBM had not

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bought off the shelf from other manufacturers. Compaq's BIOS chip was functionally equivalent to the chip in the IBM PC, but used different code and thus did not violate IBM's copyright. Other PC companies soon followed Compaq's lead, including Tandy, Zenith, Leading Edge, and Dell. The birth of the clone industry was a huge boon to Microsoft. By virtue of its nonexclusive license with IBM, Microsoft had the ability to sell MS-DOS to a growing number of clone makers.

In 1983, Microsoft expanded its product offering with the introduction of Word for MS-DOS, the company's first word processor. Word was differentiated from other word processors at the time by being the first to use a mouse. In 1985, Microsoft introduced a version of Word to run on Apple's latest machine, the Macintosh. In 1985, Microsoft released the first version of Excel, the company's spreadsheet offering, which competed with the bestselling Lotus 1-2-3. In 1987, Microsoft purchased a start-up company that had developed presentation software for the Macintosh. This product ultimately became PowerPoint, the first version of which was introduced in 1990.

The lead developer for Word and Excel was Charles Simonyi, a key hire at Microsoft who had formerly worked at PARC, Xerox's legendary research center, which had pioneered the development of the computer mouse, on-screen icons, a graphical user interface (GUI), object-oriented programming, and the laser printer. In a quirk of business history, senior management at Xerox had passed on the opportunity to commercialize these innovations, which opened the doors to Apple and Microsoft to pick up the ideas and run with them.

In 1982, with business booming, Paul Allen was diagnosed with Hodgkin's lymphoma. His cancer was successfully treated with radiation therapy, but he took an extended leave and never again held an operating position at Microsoft. In 2000, he resigned from the company's board of directors.

BUILDING THE DOUBLE MONOPOLY

By the mid-1980s, Microsoft was doing very well. It became apparent that the MS-DOS business had some compelling economics. While Microsoft bore

the costs of developing successive versions of MS-DOS, the incremental or marginal costs of producing individual copies of MS-DOS were very low. In the case of new PCs, Microsoft simply gave the master code to the manufacturer, who installed MS-DOS on every machine built, and paid Microsoft a licensing fee per machine. This resulted in gross margins as high as 90%. In contrast, the gross margins of PC makers at the time were closer to 40%.

The Development of Windows and Office

In 1986, Microsoft went public. The IPO raised \$61 million and valued Microsoft at \$650 million. Microsoft now had over 700 employees. The company's position, however, was not secure. Although MS-DOS was the most widely used operating system for PCs, Apple had shown what the future looked like in 1984 when it introduced the Macintosh. Borrowing many ideas from Xerox PARC, the Mac had a graphical user interface (GUI) which displayed programs as on screen icons. It also used a computer mouse with its point-and-click methodology for selecting tasks. This intuitive interface was a big improvement in usability over the clunky command-line interface of MS-DOS, which could be intimidating for people without a computing background.

Gates realized that a GUI interface was the future. Microsoft worked closely with Apple to develop the first version of Word for the Mac, which took full advantage of the Mac's GUI interface and mouse capabilities. Word for the Mac soon became one of the bestselling Mac applications. At the same time, Microsoft took what it learnt from Apple and used it to start developing its own GUI interface, which was christened Windows.

Apple inadvertently helped Microsoft in two ways. First, it licensed its "visual displays" to Microsoft in 1985, enabling Microsoft to legally develop a GUI that had a similar look and feel to the Mac. Second, it was difficult to develop applications for the Mac. Apple did a poor job of providing tools to help third-party software developers write programs for it. In contrast, Gates often said that the most important strategic business unit at Microsoft was its tools business. Microsoft invested heavily in the development of tools to boost developer productivity. This made

it easy for third-party developers to write applications for MD-DOS, and later Windows, and drove adoption of Microsoft's operating system offerings.

The first version of Windows was introduced in November 1985. It was a GUI shell that displayed programs as on-screen icons allowed for multitasking (using more than one program at a time). Windows sat on top of MS-DOS. It was commercial failure. Many users lacked sufficiently powerful hardware to run Windows, and there were few programs available that took advantage of its features. Nevertheless, Microsoft continued development work on Windows.

