return on investment is several times the profitability of other information technology companies. The calculations are based on accounting data that are not reported in a form that enables one to calculate profitability precisely. In particular, one needs to make assumptions about appropriate depreciation rates for software development expenditures, the actual timing of expenditures for developing specific products, and mechanisms for disaggregating some costs that are not reported by product line.

In her expert report for the Plaintiffs in the Iowa Microsoft case, Janet Netz refined the estimates of some of these items and performed a sensitivity analysis on how profits estimates depend on technical assumptions about the accounting data. Her calculations confirm the findings of Professor Nordhaus that Microsoft is generally far more profitable than other leading software companies, and has been throughout the period that is covered by this litigation. Moreover, Dr. Netz concluded that, if anything, the calculations by Professor Nordhaus were conservative – her best estimate of Microsoft's profitability is substantially higher than the estimates by Professor Nordhaus.

Microsoft's profits were explicated clearly in 1997 by Jeff Raikes in his attempt to convince Warren Buffet to invest in the company. Noting that Microsoft is likely to sell Windows to 90 percent of the PCs that are manufactured, Raikes adds that "since there effectively no COGs and a WW sales force of only 100-150 people this is a 90% margin business."[88] Similarly, Scott Oki testified that before the bundling of MS DOS and Windows GUI, DOS was highly profitable. "It [DOS] was a very stable product that was requiring not as much investment from either an R&D or a marketing standpoint and therefore was able to, you know, be -- be a very profitable -- a very profitable product, a cash cow."[89]

Earlier, in explaining why a team of Windows developers was switched to assist in developing the version of Word to be released in parallel with Windows 95, Bill Gates stated that Microsoft's

---

safely.php?fname=../pdffiles/brief.pdf.

88. Vates No. MS-PCA 1301179.

89. Deposition of Scott Oki, Volume II, June 13, 2001, p. 433.

productivity software was even more profitable than its operating system software. "The majority of our profits come from Word and Excel."[90]

Microsoft's filings before the Securities and Exchange Commission confirm that Microsoft was and still is highly profitable.[91] In the fiscal year ended June 2005, Microsoft reported pre-tax income of $16.6 billion on sales of $39.8 billion, a margin on sales of over 40 percent. Costs of good sold were reported at $5.3 billion, producing a gross operating profit of over 85 percent. For fiscal 2008, Microsoft reported a pre-tax income of $22.5 billion on revenues of $60.4 billion.

Microsoft's profits are concentrated in two product lines: Windows and Office. For its "Client" products (meaning Windows), 2008 operating profits were $13.1 billion on revenues of $16.9 billion, an operating margin of 78 percent. The Microsoft Business Division, which includes Microsoft Office, had profits of $12.4 billion on revenues of $18.9 billion, an operating margin of 66 percent. In servers and tools, Microsoft's operating margin was $4.6 billion on revenues of $13.2 billion for an operating margin of 35 percent, which is in the normal range for companies in the computer industry. The Entertainment Division, which includes games and the X-Box game computer, had revenues of $8.1 billion but operating profits of only $0.4 million, producing an operating margin of only five percent. Finally, in on-line services, Microsoft lost $1.2 billion on revenues of $3.2 billion.

Thus, the evidence is overwhelming that Microsoft is highly profitable and that its profits are concentrated in Windows and Office. On this basis Microsoft enjoys substantial market power in these product lines.

Exclusion of Competitors

The last indicator of market power is the ability to exclude competitors. The meaning of this

---

90. Message from Bill Gates to Eliyezar Kohan, November 8, 1993, Bates No. MX 5049756.

91. Accessed via moneycentral.msn.com/investor/sec/filing.asp?Symbol=MSFT on April 21, 2009.

concept is that an entrenched firm with market power can prevent others from entering successfully and can force other incumbents from the market. As shown in Table 1, in all but the browser market, several firms have entered and then left the industry since 1988. While some entrants remain, they have not succeeded in capturing a significant share of the market, while Microsoft's market share has grown. Thus, Microsoft has demonstrated market power by driving several firms from the relevant markets and causing others to shrink to insignificance.

A firm can exclude competitors in several ways. First, other firms may be unable to match the quality-price combination of its products. A version of this story is a permanent innovation advantage – other firms are always behind the leader in technology. Second, one firm may acquire market power because it is substantially more efficient without being more innovative. A version of this story is that economies of scale are of such overwhelming importance that the firm that gets to the market first with a reasonably attractive product remains the leader indefinitely. Third, a firm may be able to use its market power to force its customers and/or suppliers not to deal with its competitors or to impose costs on competitors that severely weaken them. In this third category are anticompetitive acts that create or preserve market power that otherwise would be eroded by competition. The next section describes several anticompetitive acts undertaken by Microsoft. To the extent that these actions excluded competitors, their success is evidence of Microsoft's market power as well as of anticompetitive behavior.

An indicator of Microsoft's market power in operating systems is its ability to exclude PCs from the market if an OEM does not adhere to Microsoft's wishes with respect to software distribution. "For example, in 1995, at a time when IBM still placed hope in OS/2's ability to rival Windows, the firm nevertheless calculated that its PC company would lose between seventy and ninety percent of its sales volume if [it] failed to load Windows 95 on its PCs... Microsoft knows that OEMs have no choice but to load Windows... Secure in this knowledge, Microsoft did not consider the prices of other Intel-

81

compatible PC operating systems when it set the price of Windows 98."[92]

Another indicator of Microsoft's market power in operating systems is its ability to prevent OEMs from making competitive software products available to their consumers. For example, the Compaq, Dell, IBM and Sony licenses for Windows required a sufficiently large amount of "free system resources" after the initial boot sequence that IBM could not include RealPlayer with its PCs.[93] Because Windows Media Player is bundled with Windows, this effectively excluded RealPlayer from the most important distribution channel for media players.

Summary of Market Power

All of the standard measures support the conclusion that from May 1994 to the present Microsoft has enjoyed monopoly power in the relevant market for operating systems as well as its graphics user interfaces. The long-term dominance of Windows makes it one of the most profitable products in history, and the most profitable software product for over two decades. Microsoft also enjoys substantial market power as the leading supplier of office productivity applications, whether these markets are defined by the component parts (such as word processors, spreadsheets, and groupware) or as office suites. Even in browsers, where Microsoft has a declining market share in recent years, it remains the dominant product. Whereas Microsoft's market power in applications and middleware is profitable in its own right, it also has the effect of protecting Microsoft's monopoly power in operating systems by fortifying the applications barrier to entry.

SOURCES OF MARKET POWER

Monopoly power can arise because of "superior skill, foresight and efficiency" – that is, a firm

---

92. "Findings of Fact," paragraphs 54-5.

93. Testimony of David Richards, *State of New York, et al., v. Microsoft*, paragraphs 114-117.

may simply be better than its competitors in producing products that its customers value. Monopoly power obtained and maintained in this fashion, no matter how great or durable, is not anticompetitive. Instead, actions that reduce or prevent competition are anticompetitive if they are not derived from production efficiency and user preferences. An action by a firm is anticompetitive if it does not provide efficiency advantages for end-users but harms end-users by weakening the competitive process.

Microsoft has two sources of market power that are categorized as examples of superior skill, foresight and efficiency. The first is intellectual property rights, as discussed in the Market Power section. The second is the reputation of the company as a supplier of high-quality software that was built in the 1980s as the developer of DOS and the Windows GUI. Nevertheless, these assets were not sufficient to prevent other firms from successfully entering the relevant markets in the late 1980s.

Prior to the release of Windows 95, Microsoft was sufficiently dominant in the markets for operating systems and GUIs that it enjoyed monopoly power. In office applications software, Microsoft was not the leading firm until 1993 and did not acquire monopoly power until after the release of Windows 95. This litigation is concerned with how Microsoft enhanced and maintained its monopoly power in operating systems and GUIs after May 1994, and I realize that this litigation does not address the harm to Novell ands others arising from Microsoft's conduct prior to that date. Nevertheless, one can not fully understand the economics of the PC software industry without understanding its historical evolution over the preceding five years. The business strategies pursued by Microsoft after May 1994 continued a broad pattern of anticompetitive conduct that began years earlier in response to competitive challenges like those that Novell and IBM posed to Microsoft in 1994 and 1995. Nevertheless, a review of this earlier conduct is useful background for understanding the logic behind the anticompetitive strategies that Microsoft developed before May 1994, which created the market power that Microsoft enjoyed in 1994 and which were applied to Novell and others after May 1994. This history also is useful for assessing the validity of Microsoft's defense of the actions at issue in this litigation.

Historical Background on Microsoft's Business Strategies

During the late 1980s and early 1990s, Microsoft first perceived two business challenges. One challenge was that the dominance of MS DOS was threatened. The other was that Microsoft saw an opportunity to gain dominance and substantial profits in office applications. The product that seemed most safe from short-term competitive attack was the Windows GUI. Although Microsoft was not the first company to offer a GUI, Microsoft executives believed (correctly) that GUIs were going to become ubiquitous: "The migration to GUI on desktops is becoming a given in large and medium size businesses... in the next five years, we're all going to be in the graphical world."[83] Microsoft was especially well-positioned to capture the lion's share of the benefits from the migration to GUIs. The Windows GUI was the clear market winner on 286 PCs and could be installed successfully on all of the most important competing x86-compatible operating systems, which simultaneously was a great benefit to Windows but a challenge for MS DOS.

The attack on MS DOS came from several quarters, but Digital Research and IBM were the most important. In 1988, Digital Research introduced DR DOS, an x86 operating system that could run applications written for MS DOS. A Microsoft message succinctly stated the problem: "dos is this company's foundation, last year 36% of total income. we could afford to neglect dos in the past when ibm was a partner and dri was a gnat. neither is true now. we need to protect the castle."[84] That consumers benefitted from competition in operating systems was clear from Microsoft's assessment of the situation: "A few of the Radio Shack product managers mentioned to me that Tandy was 'looking at' DR Dos 6.0... If the threat is real I suggest MS lower their high volume royalties for the 386SX to $10."[85] Thus, competition benefitted end-users by forcing Microsoft to cut prices.

---

83. Microsoft Windows 3.0 Marketing Plan, October 31, 1989, Bates No. MSPCA 01107354-6.

84. Bates No. X000000207447, August 1991.

85. Tandy trip report, October 22, 1991, MS00000074729.

84

IBM, the leading PC manufacturer in this period, competed with Microsoft through its PC DOS operating system. PC DOS was a slightly modified version of MS DOS that was distributed only by IBM. Microsoft and IBM formed a partnership to develop OS/2, which contained a new operating system to replace DOS and a new GUI to replace Windows. The first version of OS/2 was released in 1987, and the first version with a GUI was released in 1988. OS/2 was the first operating system to allow multitasking (running multiple programs at the same time), but version 1.0 lacked features, was difficult to operate, and so was not very successful. Microsoft and IBM continued to work on the project, with the goal being to replace MS DOS and Windows GUI in an improved version to be released about 1990. But while working with IBM on OS/2, Microsoft continued to make improvements to MS DOS to get around memory limits for applications and to take advantage of new capabilities in x86 PCs. For over two years, Microsoft simultaneously improved MS DOS and Windows while planning an eventual switch to OS/2.

In 1989, after a lengthy internal debate among top executives, Microsoft decided to put platform improvements that had been planned for OS/2 into the Windows GUI and aggressively to market these new features in a manner that would undermine the demand for OS/2 so that Microsoft could retain its dominance in x86 PC operating systems.[86] Microsoft realized that OS/2 was a competitive threat to MS DOS prices: "we need to aggressively pursue oems with dos/windows bundle deals as a preemptive strike against ibm. We obviously need to carefully think thru the pricing... ibm WILL bundle on their systems and they WILL try to get oems to bundle. This will be painful to us..."[87]

Microsoft decided that the operating system battle could be won by bundling new elements of the operating system with Windows because the Windows GUI was dominant. Some important APIs and related platform functions were included in the Windows 2.x series. For example, Windows 386 (despite

86. "Sun & PM," April 14, 1989, Bates Nos. X000000194247-54; "Operating Systems Strategy," May 18, 1989, Bates Nos. X000000159502-7; "OS Strategy," August 6, 1989, Bates Nos. X000000159495-61.

87. IBM Briefing, April 21, 1991, Bates No. MS00000084846.

the number, a version of Windows 2) implemented multitasking capabilities of the 386 microprocessor. Windows 3.0 contained platform features that, among other things, allowed applications to exceed the 640k memory limitation.[88] Thus, customers who bought these versions of Windows had no need to buy upgrades of their operating system, whether MS DOS or a competing product. Instead, they could get this functionality by running a new version of Windows on their old operating system.

In early 1988 Microsoft realized that the popularity of its GUI provided an opportunity to achieve dominance in important applications, such as data base management, word processors and spreadsheets. Microsoft believed that the applications battle could be won if Microsoft was the first to develop applications that made use of new platform capabilities, and began secretly to incorporate platform functions in Windows 2.x that were used by Microsoft applications to achieve performance advantages. "We will be the first to introduce great applications in key categories (SS, WP, DB) that exploit the new PC platform. These applications must be a generation beyond the old standards (1-2-3, WordPerfect, dBase), and introduced early enough to establish leadership positions before other new generation applications arrive or establish momentum... Since our key competitors are not doing Windows applications, we will have a significant time advantage on GUIs for PCs."[89] "FY91 is the year of the GUI. Not just any GUI. The real strategic opportunity is market preemption for the Windows platform... Currently the category is absent our traditional competitors in the key product market segments. This will not be the situation for long. Lotus, WordPerfect, Aldus, Ashton-Tate, et al. will all have Windows based applications available within the next year. It is a key strategic imperative to coalesce around and marshall [sic] our sales and marketing resources to fully exploit this once in a lifetime opportunity."[90]

Around the beginning of 1988, Microsoft embarked on a new business strategy to dominate

---

88. "What users out there need more than anything else is more memory." Bates No. X000000566002.

89. "Summary of Microsoft Applications Strategy," February 29, 1988, p. 3, Bates No. X000000585278.

90. "1991 USSMD Strategic Planning," March 30, 1990, p. 2, Bates No. X000000505517.

operating systems, graphic user interfaces, and major applications. As one top Microsoft executive put it: "The usual Microsoft tactic is ... to focus on one key competitor that stands in our way, and figure out how to knock him out."[91] Microsoft did just this, knocking out DR DOS, OS/2, Netscape, Lotus SmartSuite, Lotus Notes, PerfectOffice and GroupWise.

