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—*Joseph Logue*

Windows and Windows NT

Windows and Windows NT are the names of the **operating systems** (OSs) marketed by **Microsoft** for the IBM **personal computer** (PC) and compatible computers. First delivered in 1985, Windows has gone through several major releases during its lifetime—the latest release of the product is Windows 2000. Millions of copies of both operating systems are sold each year; Microsoft's revenue from all Windows platforms was around U.S.$7 billion in 1999.

The history of Windows goes back to the Lisa, a machine shipped in 1983 by **Apple Computer**. The IBM PC was introduced in 1981, and the operating system, **DOS**, was text-based—that is, instructions had to be typed in a command line. The Lisa, however, was more like modern computers in that it used a **graphical user interface** (GUI) with multiple windows and used a **mouse** as a pointing device.

The GUI proved popular, and since IBM and Microsoft were not offering a GUI for the PC, other companies started selling add-ons for DOS. This was the case of VisiOn a GUI written in 1983 by programmers working for the company VisiCalc, and of GEM (Graphics Environment Manager) announced by Digital Research in 1984. However, GEM was not compatible with older PC **software** and gained little acceptance in the PC world. Only Atari would later adopt GEM for its own line of personal computers. IBM also introduced in 1985 a kind of multitasking add-on for DOS called TopView, which was text based but allowed users to switch between DOS applications. (This was a new feature because DOS let the user run only a program at a time; if another program was needed, the first had to be closed.) Finally, there was also a multitasker for DOS called DESQview, sold by Quarterdeck Office Systems with a functionality similar to that of TopView.

In November 1985, Windows 1.0 finally shipped. It had been announced three years earlier by Microsoft but had gone through several delays. It still had many significant shortcomings; the application windows could not be overlapped, and the **fonts** and **graphics** did not look as crisp on the screen as in the **Macintosh**. Significantly, DOS programs had to be rewritten for the new system. Few companies incurred the trouble of doing so, and therefore, for several years afterward, the most important applications were still DOS programs.

In the following two years, programs appeared that would increase the appeal of Windows. The first was PageMaker, a desktop publishing software with WYSIWYG capabilities; WYSIWYG stands for What You See (on the screen) Is What You Get (out of the printer). The other program was Excel, Microsoft's **spreadsheet**; already available for the Macintosh, it was ported to the IBM PC to challenge the market dominance of Lotus 1-2-3. Around this time, IBM and Microsoft decided to work on different versions of the operating system of the future. While IBM introduced and continued developing OS/2, Microsoft made a strong commitment to Windows, releasing version 2.0 in 1987, but without entirely removing the shortcomings of 1.0.

The first really popular version of Windows, release 3.0, was shipped in 1990. Competitors had already developed alternatives, such as DR-DOS from Digital Research, a system called GEOS 1.0, and IBM OS/2 with the new presentation manager. However, Windows 3.0 was better because it looked much more like the Macintosh: It offered overlapping windows, better fonts, and better disk management. Also, Microsoft started signing vendors to offer computers with Windows preinstalled, in this way effectively bundling the OS to the **hardware**.

At the same time that Microsoft was readying Windows 3.0, the company was already thinking about its follow-up, the New Technology (NT) system with the code name "Chicago," which would later became Windows NT. Microsoft raided the software industry, contracting the most talented software engineers, as for example David Cutler from **Digital Equipment Corporation**. Initially, NT would be based on the approach followed when working with

IBM on OS/2. But in 1991, the decision was taken of giving NT the look and feel of Windows. It was initially planned that the new operating system would be **microprocessor** independent, programming everything in **C**, but this approach was abandoned when NT and Windows were fused in Windows NT. Finally, in early 1993, Windows NT was released. It was geared for the server market and the first version was named 3.1 to avoid starting from 1.0, which would suggest that the system was still unreliable.

In 1995 Windows 95 was launched to great fanfare. Using a song from the Rolling Stones ("Start Me Up") as a theme, the new operating system made its debut. Windows had equaled the Macintosh at last. It had taken Microsoft 10 years to reach the quality level of the Apple product, but in the meantime Apple had barely improved the operating system of the Mac. Windows 95 also included support for **TCP/IP**, dial-up networks, and scalable fonts. Just a year later, Microsoft shipped Windows NT 4.0 with the same user interface as Windows 95 and a staggering 16 million lines of code. Microsoft's strategy concentrated on displacing **Unix** in the research and corporate market with Windows NT.

After Windows 95, two major releases of Windows followed, Windows 98 and Windows 2000. Whereas the 98 version was just an interim solution, the 2000 version represents the fusion of parts of the original Windows with NT. It is intended to bring both worlds together, providing better networking and security features. In Windows 2000 the user has to log on in the computer, even if it is his home computer, providing a password. System files cannot be modified by all users, providing in this way a shield against intruders or computer viruses. Although the security features of Windows have been widely criticized and its vulnerability to viruses is well known, Microsoft will try to close the security holes in future releases.