IBM, too, saw the importance of a GUI interface. IBM was losing market share to the clone makers, so it decided to replace MS-DOS with its own GUI operating system, OS/2. IBM contracted with Microsoft to develop OS/2. However, the arrangement was a difficult one. IBM resented the fact that Microsoft had facilitated the emergence of the clone businesses by licensing MS-DOS to IBM's competitors. IBM was also concerned that Microsoft continued to work on Windows even while it developed OS/2. For its part, Microsoft knew that IBM was also investing in the UNIX operating systems, and had licensed a UNIX based PC operating system, NeXTSTEP, from NeXT, a PC company that Apple founder Steve Jobs established after he left Apple in 1985. Microsoft knew it would be in trouble if IBM scrapped OS/2 in favor of a UNIX alternative. The pivotal event was IBM's announcement that it would release two versions of OS/2, a powerful version that would be exclusive to IBM machines, and a basic version for other PC makers. That wasn't news that Microsoft wanted to hear. Gates decided to sever links with IBM and go for broke on Windows.

The fruit of this effort, Windows 3.0, was introduced in 1990. Windows 3.0 was a big improvement over earlier versions. It was well reviewed and became a major commercial success. IBM's OS/2, meanwhile, garnered mixed reviews and limited market traction. PC manufacturers, seeing a chance to deliver a body blow to IBM, which after all was a direct competitor, adopted Windows 3.0, bundling it with most new PCs. Market momentum toward Windows was also helped by the introduction versions of Microsoft's increasingly popular applications products, Word, Excel, and PowerPoint, for Windows 3.0. At the time, each of these products was number 2 in its market space (Word was behind WordPerfect, Excel behind Lotus

1-2-3, and PowerPoint trailed Harvard Graphics). Microsoft's rivals, however, were slow to introduce versions of their products for Windows, resulting in big market-share gains for Microsoft's offerings. To further drive adoption of Windows, Microsoft redoubled its efforts to provide developers with the best tools, and to persuade them that Windows was best platform for which to develop applications.

In 1992, Microsoft combined its three leading application programs—Word, Excel, and PowerPoint—into a single offering for Windows, which it called Office. Office was priced slightly below the combined price of each individual offering. Microsoft also promised interoperability between the three programs, although this took several versions to perfect. Microsoft's rivals, including most notably WordPerfect and Lotus, lacked a comparable suite of offerings and were unable to match Office. From this point on, Office became the dominant suite of productivity programs for information workers.

During the late 1980s, Microsoft started an operating system development project targeted primarily at servers. Servers were specialized PCs that sat at the heart of corporate networks of "client" PCs and "served" those "clients," holding shared files and applications programs used by many machines, such as email systems. Dubbed Windows NT, this was a powerful, 32-bit operating system that could run on servers. Unlike Windows 3.0, it was not DOS based ("NT" stood for new technology). To develop Windows NT, Microsoft hired a team of software developers led by Dave Cutler from Digital Equipment Corporation (DEC). Cutler's team drew on their prior experience developing 32-bit systems for DEC to develop Windows NT.

The move into the server OS business represented recognition by Microsoft of the growing importance of client-server systems within large enterprises. The development of Windows NT constituted a strategic shift by Microsoft toward the enterprise market, where the primary demand for client-server systems resided. Windows NT was an attempt to make secure, stable software that could run "mission-critical" applications within enterprises. Client-server networks were taking business away from the mainframes and minicomputers sold by the likes of IBM, DEC, and Hewlett Packard. Microsoft wanted a piece of this business, and with Windows NT it intended to get it. Introduced in 1993, Windows NT was a solid, stable, secure system that gained increasing acceptance

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within enterprises. Windows NT marked the beginning of Microsoft's server business.

To gain further enterprise business, Microsoft added an email client to its Office suite, Outlook, which could connect with corporate email hosted on servers. By the time Windows NT was introduced, Microsoft was also selling a relational database offering, Microsoft SQL Server. A relational database is a product whose primary function is to store and retrieve data as requested by other software applications, be they on the same computer or running on another computer across a network. Microsoft SQL Server was the company's entry into the enterprise-level database market, and it pitted Microsoft against Oracle and IBM, both of which had relational database offerings.

The 32-bit technology underlying Windows NT was subsequently incorporated into the next two releases of Windows for PCs, Windows 95, and then Windows XP (introduced in 1995 and 1998, respectively). Increasingly, this made Windows more than just a GUI that sat on top of MS-DOS. Windows was becoming a fully-fledged operating system in its own right. By the time Windows 2000 was introduced, Windows had effectively shed its DOS heritage.