Microsoft perceived that its dominance was threatened several times after the threats from DR DOS and OS/2 in the late 1980s. Just before the release of Windows 95, before all serious competitors in operating systems were driven from the market, one important threat was cross-platform applications that potentially could eliminate the applications barrier to entry. Since the introduction of Windows 95 the most important potential threat to Microsoft's dominance in operating systems has been important non-Microsoft innovations in middleware.

U. S. v. Microsoft focused on the "browser war" between Microsoft and Netscape, wherein Microsoft was concerned that the alliance between Netscape and Sun would enable Netscape Navigator to emerge as a "universal translator," exposing APIs for applications that could then be run on all platforms. Microsoft's goal in the browser war was not to knock out Netscape, but to prevent Netscape from exposing APIs that could provide an alternative platform for writing applications programs and thereby destroy the applications barrier to entry.

A main focus of the European Union's case against Microsoft was the "media player war," pitting Microsoft against RealNetworks and, to a lesser extent, Apple QuickTime and ITunes. In the late 1990s, Microsoft had the same concerns about media players that, a few years before, it had about Netscape: that a non-Microsoft media player would expose APIs that a variety of other software vendors would use to create cross-platform applications that threatened Microsoft's dominance.

Finally, Microsoft perceived Lotus/IBM and WordPerfect/Novell, with their assets in application, middleware and network computing, to be threats not only to its applications business, but also to its

———————————————

91. Nathan Myrhvold, Win 3 vs. OS/2, April 12, 1989, Bates No. X000000159529.

dominance in operating systems. As long as other operating systems were a serious competitive threat top Microsoft, the Novell and IBM cross-platform applications suites threatened Windows..

Anticompetitive Acts

The strategy that Microsoft developed to enhance and maintain its market power in operating systems since the introduction of Windows 95 has focused on cross-platform applications and middleware that could or might in the future serve as platforms for applications. Middleware was a threat to Microsoft's dominance in operating systems if it might evolve into an operating system or could offer advanced functionality that eliminated the need to upgrade the operating system. Some middleware threats came from products that were not designed to replace Microsoft's operating system, but instead exposed APIs that provided an alternative or supplement to the APIs exposed by MS DOS and Windows.

By providing an attractive alternative platform for new applications programs, middleware products posed two threats to Microsoft's market power. The first threat was similar to the earlier effect of Windows 2.x and 3.x on competing operating systems, especially DR DOS. By exposing APIs for new functions, middleware can induce independent software vendors to write superior applications that make calls to the APIs of a middleware product, thereby eliminating the need for users to upgrade their Microsoft operating system in order to gain access to new platform capabilities and the applications that were written to make use of them. The second middleware threat was the prospect of a universal translator. By creating middleware that could run on several operating systems, these products could enable an applications developer to reach a broader market than an ISV could reach by writing an application to the APIs of Microsoft's operating systems.

To retain its market power in operating systems against these threats, Microsoft did not need completely to foreclose the middleware products of its competitors. Instead, Microsoft could remain dominant as long as it retained enough of the market so that its APIs were installed on more PCs than the corresponding APIs of its competitors, in which case ISVs still would be able to access more customers

88

by writing to Microsoft's APIs. Microsoft's attack on competing operating systems and middleware

products involved exclusionary agreements and control of the APIs that were exposed by its operating

system and GUI to disadvantage products that it perceived as a competitive threat.

After acquiring software products from WordPerfect, Borland and Digital Research, Novell

became a target of Microsoft because it offered a competing desktop operating systems (DR DOS), a

competing server operating system (NetWare) that had the potential to offer a thin client alternative to

Microsoft's fat client desktop, important cross-platform applications (WordPerfect and GroupWise), and

cross-platform middleware (AppWare and PerfectFit development tools, Corsair as an alternative to the

Windows GUI and for supporting network applications, and the PerfectOffice shell as an alternative to

Windows Explorer as a desktop environment from which to launch applications). In addition, Netscape

and Java were growing in importance to Novell. Beginning in 1994, Novell used Navigator to implement

the Internet and intranet functionality of PerfectOffice. In 1995 Netscape included Java in Navigator.

The presence of Java in Netscape enhanced the use of the PerfectOffice environment as a platform for

applications, thereby causing the combination of PerfectOffice, Netscape and Java to be a greater threat to

Microsoft's operating system monopoly than any one of them would have been alone. Thus, acts that

harmed Netscape/Java also harmed Novell PerfectOffice.

IBM also posed a multiple threat to Microsoft's dominance of operating systems in 1995. IBM

offered a competing operating system (OS/2), important cross-platform applications (Lotus SmartSuite

and the groupware application in Lotus Notes), and cross-platform middleware (the Lotus Notes shell,

which also provided a environment in which the user could launch applications). Like PerfectOffice,

Lotus products used Netscape for its Internet and intranet functionality.

Microsoft engaged in several types of anticompetitive acts to achieve its objective of thwarting

competitive threats to its operating system dominance. The first is exclusionary contracts in the

distribution channels for software products. The second is to bundle products for which Microsoft

enjoyed monopoly power with products that faced competitive threats. The third is to use its control over

89

the operating system to advantage its own middleware and applications products, and in some cases to undermine the performance of competing products. The fourth is to undermine the reputation of competing products in the market.

Exclusionary Agreements

Exclusionary agreements require one party to foreclose a market to competitors of the other. These agreements do not achieve mutually beneficial goals of Microsoft and its customers or its competitors. Instead, Microsoft exercised its market power by threatening costly retaliation if the other firm did not accede to its strategy to erect entry barriers against competing products. Microsoft's ability to force exclusionary agreements grew as its market power increased through either the effect of prior exclusionary agreements or other actions that shrank the sales of its competitors.

Microsoft undertook two types of exclusionary agreements.

The first type of exclusionary agreement is contracts affecting the distribution of Microsoft's products and the products of its competitors. Software products are distributed through four main channels: OEMs, retail stores, value-added reseller, and Internet sites. When Microsoft discovered that competitors were using a channel to distribute their products, it used exclusionary contracts to cut off this channel to competitors. To accomplish this task, Microsoft needed to enjoy substantial market power in a core product – in this case, its operating system and GUI – so that when a firm was offered an exclusionary agreement, the choice between "all Microsoft" or "no Microsoft" would be the former.

The second type of exclusionary agreement imposed requirements on existing or potential competitors in middleware to limit the scope of their product in return for Microsoft's continued cooperation on other matters that were crucial to the success of the other party. Examples of this behavior can be found in Microsoft's attempt to divide the browser market with Netscape and the media player market with RealPlayer. Although Microsoft failed in these attempts, their behavior is part of a broader

90

pattern of conduct that sought to obtain or maintain market power in operating systems by trying to obtain agreements not to compete in middleware. These episodes demonstrate that Microsoft's primary goal was to protect its operating system monopoly, not to gain a monopoly in the other product.

To be effective in protecting its operating system monopoly, exclusionary agreements do not need completely to freeze competitors out of the market. Although in some cases complete exclusion was achieved, all that Microsoft needed to accomplish was to assure that the competitors' market shares were sufficiently low. For middleware, the market share had to be sufficiently low that most ISVs would not write or port applications to run on them. For cross-platform applications, the market share on the Windows platform had to be kept sufficiently low that a competing operating system could not offer a seamless transition to its environment.

In this report, I do not discuss in detail some exclusionary contracts that were used until the release of Windows 1995 that Microsoft agreed to eliminate as part of the 1995 consent decree that settled the government's first Microsoft case. These contracts, called per processor or per system licenses, were aimed at freezing out competing operating systems by forcing OEMs to pay a license fee for every PC that it sold, regardless of whether MS DOS was installed. The contracts that were anticompetitive were the ones that required an OEM to pay Microsoft a software license fee for every computer it shipped that contained an x86 microprocessor (or some similar definition of a system). Discovery has shown that these types of agreements covered a very large fraction of all sales of MS DOS and Windows (prior to Windows 95); however, Microsoft has produced very few contracts of any type that cover office applications.[92] Because the contracts that have been produced have a standard format in which the

---

92. The Microsoft agreement with NEC for a group of products that includes Microsoft Works is a license for office productivity software that is based on the number of computers shipped with either a 486 or Pentium microprocessor. The renewals of this contract occurred after the antitrust case was settled. See Bates Nos. MS PCA 1837118-137 (January 1, 1995) at 126, MS PCA 1681785-789

91

specifics of the agreement have been filled in, it is implausible that the agreements that have been

discovered are atypical, but due to incomplete discovery I can not draw inferences from the contracts that

are available about the extent to which these contracts played a role in excluding the OEM channel for

competing office productivity software. Nevertheless, I do analyze later discount programs that were

similar in nature to per-processor and per-system licenses and that included applications software.

My analysis also does not focus on Microsoft's use of long-term contracts to guarantee that a

competitor could only slowly penetrate the OEM channel, no matter how brilliant its new product,

because few contracts expired at any given time. Long-term contracts also were eliminated by the 1995

consent decree. As with per-processor and per-system licenses, discovery has not produced a sufficient

number of Microsoft's pre-1995 OEM contracts to support a conclusion about the extent to which the

practices with regard to applications were like those with regard to MS DOS and Windows. Nevertheless,

subsequent contract forms that do cover applications had "evergreen" features whereby customers could

receive rebates only if they renewed the contract. These are reviewed in this section.

Choking Off Netscape Distribution

Microsoft adopted a variety of exclusionary agreements with OEMs, Internet Service Providers

(ISPs), and Internet Content Providers (ICPs) to choke off distribution channels for Netscape. These

contracts affected Novell because in 1994 Novell began to integrate Netscape Navigator with applications

in PerfectOffice, and in 1995 began to include Netscape, by then bundled with Java, in PerfectOffice.

Novell's development plan for the version of PerfectOffice that would run on Windows 95 anticipated

more integration between Navigator and Novell's office productivity products. Given the popularity and

functional superiority of Navigator in 1995 (as discussed in greater detail below), integrating Navigator

and PerfectOffice was a potential advantage of PerfectOffice in competing with Microsoft Office.

(November 8, 1995) at 787-8, and MS PCA 1681801-805 (February 7, 1996) at 804.

92

The genesis of Microsoft's strategy to choke off distribution of Netscape was the belief within Microsoft that IE could not win the competition on the merits "both because Netscape's brand name had become nearly synonymous with the Web... and because Navigator had developed a much better reputation for quality than Internet Explorer."[93] Microsoft compensated for this disadvantage by making "substantial sacrifices, including the forfeiture of significant revenue opportunities... The restrictions on the freedom of IAPs [Internet Access Providers, herein called ISPs] to distribute and promote Navigator were far broader than they needed to be to achieve any economic efficiency. This is especially true given the fact that Microsoft never expected Internet Explorer to generate any revenue."[94] Such a strategy makes sense financially only if it has the effect of preserving Microsoft's operating system monopoly.

Beginning with Windows 95, "Microsoft both refused to license its operating system without a browser and imposed restrictions – at first contractual and later technical – on OEMs' and end users' ability to remove its browser from its operating system."[95] Microsoft's license with OEMs for Windows 95 insisted that OEMs not alter Microsoft's icon display on the Windows desktop or delete any component of Windows 95. The purpose was to reduce the likelihood that OEMs would pre-install Netscape Navigator with Windows 95. "Pre-installing more than one product in a given category, such as word processors or browsers, onto its PC system can significantly increase an OEMs support costs, for the redundancy can lead to confusion among novice users. In addition, pre-installing a second product in a given software category can increase an OEM's product testing costs. Finally, many OEMs see pre-installing a second application in a given software category as a questionable use of the scarce and valuable space on a PC hard drive."[96] "[J]ust three calls from a consumer can erase the entire profit that

----

93. "Findings of Fact," paragraph 243.

94. "Findings of Fact," paragraph 247.

95. "Findings of Fact," paragraph 155.

96. "Findings of Fact," paragraph 159.

an OEM earned selling a PC system..., OEMs have an acute interest in making their systems self-explanatory and simple to use."[97]

Microsoft vigorously enforced its restrictions on not placing other icons on the Windows boot screen. Windows 95 contained Windows Explorer, which enabled the user to connect to Microsoft Network (MSN), an internet service provider that was launched with Windows 95. An icon for MSN appeared on the desktop when Windows was launched. In August 1995, Compaq signed an agreement to add the AOL icon to the Windows desktop, and "in late 1995 or early 1996" Compaq began to ship Presario computers which added the icons for AOL, the ISP Spry, and the supporting browser, Netscape, and deleted the icon for MSN. Microsoft informed Compaq that these actions violated its license for Windows 95, and in May 1996 told Compaq its Windows license would be terminated if it did not restore MSN. "Compaq's executives opined that their firm could not continue in business for long without a license for Windows...."[98] so it complied with Microsoft's demands.

As time progressed, Microsoft added restrictions on manipulating the Windows desktop display to licenses for Windows 95 and 98 pertaining to removing icons, folders and start menu entries; modifying the initial Windows boot sequence; installing alternatives to the Windows desktop user interface that would launch automatically upon completion of the initial boot sequence; adding icons to the desktop that were not similar in size and shapes to Microsoft icons; and using the Active Desktop feature to display third-party brands.[99] "...OEMs that in the aggregate represented over ninety percent of Intel-compatible PC sales believed that the new restrictions would make their PC systems more difficult and more confusing to use, and thus less acceptable to consumers. They also anticipated that the restrictions would increase product returns and support costs and generally lower the value of their

---

97. "Findings of Fact," paragraph 210.

98. "Findings of Fact," paragraph 206.

99. "Findings of Fact," paragraph 213.

machines... Even in the face of such strident opposition from its OEM customers, Microsoft refused to relent on the bulk of its restrictions."[100]

Microsoft also offered financial incentives for OEMs that promoted IE and made it their default browser.[101] Compaq was offered discounts on Windows for agreeing to this arrangement. Gateway was offered compensation from Microsoft if it would switch from Netscape to IE as its internal corporate browser and discounts if it signed an agreement like that Microsoft had made with Compaq. Gateway refused, and "Gateway has consistently paid higher prices for Windows than its competitors."[102] Microsoft told IBM that "it would suffer 'MDA repercussions'" if it did not exclude Netscape from its PCs.[103] IBM refused. "The differences in the ways that Compaq and IBM responded to Microsoft's Internet-related overtures in 1996 and 1997 contributed to the stark contrast in the treatment the two firms have since received from Microsoft,"[104] including IBM's higher prices for licensing Windows.