Nathan Myhrvold (1969–), chief technology officer at Microsoft, has noted that software behaves like a gas, filling all the available memory if given a chance. This is certainly true for Windows NT, which over the years has doubled in size every two years. In 1998, Windows NT was estimated to have 20 million lines of code, and for Windows 2000 there are contradictory accounts that set the size of the system between 35 and 60 million lines of code. As a point of comparison, the free operating system **Linux** has an estimated size of 5 million lines of code, including all its utilities.

The main difference between an operating system such as Windows and one such as Solaris, sold by **Sun Microsystems**, is the different philosophy. Windows is a *client-oriented operating system*—each user has a full copy of the system in his or her machine. Every time a new release of the OS is distributed, or if a patch has to be installed, every machine in a corporation has to be serviced. This can become a logistical nightmare. **Unix** (and its Solaris variation) are *server-centered* systems, where the operating system resides on a powerful server. The clients start the operating system through the network and if a patch or new version of the OS becomes available, only the server has to be upgraded.

However, PCs are much cheaper than workstations, and Windows has become the dominant OS. Large corporations need to manage all machines linking them in a coherent network, so Microsoft's strategy has been to provide NT for servers and Windows for clients. Windows 2000 should be the first step toward the fusion of both operating systems.

The market share of the various operating systems available has been changing over time, but Microsoft's market share is around 95 percent in the IBM PC world. If the Macintosh computers are included, Microsoft market share still remains near 90 percent. Only in the case of the Windows version for handheld computers (Windows CE) has Microsoft been unable to grab a significant portion of the market—here the OS of the PalmPilot **personal digital assistant** still dominates. One significant statistic is that the market share of the Microsoft browser increased to 75 percent in 1999, while Netscape's Navigator fell to less than 25 percent. Since Microsoft has integrated the browser with the OS, this dominance in the browser market serves to cement Microsoft's overall hegemony in the software sector.

Statistical forecasts see the market share of the Mac OS and Unix falling below 2 percent and 1 percent in 2001, respectively. The only alternative operating

system whose market share is expected to increase is Linux, with 5 percent of the market in 2001.

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—Raúl Rojas

Wired

Wired Ventures pioneered electronic magazine publishing in the 1990s. The company has been credited with largely inventing what has become known as *wired culture* through its magazine *Wired* and its companion **World Wide Web** site *HotWired*.

Wired Ventures was formed in October 1992 by Louis Rossetto (1949–) and his partner, Jane Metcalfe (1961–), who had published a pioneering electronic publishing journal called *Electric Word* in Amsterdam in the late 1980s. Returning to the United States in 1991 with an idea for a magazine that would become *Wired*, they initially failed to find investors. But Nicholas Negroponte (1943–), director of the **MIT Media Laboratory**, offered to supply the U.S.$75,000 they needed to produce a pilot edition and became one of *Wired* magazine's first contributors. After attracting venture capital investment in late 1992, Rossetto and Metcalfe were able to publish the first issue of *Wired* in January 1993 to a circulation of 1000 readers. Despite rapidly gaining readers (*Wired*'s circulation would reach 300,000 in its first three years), the company lost nearly U.S.$1 million in its first year of business.

Given Rossetto's interest in electronic publishing, it was not long before he began putting into practice some of the ideas that *Wired* was exploring. After experimenting with **electronic mail** articles and content distributed through **America Online**, he was prompted to launch a *Wired* Web site toward the end of 1993 when two Japanese readers starting circulating *Wired* articles on their own Web server. The result was HotWired, launched in October 1994, one month before **Netscape** Navigator was released. HotWired became the model of the Web site magazine. It pioneered the use of the banner advertisement, initially by selling space to blue-chip advertisers such as **IBM** and Volvo. Free site membership was designed to build a loyal community of readers, and the use of distinctive magazine brands within HotWired, such as WebMonkey for Web developers and the irreverent Suck.com column, drew different readers to different parts of the site.

Both *Wired* and HotWired drew attention, praise, and numerous awards for Rossetto and his colleagues. But the company was still not making a profit and failed several times to go public in 1996. However, that year did bring two more notable successes. In May 1996, HotWired launched an Internet search engine called HotBot that would win dozens of awards for its user-friendly interface. In November, HotWired launched Wired News, its daily technology roundup.

Rossetto stepped down from Wired Ventures in July 1997 and by November of that year, Wired Digital (the part of Wired Ventures devoted to electronic publishing) had laid off 20 percent of its staff. In May 1998, *Wired* magazine and Wired Digital were split off from one another. *Wired* was sold to international magazine publisher Condé Nast Publications for around U.S.$75 million. Wired Digital continued to trade as a separate company until October 1998, when it was bought by the Lycos search engine and **portal** company for U.S.$83 million.

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—Chris Woodford