Windows 95 was a landmark release. Its enhanced graphics effectively closed the gap between Windows and Apple's Macintosh. Since the introduction of the IBM PC, Apple had been a niche player in the PC business, focused primarily on the education, graphic artist, and desktop publishing markets, where its graphic displays and ease of use gave it maximum advantage. With Windows 95, however, the differential appeal of the Mac all but vanished. By 1997, Apple was facing bankruptcy.

The Internet Tidal Wave

One other event occurred during the 1990s that helped to cement the dominance of Microsoft: the explosive growth of the World Wide Web (WWW). Tim Berners-Lee, a British researcher at CERN in Europe, invented the Web during the early 1990s. The WWW sits on top of the Internet, which itself had been developed by American researchers during the 1960s and 1970s. As Berners-Lee conceived it, the Web used hypertext markup language (HTML) and hypertext transfer protocol (HTTP) to enable links to be made to information anywhere the Internet, thereby creating an enormous "web" of information. In 1993, a team at the University

of Illinois led by a 22-year-old student, Marc Andreessen, developed the Mosaic Web browser. Mosaic could display information on the Web graphically. This was the beginning of the enormous growth of the WWW. After graduation, Andreessen joined up with Jim Clark, the former CEO of Silicon Graphics, to form Netscape. Netscape further developed the Mosaic Browser, releasing its version, Netscape Navigator, in November 1994. Netscape Navigator quickly became the dominant Web browser. In August 1995, Netscape held an IPO. The stock was offered at \$28 a share, but closed its first day at \$75, valuing Netscape at \$2.9 billion.

Prior to the explosive growth of the Web, Microsoft's Internet strategy involved the creation of a dial-up online service, MSN, which was developed to be included with Windows 95. MSN was similar in conception to early versions of AOL, with email capabilities, message boards, chat rooms, and some news and weather offerings. The first version of MSN did not have a Web browser and users could not connect to the Internet. With MSN and Windows 95 in late development, Gates became aware of the rapid growth of the Web. Microsoft legend has it that the WWW was brought to the attention of Gates by memos from two junior engineers, Steve Sinofsky and Jay Allard. Gates immediately saw its strategic significance. In May 1995, Gates wrote a memo to his executive staff and direct reports, calling the growth of the Internet a "tidal wave." Gates wrote that the Internet "is crucial to every part of our business" and "the most important single development to come along since the IBM PC was introduced in 1981". In his memo, Gates went on to say that Netscape was a "new competitor", and that Microsoft's strategy should be to make it clear that "Windows machines are the best choice for the Internet."¹¹

To fulfill Gates's vision, Microsoft acted rapidly. It licensed a version of the Mosaic Web browser from a company called Spyglass, improved on it and released it as Internet Explorer (IE) version 1.0 in August 1995. IE 1.0 was bundled with Windows 95 and appeared as an icon on the start screen. Although it was too late to change MSN in time for the release on Windows 95, MSN was reworked to utilize HTML and HTTP and give users access to the Web. In late 1996, the new version of MSN, MSN 2.0, was released. Microsoft also quickly added the ability to insert hypertext links into Office documents, allowing readers of those documents to navigate away to websites.

Antitrust Issues

All of these moves were successful for Microsoft. However, the bundling of IE with Windows brought Microsoft to the attention of the U.S. Department of Justice (DOJ). The DOJ argued that the bundling strategy put Netscape at a competitive disadvantage and was a deliberate attempt on Microsoft's part to "squash" their rival. Whereas Netscape charged consumers for their browser, IE was perceived as being a "free" product. Moreover, the DOJ contended that Microsoft configured the Windows code such that it was slow and difficult for users to download Netscape Navigator and install it on the Windows desktop. For its part, Microsoft claimed that IE was part of the operating system and that users expected it to be there.

In the end, the DOJ prevailed. The judge in the case ruled that Microsoft was a monopoly, and that the bundling strategy represented an abuse of Microsoft's monopoly power. In 2002, Microsoft and the DOJ reached a settlement that required Microsoft to share its application programming interfaces (APIs) with third-party companies, so that they could write programs that worked well with Windows. Microsoft, however, was allowed to continue bundling IE and other products with Windows. For Netscape, this was a Pyrrhic victory. The company continued to lose market share against IE, and was not helped by reports that its products were inferior in quality to IE. In 1999, Netscape was sold to AOL for \$10 billion, a price tag that left many scratching their heads. AOL discontinued the Netscape browser in 2008. At the time it had less than a 1% share of the browser market, down from over 90% in 1995.