Microsoft's actions succeeded in substantially reducing Netscape's access to the OEM distribution channel. From 1995 to 1997, Netscape's share of OEM distribution fell sharply, and the share it did retain was achieved at substantially higher cost.[105]

The inducements offered by Microsoft to encourage OEMs to favor IE over Netscape constitute anticompetitive vertical leveraging. This cross-subsidy of IE would not make sense financially to Microsoft if it did not believe that, first, it would lose the competition against Netscape on the merits, and second, if it did lose this competition, Netscape would threaten Microsoft's operating system monopoly.

---

100. "Findings of Fact," paragraphs 214-5.

101. For more details, see "Findings of Fact," paragraphs 231-8.

102. "Findings of Fact," paragraph 236.

103. "Findings of Fact," paragraph 237.

104. "Findings of Fact," paragraph 238.

105. "Findings of Fact," paragraphs 239-40.

If Netscape were not a threat to the operating systems monopoly, Microsoft would have welcomed its use because its functionality increased the demand for PCs and, therefore, for Windows.

Microsoft also used exclusionary contracts with ISPs and IAPs to choke off the other main distribution channel for browsers.[106] Users sometimes acquire a browser when they initially begin to use the Internet from the company that provides them with Internet access and content services. The essence of Microsoft's strategy was to offer a free license for IE plus free technical and marketing support for Internet firms that would promise to promote IE.

Microsoft also offered space on the Windows boot screen to large ISPs. According to one Microsoft internal document, AT&T "very badly wants in the windows box. I have told him that the only way we can even consider AT&T being in the windows box is if AT&T gives IE exclusive or very very preferential treatment (ala what we have with AOL)."[107] Some of these agreements included exclusive arrangements, others required only preferential treatment and minimum guarantees; however, the effect of these contracts was to switch the bulk of Internet distribution of browsers from Netscape to IE.

OEM Channel for Applications

At the centerpiece of Microsoft's strategy to maintain its dominance in operating systems were its relationships with OEMs. Nearly all purchasers of new personal computers buy a PC with an operating system that already has been installed by the manufacturer. Until Microsoft forced OEMs to stop selling "naked" PCs in 2000,[108] approximately 80 to 85 percent of PCs were shipped with a pre-installed

---

106. For more details, see "Findings of Fact," paragraphs 242-336.

107. Bates Nos. MSPCA01092151-2, March 15, 1996. AT&T did sign such an agreement. Bates Nos. MSPCA01091968-70, September 9, 1996. See also Bates Nos. MSPCA01090678-88, September 25, 1996, about using the same strategy to convert other ISPs to IE.

108. Cooperative Market Development and Support Agreement for Microsoft Windows Desktop

96

operating system.[109] Thus, an operating system can not succeed in obtaining a substantial share of the market unless it obtains significant sales to OEMs. "OEMs are the most important direct customers for operating systems for Intel-compatible PCs... Without significant exception, all OEMs pre-install Windows on the vast majority of PCs that they sell..."[110] Because Microsoft has the dominant operating system, OEMs must have a license agreement with Microsoft that allows them to pre-install Windows. Recognizing this reality, Microsoft has the power to demand that OEMs do not pre-install a product that Microsoft views as a threat.

Microsoft used the threat of an unfavorable license for Windows as a lever to exclude middleware and applications products from the OEM channel that were a threat to its operating system monopoly as well as its sales in these product markets. In the early 1990s, users began to buy applications software pre-installed on PCs. Microsoft sought to prevent OEMs from selling MS DOS/Windows in combinations with applications from other vendors. According to a Microsoft document, "we must participate in this emerging applications software channel. Otherwise, we believe that Lotus, WordPerfect and Borland will adopt the 'kamikaze' strategy of virtually giving away the software with the machine, getting the names from the OEM, and making money from future upgrades."[111] Later, another memorandum observes: "We are fighting Smartsuite and Corel on a daily basis, both of them selling at virtually zero royalties, and it will only get worse."[112] In short, competition leads to lower

---

Operating System Products, January 1, 2000, Bates Nos. MSPCA01715808-22.

109. See "naked" PC sales figures in Microsoft's "Mid-Year Review Data Summary Package" for March 10, 1995 (Bates No. FLAG000105295), February 15, 1997 (Bates No. FLAG000105545), and February 19, 1998 (Bates No. MSCA000000518).

110. "Findings of Fact," paragraph 54.

111. June 23, 1992, Bates Nos. MSPCA01314021-7.

112. Bates Nos. FLAG000031290-3, February 12, 1997.

prices. To combat this attack, Microsoft sought to use its market power to prevent OEMs from offering competing applications.[113] Microsoft's strategy in applications was derived from its knowledge that "OEMs are dependent on the Windows operating system. Therefore, to market their product with Windows, they must also agree to include other Microsoft products."[114]

Before being acquired by Novell, WordPerfect did not place much emphasis on selling through the OEM channel.[115] After the acquisition, Novell planned to increase the fraction of WordPerfect sales that were accounted for by sales through OEMs from 0.5 percent to 5 percent in 1995 and to 15 percent in 1998.[116] Beginning in late 1994, Novell did enter into several sales agreements with OEMs.[117]

Novell's attempt to make substantial inroads on the OEM channel faced a formidable barrier. Beginning in the early 1990s, Microsoft used the dependency of PC sales on Microsoft's operating system and GUI to force OEMs not to sell competing applications products. This activity initially focused on Lotus, which sought to use the OEM channel before Novell acquired WordPerfect and Borland applications programs. For example, Microsoft reportedly induced Fujitsu not to offer Lotus products on

---

113. One document said: "Block emerging Lotus/Borland threat in quickly emerging channel... Use existing OEM relationship as asset." June 4, 1992, Bates No. MS00000138370.

114.   Jeff Raikes and Pete Higgins, "Doing Business at Microsoft: Competitive Strategies in the Software Industry," Bates No. MX2324924. This document is undated, but probably was written in the mid 1990s. Deposition of Pete Higgins, July 24, 2001, pp. 55-8.

115. *Deposition of Dean Cline Winn*, December 10, 2008, pp. 26-33.

116. "Novell Business Applications Business Plan," April 3, 1995, Bates Nos. NWP00002349-374 at 364-5.

117. Bates Nos. NOV00142900-920, NOV00143018-033, NOV00143259-272, NOV00143489-502, NOV00143544-559, NOV00143850-870, NOV00143911-942, NOV00143962-995, NOV0014400-023, NOV00144039-054, NOV00144330-353, NOV00212811-824, NOV00212849-861.

a laptop. According to the testimony of a Lotus witness, a Fujitsu executive claimed that "the overriding factor in his decision was that '...MS ties Works in as part of the bundle.' Despite the unprecedented deal-specific price point that Lotus offered Fujitsu for this bundle, ... 'the long term economics and our relationship with MS' makes Works the 'right decision for Fujitsu.'"[118] Thus, the price break on other MS products for an exclusive MS bundle apparently offset the price advantage of Lotus on applications that compete with Microsoft. Another Lotus executive confirmed this story, and reported that a similar incident had occurred with an attempt to sell SmartSuite to Toshiba.[119]

Microsoft apparently applied a similar strategy with Compaq after it had decided to include SmartSuite on some of its PCs. Later Compaq switched to Microsoft, despite its higher price. A Compaq executive did not go into detail, but testified that the reason for the change was "to preserve the integrity of our relationship with Microsoft."[120]

Microsoft also practiced price discrimination on the basis of whether a firm sold Lotus applications. One incident involved the contract from the Air Force for "Desktop IV," the software package for Air Force PCs. The Air Force solicited proposals from bidding integrators – middlemen who bundle software packages for their clients. Microsoft offered deep discounts and free upgrades to integrators that refused to offer bundles that contained competing applications.[121] "Microsoft reportedly told systems integrators... that their price for Windows – which was the required graphical user intrerface in the bid – would be considerably higher if the integrators carried the applications products of Microsoft's competitors..."[122] Thus, a reseller who gave the Air Force a choice between an exclusive MS

---

118. Bates No. IBM7510250617.

119. *Ibid.*.

120. Deposition of Celeste Dunn, October 23, 1998, pp. 140-2.

121. Declaration of Thomas W. Ruff, October 21, 1992, Bates Nos. IBM7510250320-22.

122. Affidavit of Said Mohammadioun, October 21, 1992, Bates No. IBM7510250310.

bundle and a bundle that mixed products from several vendors would have to pay more for MS software, even if they won the bid with the MS-only bundle.

In January 1995, IBM announced that it would install SmartSuite on IBM PCs. Microsoft responded to this event plus IBM's competitive threat in operating systems by denying IBM a license to pre-install Windows on its PCs and by preventing IBM from receiving pre-release information that would allow IBM to make its PCs compatible with Windows 95. "Then, ... just three days after IBM announced its intention to pre-install SmartSuite on its PCs, a Microsoft executive informed his counterpart ... that Microsoft was terminating further negotiations with IBM for a license to Windows 95... Microsoft did not grant IBM a license until fifteen minutes before the start of Microsoft's official launch event... In the latter half of the 1990s, IBM (along with Gateway) paid significantly more for Windows than other major OEMs ... that were more compliant with Microsoft's wishes."[123] As discussed above, the District Court found that these actions cost IBM hundreds of millions of dollars in PC sales.

WordPerfect and later Novell were not the targets of this anticompetitive conduct, but their potential customers – the OEMs – were the targets. Consequently, OEMs could anticipate that Microsoft plausibly would take similar actions against them if they began to distribute PerfectOffice when Novell decided to go after the OEM channel in 1995.

Minimum Purchase Requirements

Microsoft forced OEMs to sign contracts with minimum purchase commitments that substantially exceeded a realistic expectation by the OEM. These contracts required a minimum payment, called a Prepaid Balance (PPB), to Microsoft at the beginning of each quarter. Microsoft would then calculate the license fees actually owed on the basis of sales -- either actual sales or total relevant sales in the case of per-processor or per-system licenses. At the end of the quarter, if an OEM had not shipped enough

---

123. "Findings of Fact," paragraphs 122, 130.

product to exhaust the PPB, the unspent portion would be recorded by Microsoft as an "unspecified product billing" (UPB). If the PPB was always larger than actual sales, the UPB would accumulate over the life of the contract. Because Microsoft frequently gave OEMs all-or-nothing contract offers with unrealistically high PPBs, at the end of a contract the magnitude of the UPB frequently was large.[124]

At the conclusion of the contract the balances from minimum purchase agreements (UPBs) were not necessarily cancelled. With Microsoft's consent they could be carried forward as credits in a new contract, thereby giving the OEM a financial incentive to renew its contract with Microsoft. Microsoft was not obligated to carry these balances forward: "As a policy any funds left after the term of an Agreement belong to MS. MS will bring forward either a portion or all prepaid balances only if it is the best interest of both parties."[125]

Acer, an OEM, provides an example of the use of minimum purchase requirements. Acer distributed Lotus SmartSuite on some of its computers, and Microsoft Works on others. When its Microsoft contract expired, Acer's PPB was about $3 million. In the spring of 1996, Microsoft agreed to let Acer carry over the balance to future purchases of Microsoft products, but when Acer's contract with Lotus expired, Acer discontinued its computer with SmartSuite installed.[126]

Microsoft fully understood the anticompetitive effects of minimum purchase requirements. "OEM minimum commitments have many advantages for Microsoft... discouraging them from competitive products and encouraging sales of our products."[127] Even the Microsoft Board of Directors

---

124. Discussion of Prepaid Balances, Worldwide OEM Q90-4, 1990, Bates Nos. MSPCA01176853.

125. September 29, 1992, Bates Nos. MSPCA01180737.

126. Deposition of Michael Culver, pp. 22-4, 48, 67, 77. Culver also claims that Microsoft's offer to carry over the pre-paid balances had no effect on the decision to acquire Microsoft Works instead of Lotus SmartSuite, implying that software costs are irrelevant to purchase decisions, which seems unlikely.

127. "Discussion of Prepaid Balances," 1990, Bates Nos. MSPCA01176853-6.

was informed of this effect, being told that minimum purchase requirements, "in the face of increasing competition (Novell/DRI/IBM), make it costly for a customer to move to a competitor."[128]

In the 1995 consent decree that ended the first government antitrust case against Microsoft, Microsoft agreed to terminate most exclusionary licenses with OEMs. The consent decree required that Microsoft not use per-processor licenses, most forms of per-system licenses,[129] and minimum purchase commitments, and not enter into OEM contracts for a duration of more than one year. Although the consent decree ended minimum purchase provisions, it did not end the use of other forms of exclusionary contracts with OEMs by Microsoft.

Market Development Agreements

Before signing the 1995 consent decree, Microsoft developed a contract that provided incentives to promote Microsoft products: the Market Development Agreement (MDA). Some of these provisions were exclusionary, and after the consent decree was signed, MDAs continued to be used for exclusionary purposes. The MDA was terminated in 2002 as part of the 2001 settlement of the most recent federal antitrust case against Microsoft.

The MDA offered large discounts on Windows purchases if an OEM agreed to specific provisions regarding the promotion of Microsoft products. These discounts were not calculated on the basis of the absolute number of Microsoft operating systems products that the OEM sold. Instead, they were calculated on the basis of the degree to which the OEM committed to sell mostly Microsoft products. An OEM had to sell most of its machines with Microsoft products in order to obtain the lowest

---

128. "Board of Directors Report Finance and Administration," 1991, Bates Nos. MSPCA01189515.

129. The form of per-system license that was permitted after the consent decree is one in which the OEM is required to change the name or model number of a PC that is shipped with another operating system, but not any of the hardware.

102

price. Thus, a relatively small manufacturer that loaded only Microsoft products on its PCs could receive

a lower price than a much larger manufacturer that, while selling more PCs loaded with Microsoft

products also sold a significant number of PCs that include competing products.