MANAGING THE COMPANY

From the outset, Gates made a point of hiring people who were like him—young, bright, driven, competitive, technically sharp, and able to argue effectively for what they believed in. A small but influential number of these hires came from Xerox PARC, including Charles Simonyi, who led the development of the first versions of Word and Excel. Ballmer hired some of sales personnel. One of these was an aggressive salesman named Vern Raeburn. Gates had insisted that

Microsoft should not sell directly to end-users, but Raeburn marshaled his arguments and persuaded Gates to change course. Raeburn quickly pulled together a team to market and sell Microsoft's products to consumers.

This was the genesis of a split within Microsoft into two distinct functions that persist to this day: an engineering function that develops products, and a sales and marketing function that sells them. For years, Gates was the de facto head of engineering with responsibility for product development, whereas Ballmer was responsible for sales and marketing. Although Microsoft went on to create different business units—Windows, Windows Server & Tools, and Office all had their own business units, for example—the engineering and sales and marketing functions would cut across these units, creating a loose, matrix organization. Finance, legal, and human relations functions also cut across business units.

To motivate key employees and encourage them to work long hours and commit to the company, Microsoft gave them stock options. When the company did well, and the stock price rose, these employees made substantial sums of money. As the stock price surged after the IPO in 1986, Microsoft stock options became a major draw, enabling Microsoft to hire the best and the brightest. By 2000, it is estimated that the surging stock price had created over 10,000 millionaires among Microsoft employees.¹² Paradoxically, by the mid-1990s, some early employees were so secure financially that their competitive edge had been blunted. Some were said to have retired on the job. Many other key employees simply left the company to pursue other interests.

Another notable feature of Microsoft that emerged over time was the tendency for people to circulate within the company. It was not unusual for people to change jobs every 18 months, and move from business to business.

Formalizing Management Processes

As the company's growth began to accelerate in the early 1980s, Gates brought in people with business experience to help take the load of his shoulders and manage the day-to-day operations and finance side of the business, leaving him to focus on product development, technology, and strategy, and Ballmer to focus on sales. A key early hire was John Shirley. Shirley

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worked for Tandy Corporation, the parent company of Radio Shack. Shirley joined Microsoft as president in 1983 and stayed through 1990. He remained on the board until 2008. People within the company would joke that Shirley was there to provide some adult supervision.

In 1994, Gates hired Bob Herbold as chief operating officer (COO). Herbold had a PhD in computer science and had worked at Procter & Gamble for 25 years, where he was responsible for P&G's worldwide marketing and brand management. Herbold stayed at Microsoft until 2001. Another "adult" in charge of day-to-day operational issues, Herbold saw it as his job to bring discipline to the company without undermining the characteristics that had made it competitive. Herbold describes arriving at a company that was chaotic: "Incompatible systems and divergent practices companywide were causing all kinds of problems. Bills from suppliers weren't being paid on time. We never knew precisely how many people worked for the company. Business units set projections using incompatible frameworks and measures that prevented a comparison of their performance."¹³

Much of this chaos was the result of rapid revenue growth often exceeding 30% a year. Herbold notes "a balkanized system had grown up because, for years, Bill had focused on product development and Steve had focused on sales. Meanwhile, business and geographical units had relatively free rein to create local functional staffs, set business practices, and build stand-alone information systems. They weren't particularly interested in giving up their autonomy."¹⁴

Herbold moved fast to standardized, basic business processes at Microsoft, including financial reporting, vendor payments, and human resources policies. He also found a company with no formal strategic planning process in place. Herbold developed a rolling, 3-year planning process based on a standardized format that included historic and future projections of market share, revenues, costs, and profits. The process distinguished between established products, such as Windows and Office, and new products where there was a much greater degree of uncertainty. The plans were modified and streamlined every year based on new data.

Herbold also formalized a human resources performance-appraisal process that had originally been developed by Gates. The appraisal process required managers to evaluate their direct reports, and it utilized a forced curve, such that some members of a

team would always end up being classified as star performers, and others as poor performers. The star performers would get big pay increases, whereas the underperformers would be "encouraged to find a job outside of the company" if they couldn't bring up their rating over time. Critics of this system, known as stack ranking, noted that it pitted employees on a team against each other, encouraged backstabbing, and created a real problem for managers who had built strong teams, because they were forced to classify some of their team as underperformers, even though in an absolute sense they might be good.¹⁵

The Product Development Process

Given the nature of Microsoft's business, a key aspect of the company's organization and management structure relates to the way it formalizes development of its software products. In the early years "superprogrammers" such as Simonyi and Gates drove the vision for products. Gates came to the realization that this model would not scale well. Superprogrammers were in short supply, had little interest in updating a product once it had been created, might not understand the market well, and were prone to clash with other superprogrammers. In response a formal system for developing, testing, and releasing products emerged in the mid-90s.¹⁶

The process starts with a *program manager*, who is responsible for specifying the vision of the product, its key features, development schedule, development process, and implementation tradeoffs. The program manager works closely with senior software developers and with product managers in marketing to achieve all of this. His or her role, in other words, is to coordinate engineering and marketing and distill out of this what the product should do, what its key features should be, and a schedule to achieve these. The program manager is then responsible for managing the overall development effort, and must make the call on features to add or cut in order to hit goals such as schedule. On complex products such as Windows and Office there is a hierarchy of program managers. For example, while there may be an overall program manager for a new version of Office, there will also be program managers for each constituent program—Word, Excel, PowerPoint, and so on.

It is important to understand that many of the ideas for a product's features come from developers

and marketers. Program managers are leaders and facilitators of the process, rather than bosses, and they must work through persuasion and negotiation. In part, this may be due to the high status that developers in particular have within Microsoft's culture, something that can be traced back to Gates and Simonyi. Indeed, most program managers were themselves star developers who rose through the engineering ranks.

Once the product vision, key features, schedules, and the like have been mapped out, it is up to software *developers* to implement the vision and features. Developers write the code. Typically, a small team of senior developers and program managers will take charge of the product architecture, and developer leads (first-line managers) will provide detailed guidance to their teams of programmers. While developers may be the source of ideas for new features, they are required to clarify what each feature accomplishes, and to help program managers decide what to include in a product, and what to cut in order to stay on schedule.

Testing the code is the responsibility of developers and *testers*. Developers are meant to test their own code frequently (typically every day). They also work in pairs with testers and are required to hand their code over to a tester for testing before adding their work to the "official build." The goal in this process is to reduce the bug count to zero. Microsoft also has a specially trained group of people who perform final tests on a completed product to see if it is ready for shipment. As part of this process, beta versions of the product will be released to key customers for feedback, and the product will be tested in a usability lab. Microsoft has approximately one tester for every developer, an unusually high ratio but one that is consistent with the goal of producing stable, secure software that can run mission-critical applications for enterprises.

Over time, Microsoft routinized this process, with offering such as Windows, Office, and SQL Server going through 3- to 5-year definition, development, test, and release schedules. As these products have grown in complexity and features, there was a tendency for the process to become more bureaucratic and harder to manage. This was made more challenging by the fact that many program managers, senior developers, and development leads were people who had excelled in a technical sense but had little management training or experience. In the mid-2000s, this led to

serious issues when Microsoft ran over budget and over schedule while trying to develop Windows Vista (discussed later in the case).

THE BALLMER YEARS

When Bill Gates handed the CEO role over to Steve Ballmer in February 2000, the company was at the top of its game. Windows and Office dominated their respective markets, generating prodigious amounts of free cash flow. The stock price had hit an all-time high of \$58.72 on December 23, 1999. Microsoft was the most valuable company on the planet, and Gates the world's richest man. Gates continued to work full time at Microsoft until 2008, assuming the role of chief software architect, with primary oversight for product development. He also remained chairman of the company.

During the Ballmer era, revenues increased 280%, to \$70 billion, while net profit expanded by 215%, to \$23 billion. The stock price, however, dropped below \$40 a share in mid-2000, and did not break through that level again until 2014, after Ballmer had resigned. The failure of the stock price to advance despite growing top and bottom lines reflected a widely held belief among investors that Microsoft had lost its leadership position in the industry. Moreover, critics believed that the company was destroying economic value by investing in businesses that did not generate a positive ROI. These included the Xbox videogame business, Internet search, and the device businesses that encompassed the Zune music player, smartphones, and tablet computers. By the end of the Ballmer era, it was widely believed that the shift to a world characterized by mobile devices and cloud computing presented an existential threat to Microsoft's core operating system business.