For example, the contract that Microsoft offered IBM in 1994 provided $9 in discounts for the

following exclusive features: Pre-installing Windows 95 on at least 50 percent of PCs within 60 days of

its release, and including Windows 95 and excluding logos of other software vendors from IBM

advertising.[130] IBM was offered discounts up to $27,[131] but rejected this offer and, in January 1995,

signed an MDA with discounts totaling only $8,[132] which eventually rose to $15,[133] that enabled it to

promote its own software products. Microsoft then delayed the implementation of this agreement after

IBM acquired Lotus, insisting that IBM agree to delay the release of the Windows 95-compatible version

of SmartSuite in return for being allowed to install Windows 95 immediately upon its release. IBM did

not obtain a Windows 95 license until 15 minutes before Windows 95 was released.

Because MDA discounts are large, an OEM could not effectively compete for sales of PCs pre-

installed with Windows if it did not agree to the contract and receive the discount. "Given the substantial

nature of these discounts, participation in the MDA, as a practical matter, is not optional."[134] In fact, IBM

was the only large OEM that rejected an exclusionary MDA. As a result, IBM paid substantially more for

Microsoft software than nearly all other OEMs. When initially faced with higher prices than its

---

130. The contract contains numerous other discounts related to promoting Windows 95 that, collectively,

could provide a discount of $27 per unit. October 21, 1994, Bates Nos. MSPCA01024273-9.

131. *Ibid.*

132. Bates Nos. MSPCA01202192-7, January 31, 1995.

133. Testimony of Garry Norris, AM Session Trial Transcript, *U. S. v. Microsoft*, p. 15.

134. Testimony of Anthony Fama, Gateway Computers, *State of New York v. Microsoft Corporation*,

March 22, 2002, p. 3.

competitors, an IBM executive wrote a letter proposing more negotiations with Microsoft, cogently

stating the reason that an agreement was necessary: "Our customers will demand that IBM provide

Windows 95, and IBM can not compete fairly with such a disadvantage in royalties."[135]

Microsoft MDAs were structured to have a similar "evergreen" feature that was achieved through

the PPB/UPB system. The mechanism is that a firm's performance in one year affects the discounts that

it will receive in the next year.[136] For example, the CompUSA MDA for January 1, 1996, states: "Any

incentive discounts earned under this agreement shall apply to Microsoft's Windows Products which are

licensed under the OEM Agreement... and shipped between January 1, 1997 and December 31, 1997,"

and goes on to state that to retain the discount, the OEM must continue into the next year the practices

that earned the discount in the previous year.[137]

While the centerpiece of MDA contracts was sales of Windows, the MDAs did not produce a

clear statement of precisely what was required of an OEM to continue to qualify for Windows discounts.

Instead, Microsoft could decide unilaterally whether an OEM continued to deserve discounts. As an IBM

executive testified: "It was Microsoft's sole discretion whether or not we met those milestones."[138] For

example, the Dell MDA contained the following sentence: "Failing mutual resolution, MS shall make the

final binding determination as to whether the COMPANY has satisfactorily completed any Milestone

Activity."[139] In 1999, Dell sought to remove the provision granting sole discretion to Microsoft,

proposing instead that disputes be resolved by the U. S. District Court in the Washington, D.C., where the

---

135. Bates Nos. MSPCA01014761-3, April 6, 1995.

136. Bates Nos. COMPAQ008322-57, February 26, 1997.

137. Bates Nos. MSPCA01198569-73, January 1, 1996.

138. Testimony of Garry Norris, *U. S. v. Microsoft*, p. 17. See also deposition of Bengt Akerlind,

August 23, 2001, pp. 324-5.

139. "Dell MDA 99 Status," June 29, 1999, Bates Nos. FLAG000030779-85.

104

federal government's antitrust case was being tried.

The vague language in the MDA allowed Microsoft to cancel rebates on Windows if an OEM pursued any business strategy that Microsoft did not like, including sales of competing applications and middleware. Microsoft documents Microsoft used this vague, unilateral language in just this way. "We probably wouldn't kill the MDA under normal circumstances, but if they are holding something over our heads (like they are today with Patent rights), having this ability could be pretty strong for us, since we can almost always find cases where they are in default of an agreement."[140] Clearly a patent dispute has nothing to do with sales of operating systems, yet the MDAs for operating systems were a weapon to influence the outcome of such disputes.

In similar fashion, in the battle between Netscape and Internet Explorer, the Microsoft policy was to use MDA discount provisions as a means to force OEMS to abandon Netscape. "*We need to make it financially profitable for OEMs, IAP's, and online services to distribute or promote our browser.* This means leveraging assets that Netscape doesn't have: the Windows box, hardware OEMs, and our MDA agreements."[141] For example, Microsoft made better terms with IBM conditional on IBM reducing its commitments to Java and Netscape. According to Gates, "We will never have the same relationship with IBM that we have with Compaq, Dell and even HP because of their software ambitions. I could deal with this just fine if they weren't such rabid JAVA backers... We should position it as lets do some things that are good for both of us but which require some of the rhetoric to be lowered on both sides. On their side I mean JAVA and NC."[142]

Microsoft's MDAs continued had the same anticompetitive effect as the contract policies that were theoretically eliminated by the 1995 consent decree. Microsoft used MDAs to force OEMs to pay a

---

140. Bates No. MSPCA01092440.

141. "How to Get 30% Share in 12 Months," 1995, Bates No. MSPCA01092371.

142. Bates Nos. MSPCA01092271-3, November 6, 1997.

105

penalty for installing competitive products. By structuring the discounts to apply in a second year,

Microsoft created a strong financial incentive to renew a contract and thereby to create a *de facto* multi-

year contract that, theoretically, had been banned by the 1995 consent decree.

Other Channels

Microsoft developed the Enterprise Agreement Program for large customers that wanted to have

all of their software as up to date as possible. The purpose of this agreement was to induce large

Windows customers to use only Microsoft applications, middleware and server software. These

agreements entitled the licensee to all upgrades of the Microsoft products over the term of the agreement.

The licensee was required to pay a fee based on the assumption that 100 percent of its desktops used the

core Microsoft products – Office, Windows, and BackOffice (access to server software[143]). In return for

committing to exclusivity, Microsoft offered very large discounts. For example, the proposal to Lucent

Technologies covers 90,000 PCs, 1500 servers, and 17,000 Unix work stations.[144] The total discounted

cost for a "Select" agreement that prices each product separately is $83.9 million, whereas the total cost

of the Enterprise Agreement is $57.5 million. The Select license for 17,000 Unix users has a total cost of

$13.5 million, while the Enterprise Agreement total cost is $2.7 million. One goal of these Enterprise

Agreements was the exclusion of competing products. For example, Microsoft signed an Enterprise

Agreement with Coopers & Lybrand "which results in the elimination of 74,000 SmartSuite users at

Coopers Worldwide!"[145]

---

143. The "Client Access License" pertained to accessing server software from a desktop, and among the

products that were covered were the Windows server operating system and Microsoft Exchange server

messaging software.

144. See Bates Nos. MS-PCA1323047-056, MS PCA 1426113-160.

145. Bates No. FLAG0103289.

For resellers, Microsoft developed the Avalanche discount programs based on increasing the resellers market share of Microsoft office products (Word, Excel and Office).[146] Microsoft offered the "Bonanza fund," designed to "'close the door' on the competition.... The greater share gained, the greater the monetary reward they will receive at the end of the program."[147] "No rewards < 50%."[148] The rebates were paid 45 days after the end of each six-month period in the form of credits against further Microsoft purchases.[149] When the plan was implemented, the contracts did not explicitly base rebates on the reseller's market share "due to potential legal issues and a lack of accurate information."[150] Nevertheless, the method for calculating sales goals was equivalent to a market share target. Rebates were determined by a formula that established an estimated market growth for the second half of 1995 over the first half and calculating the expected "steady state" purchases for each customer, with the rebates based on the

---

146. "Office Drive/International Share Program," September 8, 1994, Bates Nos. FLAG0082904-906.

147. "Direct Marketing/Mail Order Segment Overview," Bates Nos. MS-PCA 1630238-243 at 239.

148. "Operation Avalanche," Bates Nos. FLAG0101927-949 at 935.

149. Bates Nos. MS-PCA 1598095-107 at 097.

150. "Project Avalanche Plan - Draft 1.0," November 22, 1994, Bates Nos. FLAG0100492-519 at 518.

degree to which the customer exceeded the "steady state."[151]   The same document states: "The program

meets the original objective of incensing [sic] accounts to improve their MS share by building intelligence

into the revenue plans for each account."[152]   The rebate increased to a maximum of 15 percent as the

amount by which they exceeded the goal increased.[153]

In the marketing program for the launch of Windows 95, Microsoft planned to launch Office and

Windows simultaneously, and to induce customers to acquire both products simultaneously by giving

discounts on Office if bought with Windows.[154]   Rebates through distribution channels were based on the

ratio of Windows "products" to Windows "units," where the latter is the number of licenses for Windows

and the former is total revenues from a group of Windows-related applications.[155]   Because Windows

accounted for almost all operating system sales in 1995, the number of Windows licenses is a good proxy

for the potential size of the applications market. Consequently the ratio is simply a transformed version

of market share – multiply the average revenue from applications sales by the number of Windows

licenses, and the denominator becomes the potential total applications sales by that vendor.

Attempted Non-Compete Agreements

Microsoft offered several companies agreements that contained provisions preventing the other

party from competing against Microsoft.

Microsoft sought an agreement with Netscape in which Microsoft would allow Netscape to

---

151. *Ibid.* at 515, 518.

152. *Ibid.* at 518.

153. "Board of Directors Report," January 1995, Bates Nos. FLAG0085303-417 at 324.

154. "Planning for Desktop 95 (Win 95 and Ofc95 Sim Ship)," December 21, 1994, Bates Nos.

FLAG0018265-278.

155. *Ibid.* at 270.

remain the dominant browser if Netscape would agree not to expose enough APIs to become a competitive threat to Microsoft's operating system. Netscape posed a threat to Microsoft because it exposed a limited set of APIs that could be used by ISVs as an alternative to Windows as a platform for applications. In addition, in May 1995, Netscape agreed "to include a copy of Sun's Java runtime environment with every copy of Navigator," thereby placing the "Java runtime environment on the PC systems of Windows users."[156] This occurred when Novell was integrating Netscape into PerfectOffice, so that an impressive array of APIs were exposed by the combination of the three products.

Netscape and Java threatened Microsoft's applications barrier to entry in three ways. First, because "Netscape has been ported to more than fifteen operating systems... [i]f a developer writes an application that relies solely on the APIs exposed by Netscape, that application will... run on many different operating systems."[157] Second, the Java runtime environment allowed ISVs to write applications in Java that would run on all operating systems that were compatible with it. "The combined efforts of Netscape and Sun threatened to hasten the demise of the applications barrier to entry, opening the way for non-Microsoft operating systems to emerge as acceptable substitutes for Windows."[158] Thus, in May 1995, Bill Gates described Netscape as a "new competitor 'born' on the Internet..." that was "pursuing a multi-platform strategy where they move the key API into the client to commoditize the underlying operating system."[159] Third, the PerfectOffice shell, which placed productivity applications and GroupWise in a desktop environment with Netscape and Java, exposed still more APIs that an ISV could use to write application to run in the PerfectOffice environment, thereby rendering integration with Windows unnecessary.

---

156. "Findings of Fact," paragraph 76.

157. "Findings of Fact," paragraph 69.

158. "Findings of Fact," paragraph 77.

159. Quoted in "Findings of Fact," paragraph 72.

"Microsoft's first response to the threat posed by Navigator was an effort to persuade Netscape to structure its business such that the company would not distribute platform-level browsing software for Windows... This would have eliminated the prospect that non-Microsoft browsing software could weaken the applications barrier to entry."[160] For over a month, Microsoft and Netscape entered into conversations about how the two companies would draw the line between Microsoft's operating system and Netscape's browser, with Netscape being restricted to browser applications in return for receiving preferential access to Microsoft's plans for Windows and being incorporated into Windows as its browser; however, when Microsoft sensed that Netscape would not agree to an agreement that required Navigator to be stripped of all APIs that Microsoft regarded as a competitive threat, Microsoft terminated the negotiations.[161]

Another attempt by Microsoft to divide markets arose with IBM.[162] IBM produced both x86-compatible PCs, two operating systems that competed with Microsoft, OS/2 and PC DOS, the Lotus SmartSuite group of productivity applications, and Lotus Notes groupware. As explained above, Microsoft charged IBM more for the license to bundle Windows with IBM PCs than it was charging IBM's competitors. The exclusionary contractual arrangements with all OEMs have an additional feature when applied to IBM, because IBM was also Microsoft's horizontal competitor. Hence, these contracts also are an attempt to reach an agreement not to compete.

In 1994 IBM sought to negotiate a contract for Windows that was comparable to the deals Microsoft had negotiated with other leading PC manufacturers. Microsoft offered IBM the lowest prices in the industry for Windows and a joint marketing arrangement if IBM would mention no other operating system in its advertising, would adopt Windows as the standard operating system within IBM, and would

---

160. "Findings of Fact," paragraph 79.

161. For more details, see "Findings of Fact," paragraphs 81-7.

162. For more details, see "Findings of Fact," paragraphs 115-32.

guarantee to ship Windows pre-installed on at least half of its PCs. IBM executive Garry Norris testified that Microsoft told IBM "that they wanted us to eliminate, drop, reduce or stop shipping OS/2," and that the terms of the proposed agreement "would have the effect of killing OS/2 in the market."[163] In short, to fulfill these terms, IBM would have to abandon its own operating systems.[164]

IBM rejected these terms and adopted an aggressive policy to promote its own products. IBM acquired Lotus in 1995 so that it could offer its own suite of applications. In response, Microsoft broke off negotiations with IBM to license Windows. Microsoft refused to release technical information about Windows that IBM could use to enable its PCs to use Windows as an operating system.[165] At this time, all of IBM's major competitors had Windows licenses and access to the Windows master code.

Meanwhile, Microsoft and IBM also were disputing the royalties that IBM owed Microsoft for past sales of Windows. Microsoft asserted that IBM owed Microsoft $25 million, but a Microsoft executive expressed his willingness "to trade certain relationship improving measures for the settlement charges and/or convert some of the amounts into marketing funds if IBM agrees to promote Microsoft's software products together with their hardware offerings."[166] Among these relationship-improving actions was an agreement to delay pre-installing Lotus SmartSuite on IBM PCs for six months to a year.

IBM rejected the agreement, and as a result was not granted a Windows 95 license until fifteen minutes before its release. Because of the delay, IBM could not benefit from the surge in PC sales that took place immediately after Windows 95 became available. "These lost opportunities cost IBM substantial revenues."[167] In addition, Microsoft continued to exclude IBM from so-called "enabling

---

163. Testimony of Garry Norris, June 9, 1999, AM Session Trial Transcript, *U. S. v. Microsoft*, p. 14.

164. "Findings of Fact," paragraph 118.

165. "Findings of Fact," paragraph 122.

166. Quoted in "Findings of Fact," paragraph 124.

167. "Findings of Fact," paragraph 125.

programs" to assist OEMs in making their PCs work optimally with Windows, even though IBM met the objective criteria for inclusion in these programs, an action that cost IBM $180 million in sales.[168] Microsoft's explanation for its decision to exclude IBM was that it feared the IBM would use the programs to sell IBM software to Microsoft's customers.

The attempts by Microsoft to induce Netscape and IBM to enter anticompetitive agreements were not isolated events. Microsoft also sought similar deals with Apple, Intel and RealNetworks, which are explained in my Iowa report. This sequence of attempts to reach anticompetitive agreements to divide markets is important for three reasons.

First, these attempts clearly reveal Microsoft's willingness to engage in explicit collusion with existing and potential horizontal competitors that harms consumers by restricting their choice of products. Second, these events place in context other anticompetitive behavior by Microsoft, such as tying competing products to the monopolized operating system and failing to disclose plans and APIs of the operating system to these competitors. The attempt to divide the market anticompetitively shows that Microsoft sought to protect the operating system monopoly, not necessarily just stop other firms from offering competing middleware and applications. Third, these events reveal the disproportionate punishments that Microsoft was willing to impose on companies that would not go along – and hence the magnitude of the financial incentive facing all firms to avoid competing with Microsoft. Both Netscape and IBM were severely punished for refusing to enter agreements not to compete with Microsoft. This behavior illustrates a principle in economics called the "chain-store paradox" – why a dominant firm has a rational reason to expend far more to punish a single competitor than that firm could expect to receive in additional profits from that action. By engaging in massive over-reaction to a competitive threat, Microsoft teaches other potential competitors that a transgression against Microsoft's interests can cost them far more than it could ever hope to gain from competing with Microsoft. These actions thereby

---

168. "Findings of Fact," paragraph 128.

encourage other firms to accept offers of agreements not to compete and exclusionary contracts. After all, if Microsoft can impose hundreds of millions of dollars of lost sales on a giant like IBM, other, less powerful players are more likely to agree to restrictions against competition.

Tying the Operating System to Other Products

Many software products are sold as part of a bundle and, in most cases, offering bundles is not anticompetitive. Bundles become anticompetitive if they foreclose the market to producers that offer a version of one product in the bundle that is at least as desirable, taking into account its quality as well as its cost, as the corresponding product of the bundler.[169] One form of anticompetitive bundling is tying, in which consumers can buy only the bundle of a monopoly product and other products for which there are competitive alternatives. Another form of anticompetitive bundling arises when the prices of the stand-alone products are so high compared to the bundled price that producers of a competitive product can not recover their costs at a price that would induce consumers to buy the products individually regardless of the relative qualities of the competing product and its counterpart in the bundle. In the latter case, the unbundled price is equivalent to tying, for in the latter case the implicit unbundled price is infinite.

If either of these conditions is true, bundling is a tie that undermines the welfare of end–users by restricting their choices. Microsoft has a long history of tying products for which it faces substantial competition to products for which it has substantial market power. Although the number of tying episodes is large, this section focuses only on those that directly affected Microsoft's ability to preserve its market power in operating systems: tying operating system advances and, eventually, all of MS DOS to the Windows GUI, tying the Microsoft network operating system to DOS/Windows, tying Internet

---

169. For more complete discussions of the economics of bundling and tying, see Nalebuff, *op. cit.*, and Einer Elhauge, "Tying, Bundled Discounts, and the Death of the Single Monopoly Profit Theory," Discussion Paper No. 629, Harvard Law School, February 2009 (forthcoming, *Harvard Law Review*).

113

Explorer to DOS/Windows, and tying messaging middleware to messaging applications.

GUI

Microsoft has tied operating system functionality to the Windows GUI since 1988. Because the primary anticompetitive effect of this act has been in the operating system market, I will not discuss all of the details here. Nevertheless, the DOS/Windows bundling is relevant to this litigation for two reasons. First, it involves the Windows shell, and so affected PerfectOffice and Lotus Notes, as discussed in the next section. Second, Microsoft achieved dominance in applications in part because it placed operating system functions in the Windows GUI and then engaged in anticompetitive acts with respect to these operating system functions, as described in the section to follow about disclosure of operating system plans and APIs. These earlier acts put Microsoft in a position to benefit from subsequent anticompetitive acts against Novell and Lotus/IBM.

Since Windows 2.0, released around January 1, 1988,[170] Microsoft tied some platform functions, including task switching in Win/286 and multitasking Win/386, to the Windows GUI. In the Windows 2.x series, the purpose of the tie was to advantage Microsoft's applications products. Windows 3.0 contained important features that enabled applications to exceed the 640k memory limitation that was present in MS DOS. The purpose of adding these features to the Windows GUI was to use the dominant position of the GUI to disadvantage Microsoft's competitors in both operating systems and applications. These bundles had no technical rationale; the GUI features of Windows were separate from the other platform features. Gates accurately stated that "as Windows came along, Windows 3.1, Windows 95, Windows 98, underneath MS DOS was running there. Windows simply sat on top of MS DOS."[171]

---

170. The actual release was December 1987 or January 1988. See *PC Week*, Vol. 4 No. 47 (November 24, 1987), p. 4, and Bates No. X000000135674, January 1988.

171. "Windows XP Launch Remarks," New York City, October 25, 2001, available at

As explained in the section about OS/2, bundling advanced operating system functionality in Windows enabled Microsoft to maintain its monopoly in the operating system. Nathan Myrhvold of Microsoft, who generally opposed putting all of the advanced functionality in Windows, nevertheless recognized that it had another big advantage: "Should give great apps revenues – this is something like a 5x-10x increase in the total number of platforms on which we can sell ou[r] apps."[172] The advantage in applications arose because Microsoft did not disclose to its applications competitors the capabilities that Windows would have, its future plans regarding the role of Windows and OS/2, and the specific APIs that applications programs could use to achieve advanced functionality, as is discussed in subsequent sections.

Microsoft pursued its bundling strategy on a grander scale in Windows 95, which combines MS DOS 7.0 and Windows 4.0, plus other applications and middleware products that are not otherwise available. These products were designed separately, and Microsoft initially planned to introduce MS DOS 7.0 as a separate product. "While Chicago is being developed as a single integrated Windows operating system,... 3 specific retail products can be packaged up and sold separately. Which products actually ship other than full Chicago is a marketing issue. 1. Windows for Workgroups... 2. Windows... 3. MS-DOS..."[173] When Windows 95 was introduced, a significant minority of PC users still preferred the DOS environment, but Microsoft stopped offering upgrades to MS DOS despite the demand for a stand-alone product.

Microsoft's public position was that the two products would be sold separately. Over a year after

---

www.microsoft.com/billgates/speeches/2001/10-25winxplaunch.asp.

172. Bates No. X000000159528.

173. In this case, Windows refers to the bundle of Windows 4.0 and MS DOS 7.0. Microsoft apparently never again expected to release a separate GUI product after the release of Windows 2.0. See Chicago Strategy Document 'Making People More Productive,' June 16, 1992, Bates Nos. MS00000072604-13 for the quote in the text and the discussion of the Chicago version of Windows.

the tying decision was made, Microsoft publicly stated that the products would not be tied: "Chicago is

the code name for development work for both Windows on MS-DOS and MS-DOS by itself. The work is

proceeding in parallel. There will be future versions of MS DOS as a stand-alone product... No, we are

not planning to merge the products."[174]

Microsoft's public pronouncements that MS DOS 7.0 would be sold separately were consistent

with the completely separate development of the two products. Microsoft's project manager for Windows

3.0 described "Windows 95 as DOS and Windows stuck together with baling wire and bubble gum," and

agreed that there was no technical disadvantage to releasing the two as separate products or even to

installing them sequentially rather than as a single product.[175] Another Microsoft executive observed that

"we did not in any significant way actually mate DOS and Windows."[176] Thus, neither Microsoft nor its

customers captured any efficiency advantage from combining the products. Because both operating

systems and GUIs can be (and are) pre-installed by the manufacturer, the "cost" to the consumer of

unbundling these products is nothing more than facing a decision among competing products rather than

accepting the bundled product of a monopolist.

Shells

Microsoft engaged in similar behavior by preventing OEMs from installing other user interfaces

(shells) on PCs that were loaded with Windows.[177] The shell for Windows is Windows Explorer. Other

---

174. Chicago Q&A, 1993, Bates Nos. MS00007095630, 33.

175. Deposition of Phillip Barrett, *Caldera v. Microsoft*, pp. 60-61, 67-68.

176. Deposition of Paul Maritz, *Caldera v. Microsoft*, p. 121.

177. A "shell" is "software, usually a separate program, that provides direct communication between the

user and the operating system. Examples of shells are Macintosh Finder and the MS-DOS command

interface program." Microsoft, , 2002, Computer Dictionary (Fifth Edition), Microsoft Press, p. 478.

116

shells began to appear in the early 1990s. Compaq was an early innovator in shell design, planning to offer different shells for new users and more experienced users.[178] Microsoft was concerned that Compaq's efforts would lead to widespread distribution of non-Microsoft shells.[179] "OEMs continue to innovate in the area of simple family shells. Easy to use entry level UI's are standard now on Compaq, Packard Bell, AST, and other machines."[180]

By early 1997, Microsoft used license restrictions to eliminate potential competition from non-Microsoft user interfaces by imposing various restrictions on OEMs. Hewlett Packard found that the number of support calls increased, the system registration rate decreased, and the return rate increased when Microsoft forced it to eliminate its proprietary shell. Hewlett Packard decried Microsoft's restrictions on their ability to meet consumer demand: "We must have more ability to decide how our system is presented to our end users. If we had a choice of another supplier, based on your actions in this area, I assure you would not be our supplier of choice..."[181]

Microsoft's contracts prohibiting use of auto-launching alternative shells tied the Windows Explorer shell to the Windows operating system, harming competition from alternative use interfaces. Both PerfectOffice and Lotus Notes contained shells that were plausible alternatives to Windows

---

178. A Microsoft internal e-mail reported that "Compaq feels that MS's usability and human interface depth for Windows 3.1 and Chicago pales compared to what PARC [Xerox' Palo Alto Research Center, Compaq's partner in developing alternative shells and the inventor of the graphical user interface with a mouse] offers." Bates No. MS00007092647.

179. "The nightmare scenario is that other OEMs will follow this and try to split up the Windows UI church." Bates Nos. MS00007092651-00007092652.

180. Bates Nos. MSPCA01094114-01094136 at 1094117.

181. HP reported a 10% increase in support calls and a 20-point decline in customer satisfaction. Bates Nos. MSPCA01016180-01016181.

Explorer. Because these products were part of a family of applications, both offered a substantially greater threat to Windows than the shells developed by OEMs.

Unlike the OEM shells, Microsoft could not prevent the shells in PerfectOffice and Lotus Notes from being loaded when these products were installed. But Microsoft faced an even stronger incentive to limit their penetration in the market because, as part of a larger suite of products, they were greater threats to Microsoft's operating system and GUI monopoly than were the OEM shells. Microsoft could limit their penetration only by undercutting the demand for the applications products that came with them.

Network Operating Systems

Microsoft also used tying to cope with the threat that network operating systems might migrate to the x86 PC. The primary threat here was Novell. Novell NetWare was the dominant operating system for networks of PCs. Microsoft saw Novell as a threat to extend NetWare to become an operating system for thin client networked PCs.[182] The first attack was a pro-competitive action: to create a product, LanMan, to compete with NetWare. Microsoft's product was a failure: "We got whupped... We can't win in the systems business by taking on our competitors on their terms. We have to find a way to win that leverages our strengths, which is our position in the desktop OS and desktop app business. And thus was born Sparta. The notion that caused this project to start up was that we would re-enter the networking business from our position of strength, the desktop OS. We would build networking into the desktop OS and just give it away... This would be positioning that Novell would find hard to fight against."[183]

----

182. [Slide title] "Systems Competitors: [1st bullet] Novell: [1st sub-bullet] Investing In building (from the server) a platform for apps. Strategic goal is to get control of client API's. [2nd sub-bullet] DSOM/OpenDoc supporter" Microsoft, 02 December 1993, Systems Release Plan Summary, Bates Nos. MS5011461 - MS5011470 at 462.

183. The Sparta Religion, August 7, 1992, Bates No. MSPCA01115449.

Not being able to win this market on the merits, Microsoft created Windows for Workgroups to tie a Microsoft client for Novell Netware with Windows 3.x, and then Windows 95 included a network operating system client that made Novell's client unnecessary. "You know, taking the client away from the competition, is always the beginning of Microsoft's Dominance Strategy... How many workstations do you think are running the Novell Client for Windows 95 vs. the MS client? You can go from a 99% client control with one platform (DOS/Windows) to a 25% (Windows 95) control really fast."[184]

Browsers

Microsoft sought to eliminate another potential competitor in the x86 PC operating system market by tying Internet Explorer to DOS/Windows. This issue was a principal focus of *U. S. v. Microsoft*, and was dealt with extensively in the Findings of Fact in that case, so it will not be repeated in detail here. The basic story is as follows. Netscape was an extremely successful browser. Microsoft feared Netscape in part because Netscape, like Novell NetWare, could become a universal translator – a middleware layer that worked on many operating systems. Netscape and Sun formed a partnership to expand the capabilities of Netscape to allow users to obtain platform functions through Netscape.