One of the first problems that Ballmer had to confront was the risk of a slowdown in the rate of growth of both Windows and Office. The markets for both products were now mature in most developed nations, implying that revenues would increasingly come from replacement rather than first-time demand. Although there was still plenty of room for growth in developing nations, those markets were also characterized by extremely high levels of piracy—as much as 90% in markets like China and Vietnam. Indeed, even in

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developed markets such as the United States, piracy rates for software products are as high as 20 to 25%.¹⁷

Two trends helped Microsoft weather the maturation of its two primary product offerings. First, a significant number of consumers in developed markets purchased multiple devices: a laptop and a desktop for example. Second, Microsoft continued to grow its share of the enterprise markets for Windows Server and SQL Server, taking business from UNIX, LINUX, Oracle, and IBM. Microsoft's success in the enterprise space reflected the fact that to a considerable extent, the company had succeeded in building stable, secure software that could run mission-critical applications in enterprises. Given that Windows for the client and Office were also widely used within enterprises, Microsoft was increasingly focused on its enterprise business. Indeed, by the early 2000s, Microsoft was more of an enterprise company than a consumer company.

Product Diversification: Xbox

Under Ballmer, Microsoft continued to diversify its product offerings, entering into new markets. The first was the videogame market. By the late 1990s, Sony dominated this market with its PlayStation console and related game offerings. The market was worth \$20 billion globally and was growing. Microsoft saw the PlayStation as a threat. The PlayStation was a specialized computer that ran a non-Microsoft operating system, and could theoretically be connected to the Internet via a TV cable. Moreover, the PlayStation was often located in the living room. Bill Gates had long dreamed of having Internet-enabled computing devices in the living room that operated interactive TV, and could also be used for Web browsing, playing games, and online shopping; but Gates wanted those devices to run Windows.

Microsoft had capabilities that persuaded management that the gaming market was a viable target. Microsoft had produced one of the bestselling PC games of all time—Microsoft Flight Simulator—and had published another, *Age of Empires*. Through MSN it also had the world's largest online gaming site, MSN Gaming Zone, which had 12 million subscribers in the early 2000s. Moreover, Microsoft intended to use a customized version of the Windows operating system to power Xbox. This would save development costs and make it easier for developers to

write games for the Xbox, because many were already familiar with Windows programming APIs and tools.

Microsoft lacked the ability to produce hardware, so it decided to outsource this to a contract manufacturer, Flextronics. Microsoft's strategy was to price the Xbox at or below cost to drive adoption, and then make money on the sales of games, either directly in the case of games developed in house, or from royalty fees in the case of games developed by third parties. For this strategy to work, it had to guarantee Flextronics a profit margin, which meant paying Flextronics a subsidy on every machine manufactured.

Xbox was introduced in late 2001, after \$1.5 billion in development costs. The company faced tough competition from Sony's new offering, PlayStation 2 (PS2). To drive adoption, it cut prices for hardware aggressively. By 2003, Microsoft was thought to be losing \$100 on every Xbox it sold. To make that back and turn a profit, Microsoft reportedly had to sell six to nine games per Xbox.¹⁸ By late 2004, Xbox was still a distant second to PS2 in the videogame market, having sold 14 million consoles against Sony's 70 million. While Sony was making good money from the business, Microsoft was registering losses. Microsoft's home and entertainment division, of which Xbox was a part, lost \$4 billion between the launch of Xbox and mid-2006.

In November 2005, Microsoft introduced its next-generation console, Xbox 360. Again, contract manufacturers made the machine, and again Microsoft paid them a subsidy to ensure their profit margins. Sony followed a year later with its PS3 console, as did Nintendo with the Wii console. The Wii was a less powerful machine than either Xbox 360 or PS3, but it came with a motion sensor controller that changed the way players interacted with games. The Wii bought a new generation of casual gamers into the market and turned into a surprise hit for Nintendo. Meanwhile, Microsoft and Sony slugged it out in the hard core gaming market. Demand for Xbox was helped by Microsoft's enormously popular Halo franchise. As the market expanded, all three companies were able to make profit on an operating basis in the business. However, both Microsoft and Sony hurt themselves with quality problems and component shortages early in the product cycle (Microsoft had to take a \$1.05 billion write off in 2007 for replacing poor-quality consoles).

Although Microsoft did achieve profitability on an operating basis for Xbox business by late in the Xbox 360 cycle, on a cumulative basis the return on