Microsoft attempted to eliminate this threat by competing with Netscape on the merits – by introducing a browser of its own, Internet Explorer (IE). Microsoft initially even planned to include IE "in a bundle of software that would have been sold as an add-on, or 'frosting,' to Windows 95."[185] But Microsoft was unable to win on the merits. "[I]f we rely on IE 4 alone to achieve this [displacing Netscape], we will fail. Not only will we not overtake them in market share, we would also give up leadership on the operating system side and become vulnerable targets for attacks from Netscape (Constellation) and the NC alliance... It seems very clear that it will be very hard to increase browser

---

184. August 23, 1996, Bates Nos. NWA000026-9.

185. "Findings of Fact," paragraph 137.

119

market share on the merits of IE 4 alone."[186] (The "alliance" is the collaboration with Sun through which Netscape included Java, which in turn was bundled with PerfectOffice.)

The solution was to tie IE to Windows. "In contrast to other operating system vendors, Microsoft ... refused to license its operating system without a browser..."[187] Internet Explorer was tied to Windows 95 with an upgrade that was released in August 1996. As explained above, the tie along with the prohibition against unbundling was undertaken to reduce the likelihood that OEMs would pre-install Netscape. As a technical matter, IE was developed in a completely separate division of Microsoft, under the Senior Vice President for Internet Platforms and Tools and later for Applications and Internet Client Group, than the division that developed Windows, under the Senior Vice President for Desktop and Business Systems.[188]

Microsoft enforced its contractual tying requirements by integrating IE into DOS/Windows. Integration was undertaken as a mechanism for enforcing exclusionary restrictions in Microsoft's licensing agreements with OEMs that prohibited the removal of components of Windows, the removal of Microsoft products from the desktop display and the Start menu, and the placement of other icons on the Windows desktop. Microsoft integrated IE into DOS/Windows in such a way that if an OEM, retailer or user attempted to eliminate IE, perhaps to replace it with Netscape or perhaps just to disable the browsing capability of a PC, the functionality of Windows would be reduced. "The intent was to make it more difficult for anyone, including systems administrators and users, to remove Internet Explorer from Windows 95 and to simultaneously complicate the experience of using Navigator with Windows 95."[189] In Windows 98, Microsoft sought even deeper integration: "to combat Nscp. we have to position the

---

186. February 24, 1997, Bates Nos. MSPCA01015610-3.

187. "Findings of Fact," paragraph 155.

188. Bates Nos. FLAG000000003-5 (September 1996) and 6-10 (Winter 1997).

189. "Findings of Fact," paragraph 160.

120

browser as 'going away' and do deeper integration on Windows."[190] "[I]f we do a great job with

Memphis [Windows 98] for consumers and NT 5 for businesses delivering solid products with new

compelling features and conduct great performance launches, we can leverage these assets to convert the

[Netscape] navigator installed base and eclipse Netscape's browser marker share leadership... It will be

more important to leverage the OS asset to make people use IE instead of Netscape."[191] As explained

above, during this period Microsoft did not succeed in delivering a product that was as good as Navigator,

so it had "to leverage the OS asset" to displace Navigator.

In *U. S. v. Microsoft,* Microsoft witnesses argued that because IE and Windows had intermingled

files, each was a component of a single product. Because any two software products can be constructed

to share some files, this argument is tantamount to asserting that any two software products can be

combined into a separate product that is sold in a single relevant market. If this argument were correct, a

software vendor could not engage in anticompetitive tying. To determine whether commingling of code

is a tie or an efficiency-enhancing innovation involves more than just noting that the programs are

intermingled. To ascertain whether commingling is a tie requires examining its purposes and effects,

including the technical consequences of commingling on performance of the combined products.

In the case of IE, whether commingling it with Windows is an anticompetitive tie depends in part

on the effect of commingling on the performance of the PC system. Fortunately in this case, the inquiry

is rather easy. Commingling the files of IE and Windows degrades the quality of both products, and its

purpose was clearly revealed by the Microsoft executives who managed the project.[192]

---

190. January 7, 1997, MSPCA01091948.

191. February 24, 1997, Bates No. MSPCA01015613.

192. The "Findings of Fact" explain why the integration of IE into Windows had no end-user benefits,

harmed all consumers, even those whose preferred browser was IE, by degrading the performance of their

PC system, and was motivated solely by the objective of increasing the difficulty and cost of substituting

The integration of IE into Windows had no valid functional purpose or efficiency objective. Whereas the common files cannot be deleted without degrading Windows, IE initially was wholly separate – the commingling of files took place later as the result of a strategic decision by Microsoft to make it difficult for OEMs, retailers and end-users to replace IE with Netscape. Moreover, the act of commingling certain files made the bundle that was called Windows more unstable and less secure.

By integrating IE and Windows files, "Microsoft has harmed even those consumers who desire to use Internet Explorer... Microsoft has unjustifiably jeopardized the stability and security of the operating system. Specifically, it has increased the likelihood that a browser crash will cause the entire system to crash and made it easier for malicious viruses that penetrate the system via Internet Explorer to infect non-browsing parts of the system."[193] And, users who do not want a browser "must content themselves with an operating system that runs more slowly than if Microsoft had not interspersed browser-specific routines throughout various files containing routines relied upon by the operating system. More generally, Microsoft has forced Windows 98 users uninterested in browsing to carry software that, while providing them with no benefits, brings with it all the costs associated with carrying additional software on a system. These include performance degradation, increased risk of incompatibilities, and the introduction of bugs."[194] Thus, Microsoft purposely wrote new software that reduced the value of its operating system for the sole reason of destroying Netscape: "To combat Nscp we have to position the browser as 'going away' and to do deeper integration on Windows.[195]

For the strategy of tying IE to Windows to succeed, Microsoft had to enjoy a near-monopoly in another product of great value to users in the bundle. By the mid-1990s, Microsoft was a near-monopoly

---

Netscape for IE after Windows had been installed on a PC. See paragraphs 160-198.

193. "Findings of Fact," paragraph 174.

194. "Findings of Fact," paragraph 173.

195. February 24, 1997, Bates No. MSPCA01015613.

in both the operating system (without which a PC is useless) and the graphical user interface (without which many users would be unable to operate the PC). Without this market power, users who preferred Netscape to IE simply would have bought competitors to MS DOS and Windows. But because these products are so important and have no significant competitors, users simply were forced to accept IE as part of Windows, with all the costs that come with it.

Messaging Middleware

Microsoft bundled its messaging application and critical features of MAPI, its messaging middleware, with its operating system. In 1992, in response to the formation of a consortium of Microsoft's competitors to create open-standard messaging middleware, Microsoft offered its own messaging middleware as an open standard. Microsoft told ISVs that MAPI would support the seamless operation of groupware applications and server messaging systems from all vendors, and, after initially planning to include it with Windows 95, agreed to make MAPI available on all versions of Windows starting with Windows 3.1.[196]

Microsoft failed to deliver a timely documented version of MAPI for Windows 3.1,[197] although it did use a version of MAPI for its own groupware product on this platform. By failing to deliver MAPI for Windows 3.1 to its competitors, Microsoft prevented its competitors from providing the same level of messaging functionality on Windows 3.1 that was provided by Microsoft's groupware. For Windows 95, Microsoft extended MAPI to provide still more functionality, but refused to make these extensions part of its open middleware.[198] Microsoft's Exchange server software provided this functionality to Microsoft's

---

196. "Microsoft Messaging Application Program Interface (MAPI) Overview," January 1993, Bates Nos. MS7058541-561, and Bates Nos. IBM7510251955-956.

197. Bates Nos. NOV00686851-852.

198. Bates Nos. IBM 7510251895-896.

123

groupware application, thereby guaranteeing that no competing groupware application could access this functionality.[199]

Some versions of Windows 95 included an option to install Microsoft's messaging application while others included installation of the messaging application as part of the Windows 95 installation. In either case, Microsoft's messaging application had to be installed and its icon placed on the desktop before a competing messaging application could be installed. This icon, labeled "Inbox," launched Exchange when clicked and required a complex, non-transparent procedure to delete. Simply attempting to delete it did not work. As a result, after a user installed competing groupware, clicking the "Inbox" on the desktop did not launch the product that the user had installed. The effect was the same as the "dual icon" effect with respect to browsers – to confuse users and to privilege the Microsoft product.

Microsoft had no reason to bundle the messaging middleware in the application other than as a device to undermine competing messaging products. A Microsoft internal email states that "the only reason mail is in Chicago is to help wga [Work Group Applications, the Microsoft group developing groupware applications] achieve dominance in the mail market (bill's words, not mine)."[200]

Summary of Ties and Bundles

The thread that connects all of these episodes is Microsoft's behavior in response to products that it regards as a threat to the operating system monopoly. Browsers, shells, network server operating systems, and messaging applications all are places where an end-user can "live" in the sense that they expose APIs and create environments from which a user can perform numerous tasks. All of these products were potential threats to Microsoft's control of the desktop and to the applications barrier to entry, both of which protected Microsoft's dominance in operating systems. In each case, Microsoft

---

199. Bates Nos. IBM 7510251964-970.

200. John Ludwig, April 22, 1993, "RE: 4M fallout," Bates Nos. MS7082447-451 at 447.

124

disadvantaged competitors by strategically tying its competing products to the operating system.

Technical Attacks on Competitors

Both operating systems and middleware can serve as the platform for an application. Microsoft is the supplier of several platform products, including its operating system, GUI, communications protocols, and messaging middleware. Microsoft used its control of these platforms to disadvantage competing suppliers of applications and middleware.

Incentive to Leverage OS/GUI Monopoly

In 1987 Microsoft offered applications, but it was not dominant in any. In 1988, Microsoft realized that it could increase its profits by becoming dominant in key office applications.[201] When it adopted the goal to gain dominance in these markets, Microsoft faced a conflict of interest with its ISVs. On the one hand, a wide variety of state-of-the-art applications at competitive prices increased the value of MS DOS, but a reduction of competition in these markets could increase the value of Microsoft's applications and, by thwarting cross-platform applications, preserve the applications barrier to entry.

Microsoft could have ignored this conflict and attempted to gain market power in applications markets by producing better products. Instead, Microsoft adopted two goals for its Systems Division (the developers of the operating system): Goal #1 was "Continue to own the desktop" and Goal #2 was "Grow Applications Market Share... become undisputed leader in the 'Integrated Office'... be #1 or #2 in every important category..."[202] To achieve both goals, Microsoft took advantage of its market power in

---

201. "Summary of Microsoft Applications Strategy," February 29, 1988, Bates No. X000000585278.

202. Welcome to Systems Product Advisory Committee, MS0000005014968. This document is undated, but from context appears to be March 25-26, 1991, since it was a kick-off meeting for the committee that led to an issues document on March 29, 1991, X000000560198-202.

the operating system and important middleware products to disadvantage ISVs in applications markets that it sought to enter: "Windows 3.0 has the potential to provide a reason to switch word processors and spreadsheets. Don't miss this opportunity."[203]

Microsoft publicly claims that its applications programmers are treated the same as ISVs. Microsoft says that its applications programmers are not given special documentation, support and access to source code that is not generally available.[204] Microsoft uses two metaphors to characterize the treatment of the MS Applications Division: the "separation of church and state" and the "Chinese Wall."[205] These claims are directly contradicted by Microsoft's arguments in opposition to the divestiture remedy in *U. S. vs. Microsoft,* and in reality Microsoft never did follow a policy of equal treatment for all applications vendors. These statements also are contradicted by Microsoft's practice of co-mingling teams that work on the operating system with teams that work on applications. When Microsoft was developing the version of Word that would run on Windows 95, Bill Gates transferred a team of developers that had been working on the part of the operating system that would support word processing to the group that was developing Word. In explaining this decision to the leader of the team, Bill Gates stated that the purpose was to deny competitors the opportunity to make use of the advanced operating

---

203. The Corporate Purchase Decision for Word Processors and Spreadsheets, Bates No. FLAG000054408.

204. "MS Apps are treated as just another ISV by Cameron's group," X547340. See Deposition of Bill Gates, February 27, 2002, p. 191.

205. For example, see March 26, 1991 MS 0155496-9; Deposition of Bill Gates, February 27, 2002 dealing with public statement by Steve Ballmer, pp. 179-82; the statement by Microsoft's PR firm regarding the issue, Bates Nos. X 547341 and MS0155496-9; and *Infoworld*, December 30, 1991, pp. 40-1.

system capabilities that could be used by Word.[206]

Each action that discriminated against ISVs was costly to Microsoft in at least one of two ways: the act increased Microsoft's costs without increasing the functionality of its products, and/or it reduced the value of its platform products by either reducing their functionality or undermining the functionality of applications that ran on these products. This strategy could be profitable if it enhanced sales of Microsoft's own applications products and/or maintained the operating systems monopoly by hindering the development of cross-platform applications and middleware.

An important feature of the core applications at issue here is that Microsoft's transformation from simply a player to dominance in word processors, spreadsheets and groupware was not because it offered a superior product. Whereas the acts described below gave Microsoft an important temporary advantage in the functionality of their applications, competing ISVs have been remarkably adept at catching up and in producing innovations in applications and middleware. Even today, the main competitors to Word, Excel and Outlook are well reviewed. Moreover, the competitors' products retain their high quality despite low sales compared to Microsoft. The long-run survival of WordPerfect Office, SmartSuite and StarOffice as high-performing alternatives to Microsoft Office and of Lotus Notes and GroupWise as competitors to Outlook demonstrates, first, that economies of scale in software are not so great that a high-quality product can not remain in the market with low sales, and second, that Microsoft did not acquire its dominance in office productivity software because its products are better.

To be as successful as the quality of the product permits, independent software vendors (ISVs) need a regularized business relationship with the supplier of the platform on which their software will run. Applications and middleware must be able to make use of functions in the operating system that control the hardware in the personal computer, and in some cases other functionality that is provided by middleware. The connections among applications, middleware and the operating system, the APIs, are

---

206.   Bates No. MX 5049756.

the communications channels through which applications access the functions of the PC. In order for programmers to be able to write applications and middleware programs that work, they must understand the relevant APIs and know how to access them. The need for disclosure of APIs is the same regardless of whether the programmer works for the same company that provides the operating system and middleware that exposes the APIs or for one of its competitors. In most cases an ISV can use a set of APIs only if their developer has assisted it in learning how to use them, typically by documenting the APIs and answering questions when the documentation is unclear.

Platform software is useless unless applications are written to its APIs. To maximize the value of a platform, its developer must assist applications programmers in learning about the functionality and use of its APIs. This assistance can be provided in several ways: *documentation*, which consists of written descriptions and instructions; *support*, which means providing a mechanism for programmers to ask questions and to seek help in solving problems; and *access to source code*, which means disclosing to the applications programmer the line-by-line instructions in an operating system that relate to a particular API and its corresponding function.

The First-in Advantage

Microsoft's technical attacks on competitors usually do not necessarily create a permanent technical roadblock for competing applications and middleware. The primary effect is to cause the release date of competing products to be delayed. As discussed elsewhere, technological innovation in PC hardware increases the functionality of a PC, but to achieve all of the benefits of hardware innovation requires new applications that can take advantage of these innovations. These applications, in turn, can not be used until a new operating system is introduced that provides the communications interfaces between the applications and the microprocessor. For this reason, the demands for a new microprocessor, new operating system, and new applications that take advantage of the new microprocessor are interdependent. More end-users will want the new PC hardware and operating system if new applications

128

are available to make use of all of the new features, and likewise the demand for applications that use these features spurts at the time the new hardware and operating system are released.

The synergies among hardware, operating system and applications create a first-in advantage in applications. First-in advantage has been extensively studied,[207] and in the related area of Internet sites has been found to be important for products that exhibit network effects and have patent protection, both of which also are true for complex software programs.[208]

The first vendor to offer a product in an applications market that takes advantage of new operating system is likely to claim a large share of the market for that application not just in the period that it is the only product available, but for the entire life of the microprocessor as a leading edge product (until it is replaced by the next innovation in microprocessors). Under my direction, economists at ApplEcon have collected monthly sales data for software that ran on Windows 95 from the date of release until December 1997, more than two years later.[209] These data show that for all business applications for which more than one firm offered a product, the average revenue market share of the first product in the market was 43.4 percent, while the second firm averaged 22.9 percent.

Undocumented APIs

---

207. For a survey of this research, see J. O. DeCastro and J. J. Chrisman, "Order of Market Entry, Competitive Strategy, and Financial Performance," *Journal of Business Research* Vol. 33, No. 2 (June 1995), pp. 165-77.

208. Marvin B. Lieberman, "Did First-Mover Advantage Survive the Dot.com Crash?" Anderson Graduate School of Management, UCLA, December 2007.

209. NPD Intellect (formerly PC Data) collects monthly data on units and revenues of software sales which are assembled in their "Software Retail Report" dataset. Internal Microsoft documents reveal that Microsoft acquires and uses these data extensively. See Bates Nos. MS PCA 01385108-131.

For a new platform product to have a market when it is released, applications programs must be available that make use of it, for otherwise customers would have no reason to buy it. Hence, documentation of APIs and pre-release versions of the platform software, called "betas," are sent to independent software vendors (ISVs) so that they can create applications that can be released roughly simultaneously with the release of the platform that exposes the new set of APIs. In discussing the development of an operating system, Bill Gates observed that "way before the release of the OS, you actually come out with the beta and the documentation, and you have what we call evangelism events... The reason for that is very clear, which is that the popularity of that new system is going to depend on whether or not you've spread the word to let people write applications in such a way that they show off those features."[210]

Many PC system customers, including large corporations with many sites, are interested in taking advantage of new hardware technology and the corresponding operating system and middleware soon after they are released. Consequently, to maximize the sales of their applications products, ISVs must have their applications ready to run on a new version of a new software platform at roughly the time it is released. If not, their products are not likely to be considered for purchase, especially among large corporate clients that, although they may phase their conversion to a new platform over several years, will commit to a complete system, including applications, soon after a new platform is released.[211] Because of

---

210. Deposition of William Gates, February 27, 2002, pp. 62-3.

211. For example, when Compaq switched to Windows-based applications for its internal uses, it sought to achieve 80% penetration in two years. Bates No. COMPAQ009762. Two-year roll-outs also were planned by Gannett, Coca Cola, Raymond James and Ford. Bates No. FLAG0000008246, 48-9, 53, 66. Microsoft's internal plans note that: "In FY '92, corporate decision-makers and the development community will make platform decisions that will materially affect Microsoft's ability to be successful over the 3-5 year time-frame." Bates No. X000000165779.

130

the importance of timely release of an application for a new operating system, ISVs rely upon a platform vendor to provide accurate and comprehensive documentation and support. Microsoft fully understands the importance of disclosure to applications programmers. In *U. S. vs. Microsoft,* Microsoft opposed divestiture of the operating system from applications on the grounds that separating these divisions would interfere with communication between them.

In some cases APIs can remain undocumented without reducing the value of a platform, such as APIs that are not used because they are unstable or have been replaced by superior documented APIs. But lack of documentation for APIs that are used or desired by applications developers has harmful effects on the platform vendor. First, it reduces the extent to which the platform vendor can use the experience of ISVs to find and repair bugs and to propose improvements in the platform. Second, undocumented APIs limit the ability of applications developers to find innovative uses of the platform that were not foreseen by the programmers who created it. Both effects cause the platform to be less valuable to end-users than it could be. Consequently, a company that competes on the merits would not allow errors and lack of documentation in platform software seriously to degrade the performance of an important application because such behavior would cause the company to lose sales. In a competitive market, persistent failure to fix bugs and document APIs would drive customers to software platforms that had fewer errors and better documentation, and hence supported more functional applications.

If a firm has a monopoly in a platform product and also supplies applications, undocumented APIs and bugs that differentially harm competing software products can be an advantage as customers realize that only the dominant firm's applications will run reliably on their PC. Microsoft understood this reality in the early 1990s, and since then purposely has not documented important APIs, has not fixed bugs that crashed competing software, and explicitly has created technical problems for competitors.

Microsoft's behavior regarding documentation of its APIs was not simply a few isolated events, but a comprehensive strategy to undermine the performance of competing products. Microsoft planned to place competitors that sought compatibility with MS DOS and Windows (which gives their users access to

131

applications written to Microsoft's APIs) on a "treadmill" – that is, to force competitors continually to spend resources trying to update their software to maintain compatibility. To retain compatibility with applications and middleware (including Windows GUI) written to Microsoft's APIs, competitors must adjust their software to deal with changes in Microsoft APIs. Keeping up with Microsoft is more time-consuming and costly if APIs are unannounced or undocumented, and if Microsoft's operating system contains unrepaired bugs for which Microsoft has an undocumented and unannounced work-around for its own applications.[212] "The real problem wrt WABI [Sun's Windows emulator] (and OS/2 for that matter) is that our API has not evolved that much for some time – allowing Sun the 2-3 years needed to get this far. OLE2 [one of the DLLs]... could be a decent hurdle... It would be great if WABI could not run the latest versions of Excel/Word when doing OLE like things."[213]

Microsoft purposefully made some documentation vague or buried it in hopes it would not be found in order to retain an advantage for its own applications. One Microsoft executive, discussing a response to complaints about undocumented APIs, suggested that MS provide perfunctory documentation that was buried among other materials to "provide enough 'air-cover' for us to say they are not undocumented."[214] This policy is reflected in another internal message about documenting a particular feature: "Don't explain in detail what any of those things do."[215]

The following is a summary of Microsoft's acts that made use of its monopoly power in operating systems to disadvantage competing applications and middleware products.

Memory Limits. Before the release of Windows 3.0, applications were limited to using 640k of memory, which limited the functionality of word processors and spreadsheets. Windows 2.x contained an

---

212. Bates Nos. MS05024075-6, 05011648.

213. Bates No. MS07085596.

214. Cameron Myhrvold, Bates Nos. MS156210-1.

215. Bates No. X130963.

undocumented method for working faster within this limitation, DefineHandleTable, that was only made available to Microsoft applications and was used to great advantage by Microsoft Excel. This feature "allows great speedups when using moveable memory... Microsoft's public position has been that Apps Division programmers do not have special hooks into Windows, when, in fact, they do. Therefore, it might be embarrassing to document 'DefineHandleTable' at this late stage, as part of a system for ISV's to use."[216] By the time the feature was documented, it was no longer useful because another method of extending the available memory for applications had been incorporated into Windows 3.0.

CBT. Windows 2.x introduced a feature called Computer Based Training (CBT) that allows one application to run certain activities in another. This feature was used in both Excel and Word in 1988, but it was not made known to ISVs and documented until April 1992 in the Software Development Kit for Windows 3.1. When this documentation was released, Microsoft inaccurately stated that it was available only in Windows 3.1, when in fact extensive documentation had been available internally for prior versions of Windows.[217] WordPerfect sought to use this feature to create interactive instructions based on active figures (coaches) as an improvement on the traditional help menu.[218] Microsoft's failure to provide accurate information about CBT was said by one witness probably to have cost WordPerfect market share and raised their support costs.[219]

RNA API and Scripting Tool. The Remote Network Access API and Microsoft's scripting tool were important to Netscape, but Microsoft withheld both from Netscape.

Microsoft told Netscape that it would not receive timely documentation for the RNA API unless it signed the agreement limiting the APIs that it exposed that was discussed in the section about attempts

---

216. August 29, 1989, Bates No. X130566.

217. Bates Nos. X505887-98.

218. Deposition of Gregory Richardson, December 13, 2001, pp. 60-6, 94-5.

219. Deposition of Adam Harral, December 12, 2001, pp. 70-3.

to divide the market. When Netscape refused to sign, Microsoft delayed giving the documentation to

Netscape from late June to late October. "The delay in turn forced Netscape to postpone the release of its

Windows 95 browser until substantially after the release of Windows 95 (and Internet Explorer) in

August 1995. As a result, Netscape was excluded from most of the holiday selling season."[220]

The scripting tool was necessary to enable Netscape to reach certain dial-up Internet service

providers. Netscape negotiated an agreement to license this API, but Microsoft refused to sign the

agreement unless all remaining issues with Netscape were resolved. "Microsoft had licensed the tool

freely to ISPs that wanted it..." and, as a result, "Netscape never received a license to the scripting tool,

and as a result, was unable to do business with certain ISPs for a time."[221]

IShell. Windows 95 contained a mechanism called IShell to add "namespace extensions" (new

features on the Windows screen that behaved as if they were files or folders) to the Windows GUI.

Initially Microsoft provided ISVs with sufficient documentation to allow them to begin to implement

namespace extensions, but insufficient to allow the work to be completed.[222] WordPerfect intended to use

namespace extensions to implement far greater integration of its products, including integration between

the desktop and the network.[223]

Here I briefly summarize the technical aspects of Microsoft's conduct with respect to IShell. The

---

220. "Findings of Fact," paragraph 91.

221. "Findings of Fact," paragraph 92.

222. Deposition of Gregory Richardson, p. 213. According to Richardson, Microsoft promised to

provide the additional APIs later (p. 83).

223. Depositions of Adam Harral, p. 106, and Gregory Richardson, p. 93. See also "WordPerfect

Windows 95 Shell Integration," September 30, 1994, Bates Nos. NOV-B00941714-723, "Tapestry

Concepts Document," December 19, 1994, Bates Nos. NOV-B06510118-143, and "PerfectFit 95

Development," December 20, 1994, Bates Nos. NOV-B01413613-615.

expert report of Ronald Alepin contains many more details, including the uses Novell had planned for namespace extensions and the effect of Microsoft's conduct on the time that was required to complete a fully functional version of PerfectOffice for Windows 95. My focus is on why from the perspective of antitrust economics Microsoft's conduct with respect to namespace extensions was anticompetitive.

In October 1994, Microsoft learned that WordPerfect intended to make extensive use of this feature. Microsoft's applications were not as far along in utilizing this functionality. Bill Gates, having learned that the WordPerfect developers were more innovative than his own applications division in using this feature, ordered that documentation not be provided, stating: "I have decided that we should not publish these extensions. We should wait until we have a way to do a high level of integration that will be harder for the likes of Notes, Wordperfect to achieve, and which will give Office a real advantage." [224] A week later the documentation was withdrawn: "Based on the recent decision, we are hiding one of shell extension mechanisms..."[225] Former WordPerfect executives estimate that retracting these APIs cost WordPerfect between seven and 11.5 developer-years of effort.[226] As explained in the expert report of Ronald Alepin, Microsoft had no valid technical reason for de-documenting namespace extensions. The only plausible reason was to prevent applications products from entering the market in a timely way that were superior to Microsoft's applications products.

The documentation for IShell was not reintroduced until mid-1996, and even then it was described as "preliminary."[227] In short, a feature that Novell had found useful and was implementing was not fully revealed in order to prevent PerfectOffice from competing effectively with Microsoft Office. Microsoft told ISVs that the APIs were withdrawn because they were not stable, and either would not

---

224. Bates Nos. FLAG 043508, MX9030733, FLAG 087459.

225. Bates No. MS980103243.

226. Depositions of Gregory Richardson, pp. 107-8, and Adam Harral, p. 89.

227. *Microsoft Systems Journal*, July 1996.

135

exist or would be drastically changed in the released version of Windows 95.[228] But these functions were part of Windows 95 and were used by Microsoft applications that were created to run on Windows 95: "This is the EXACT thing we told ISVs they could (and should) not do!"[229] Thus, Novell was forced to create an unnecessary work-around for the release of PerfectOffice for Windows 95 in May 1996. The first version of WordPerfect that fully implemented namespace extensions was not released until June 1997. "The largest area that has held us up has been that Microsoft initially published integration features (plug and play, shell integration, etc.) and then pulled the features without letting us know."[230]

Containers. Microsoft Access, a database program that is used, among other things, in conjunction with spreadsheets, contained an "OLE Control" (OCX) container mechanism in early 1994 that was not documented for ISVs for more than a year. An OCX container is essentially a way for one application to perform tasks inside another application that has no capability of its own to perform it. This feature can be used, for example, to place motion advertising on an Internet browser screen. Because Microsoft had not documented this feature, "we incorporated this technology before it was available to the general public."[231] Both Lotus and Borland complained that this gave Microsoft's office productivity applications an unfair advantage.[232] Microsoft purposely withheld information to disadvantage its competitors. Microsoft "decided to give him [Borland] a paper written by one of the VC people that describes the basic architecture. They do not believe that Borland could achieve containership just from this documentation, but it is remotely possible. The long-standing plan has been and continues to be to give Borland (and Lotus, etc) a 'design preview' in March/April. This means we will have a

---

228. Bates Nos. MS9801220900-2.

229. Bates No. MS980120901.

230. Deposition of Adam Harral, December 12, 2001, p. 98.

231. Dawn Trudeau, January 13, 1994, Bates No. MS0157789.

232. Bates Nos. IBM0410075018-20, MS0157790, MS0158502-2x.

large window of at least several months wherein Access is the only database product supporting custom controls."[233] In fact, the first non-Microsoft product to use this system was not shipped until July 1995.

MAPI. Microsoft's conduct with respect to MAPI is discussed extensively in the expert report of Ronald Alepin, so my discussion will focus on why from the perspective of antitrust economics Microsoft's conduct was anticompetitive. Microsoft used its control over the middleware that implements groupware to disadvantage its competitors in groupware as well as server software that supports groupware. A consortium of softer vendors that included Novell was created to develop an open industry standard for messaging middleware. Microsoft decided that it would not join this effort. Instead, Microsoft announced that it would develop its own messaging service middleware as an open industry standard that would provide advanced messaging functionality that could be used by all groupware applications and all network servers.[234] Microsoft stated that "the full MAPI functionality will be built into future releases of the Windows operating system... As a result, an organization can continue to use its different messaging systems while migrating all users to the same client email application. The organization is free to choose the client application that best meets its needs."[235] In so doing, Microsoft was committed to middleware that would enable a user to use messaging applications and supporting sever messaging software from different vendors.[236] After convincing others to adopt its standard,

---

233. January 7, 1994, Bates No. MS0157790.

234. "Microsoft Messaging Application Program Interface (MAPI) Overview," January 1993, Bates Nos. MS7058541-561.

235. *Ibid.,* at 558.

236. Regarding Microsoft ExchangeServer, Tom Evslin testified that "from the beginning or at least from as long as I was involved with it, the plan was that any mail client that anybody wrote that used MAPI would be able to access the facilities of the server, and that our clients would be able to access the facilities of any server which implemented MAPI." *Deposition of Tom Evslin,* February 19, 2009, pp.

137

Microsoft then made components of the middleware proprietary, which meant that only Microsoft groupware applications could access the full functionality of the supposedly open standard for messaging. As discussed elsewhere in this report, Microsoft also bundled the middleware messaging software with its messaging applications so that users could not install competing applications without also installing Microsoft's application.

Microsoft took advantage of its bundling of middleware functionality in applications with the release of Office 97, which included the new Outlook groupware application. Outlook contained a new version of a critical component of MAPI which Microsoft had not disclosed to its competitors in either groupware applications or back-end messaging support on network servers. As a result, the installation of Office 97 made GroupWise incompatible with Windows 95 so that when Office 97 was installed, GroupWise no longer worked.[237] Novell had to reverse engineer Office 97 to figure out the problem, which was easily fixed once it was identified; however, as discussed more fully by Mr. Alepin, fixing the problem required almost a month. In the interim, Novell customers could not use GroupWise. As discussed in the expert report of Ronald Alepin, Microsoft also did not include MAPI in the installation of Windows 98 and Windows 2000.

IE. Microsoft used undocumented APIs in its battle against Netscape, the then-leading browser that threatened the operating system because it was cross-platform and exposed APIs. Windows 95 contains undocumented APIs that were used by Internet Explorer (added to Windows 95 in 1996) and Microsoft Network (part of Windows 95). These APIs allow applications to manipulate icons, to drag and drop files, and to manipulate the dial-up "phonebook" (the numbers available to make an Internet connection over a telephone line). Because these APIs were unannounced and undocumented, Netscape always was a version behind Internet Explorer in implementing these features. Because PerfectOffice

---

19-20.

237. Bates Nos. NOV00440032-33, NOV00686853.

138

relied on Navigator for its integration with the Internet, this act caused PerfectOffice to be disadvantaged in comparison to Microsoft Office.

Help. Microsoft Windows Help provides another example of using proprietary software to interfere with competition on the merits. Because Microsoft Help uses proprietary HTML formats, users can not access Help using any browser other than Internet Explorer. Thus, no matter how badly a user wants to avoid having IE on a PC, IE must be present to access Microsoft's Help features, including security downloads. Forcing users to deploy IE to access Help is technically unnecessary. There is no technical benefit from using formats other browsers cannot read. Microsoft documents indicate Bill Gates wanted Windows Help functionality to depend on Microsoft proprietary extensions to force the use of IE instead of Netscape.[238] Microsoft successfully persuaded the Courts during trial and remedies that Windows required IE, and therefore Microsoft should be allowed to override a users preferences for an alternative browser when Windows Help was invoked. The dependence of Windows Help on IE is gratuitous, which implies that making the Help formats proprietary was a costly act for which the only benefits were derived from anticompetitive effects.

Server Protocols. Microsoft also used intentional incompatibilities and incomplete disclosure to prevent network computers and server-based applications in a thin client environment from supplanting Microsoft desktop operating systems. Microsoft's actions with regard to server protocols parallel its actions with respect to MAPI: withholding software that enables communication between the desktop and the server.

In the relief phase of *U. S. v. Microsoft,* Judge Kollar-Kotelly concluded that server operating

---

238. "Another place for integration is to eliminate today's Help and replace it with the format our browser accepts including exploiting our unique extensions so there is another reason to use our browser." Resend: The Internet Tidal Wave, 02 June 1995, Bates Nos. MSPCA01083170-01083179 at 01083175.

139

systems can operate in a similar fashion to middleware.[239] Microsoft recognized that communications

protocols between servers and clients could function as APIs, and to prevent this it created proprietary

protocols for communications between its desktop operating systems and its server operating systems.

These protocols were then withheld from others. The purpose was that "there MUST be additional value

created when a Windows machine touches another Windows machine. NOT doing this is akin to giving

away the win32 APIs."[240] In 1993, Microsoft explicitly planned to use this strategy to help win the server

market over Novell: "How will we compete with Novell [sub-bullet] long term strategy will be to

upgrade storage functions of the client, and offer better client service from an MS server"[241]

These secret protocols reduced the functionality of non-Microsoft server operating systems when

operating in conjunction with Windows. Because Windows was on almost all desktops, the secret

protocols enabled Microsoft to obtain a higher share of server operating systems sales than was justified

on the basis of the merits of their software. Of course, Microsoft server operating systems do not threaten

the Microsoft desktop, so that by limiting the penetration of competing serve operating systems,

Microsoft assured that no network computer system managed by another server product would gain a

sufficiently large installed base to become an attractive alternative set of APIs from the perspective of

applications ISVs.

Source Code

Source code is the actual programming in a software product, annotated internally by programmer

---

239. 224 F. Supp. 2d 76, 172-3 (D.D.C. 2002).

240. Bates Nos. MSCCRN0000001044781-84.

241. The same document also states that Microsoft planned to "use client side functions to differentiate"

to "ensure NT wins on server." December 2, 1993, "Systems Release Plan Summary," Bates Nos.

MS5011461-470 at 466 and 464.

comments. Access to source code is extremely valuable as a means of learning how a program and the APIs it exposes actually work. Microsoft licenses access to source code to universities, large corporate customers,[242] and national governments through its Government Security Program. Agreements have been reached with China, NATO, Russia and the United Kingdom.[243] Access to source code enables these entities to develop efficient customized software.

Microsoft does not grant ISVs access to source code. Microsoft was fully aware that its failure to disclose source code and otherwise to be more open about its operating system software was a liability in terms of ISVs. According to Paul Maritz, "There are ultimately only two things that can (and are) legitimately used to label us as being more 'closed' or 'proprietary' than UNIX – the fact that we do not put source code in the price list (at reasonable price with DW rights) and the fact that we do not conform to standards set by standards bodies..."[244] Or, as Gates testified: "There might be a very special circumstance where you need to understand something more than the documentation, and you could go about solving that by asking the question or looking directly at the source code."[245] For ISVs that compete with Microsoft, these solutions generally are not available.

One Microsoft document explains exactly how failure to provide access to source code damages

242. "New Software Assurance Membership Benefits," October 1, 2001, accessed on January 10, 2002, http://www,microsoft.com/LICENSING/programs/sa/samembers.asp. See also Meta Group, et al., "Commentary: Microsoft co-opts open source approach," March 8, 2001, accessed on April 10, 2003, CNET Nes.com.

243. Ken Gao, "China to View Windows Code," February 28, 2003, accessed on April 10, 2003, at http://news.com.com/2102-1007-990526.html.

244. Bates Nos. X000000194112-3, December 16, 1989. The document pertains to how Microsoft can appear more open than IBM.

245. Deposition of William Gates, February 27, 2002, p. 201.

ISVs. "Windows is poorly documented... Any ISV that wants to write a great Windows app ends up looking at the source code (like our Apps group), unassembling the DLLs, or writing experimental code to divine the actual behavior of the system... An ISV that unassembles Windows to figure out its behavior is effectively looking at source code, but without the benefits of source comments. This approach is more work for the ISV... An ISV that writes test apps to divine Windows behavior is really on thin ice. Either the ISV spends a lot of effort writing test code to be certain Windows is fully understood, or the ISV may end up making assumptions which are not correct. Since the former approach is a great deal of work, and the ISV is never sure when to stop ... most ISVs will end up in the latter situation."[246] In addition, of course, the time required to undertake this work inevitably causes delays in the release of competing applications software, thereby robbing it of customers who want to commit to a new platform when it is released and giving an advantage to the corresponding Microsoft product.

Microsoft applications programmers have had access to MS DOS/Windows source code that has not been given to competing ISVs. After emphatically agreeing that access to source code is an advantage for applications developers, Microsoft's Phillip Barrett stated that access to the source could "allow them [applications developers] to dedicate a person to become a Windows expert and to be able to advise their development teams on the best way to structure their applications to perform the best on Windows... Certainly time advantage and efficiency advantage can be gotten by understanding the internals of Windows."[247] For example, a Microsoft applications programmer was given access to an undocumented file format, WinHelp/HLP/MVB, with the explanation that "in the spirit of helping out another MS group, I won't stop Nigel from accessing the source code..." even though "you're asking to have information that we have explicitly refused to Viewer users outside Microsoft."[248]

---

246. Ben Slivka, November 26, 1990, X575839.

247. Deposition of Phillip Barrett, May 17, 2002, pp. 133-4.

248. Bates Nos. MS0000005031898-900.

Another group sought and received access to common dialog source code. In response to the observation that "Apps is not suppose [sic] to look at Windows source since external ISVs don't get the opportunity," an apps developer responds: "This is pure and utter BULLSHIT! As Bill Gates said at the latest Apps Division meeting, the 'Chinese Wall' is a figment of the media. Systems and Apps are supposed to work together Apps should be able to look at any Windows source. As a practical matter, we do, whether you like it or not."[249]

The group responsible for Excel also was given access to source code that was not available to other spreadsheet developers.[250] As one Microsoft executive put it, "the biggest advantage our apps group has is access to the operating systems source. as long as this continues, the issue [of unequal treatment of ISVs] will never go away. in fact, jimall [Allchin] has long been assuming that the apps group did not have source access. he has been telling isv's this, too. when I told him yesterday that this was not the case, he had that 'oh shit' look on his face."[251]

The only explanation Microsoft has offered for this behavior is that it protects Microsoft's intellectual property. This argument is unpersuasive for two reasons. First, many large, successful information technology companies behave differently, including Intel and other microprocessor manufacturers and other operating system vendors. Second, Microsoft already protects its intellectual property in its license agreements.

All Microsoft software comes with an "end-user license agreement" (EULA) that asserts Microsoft's intellectual property rights and that grants the right to use the software only to a single licensee. Microsoft also publishes extensive public documentation about products that already have been released, which is accompanied by another EULA. This agreement states that only the licensee may use

---

249. July 1991, Bates No. MS0000005062505.

250. August 16, 1991, Bates No. MS0000005055416.

251. August 27, 1992, Bates No. MS0157627.

the software for the "purposes of designing, developing, testing, and demonstrating" ISV software, that the ISV "may not reverse engineer, decompile, or disassemble the software, except and only to the extent that such activity is expressly permitted by applicable law notwithstanding this limitation," and that redistributed code can only operate in "conjunction with Microsoft Windows platforms."[252] Finally, separate developer agreements enable an ISV to gain access to Microsoft documentation and support for beta versions of its operating system.

ISVs are willing to agree to the restrictions in these agreements because they believe that the software and other information that they obtain will enable them to write attractive, state-of-the-art applications. Withholding important information about Microsoft platform software in the information that is made available to Microsoft's applications software developers, despite the safeguards of these restrictions, is a form of anticompetitive discrimination that leverages Microsoft's monopoly power in platforms into applications and middleware markets as well as preserves Microsoft's market power in operating systems.

Inaccurate and Misleading Product Information

For core applications products such as spreadsheets and word processors, a great deal of ISV effort is oriented toward releasing new applications roughly simultaneously with new platforms. Thus, ISVs consent to EULAs and developer agreements with operating system vendors for the purpose of gaining access to accurate information about the version of an operating system that will be released years in the future. If ISVs are given incorrect information about the nature of future versions – their technical capabilities and related APIs – the software that they create in reliance on the OSV's representations will not work, in which case the ISV must either abandon its application or face delay and unplanned

---

252. See http://msdn.microsoft.com/library/en-us/dnnetdep/html/addendeula.asp?frame=true and http://msdn.microsoft.com/subscriptions/downloads/EULA_MSDN_Jan03.pdf, accessed April 10, 2003.

144

expenditures to make its application compatible with the new operating system.

Microsoft's strategy of releasing inaccurate information about its own products and the performance of its competitors products began long before the release of Windows 95. This background behavior is important, not just because it led to Microsoft's rise to dominance in applications but also because it established in the minds of customers a concern that competing applications, not matter how good, never would be as fully capable of implementing all of the functionality made possible by Microsoft's operating system and middleware. By 1995, Microsoft had developed a track record of misleading ISVs and customers about its own products, and then blaming competitors for subsequent functionality problems arising from incompatibilities and unrealized expectations that Microsoft created.

The OS/2 Headfake

A key event in Microsoft's rise to dominance in spreadsheets and word processors arose from the difference between its private plans and public statements regarding the future of OS/2 and MS DOS/Windows between 1988 and 1991. Microsoft secretly planned to develop new versions of MS DOS and Windows that would be released before OS/2 2.0 but would implement the features that otherwise would have made OS/2 successful in the market, thereby preserving Microsoft's operating system monopoly. This episode is important because it illustrates the link between dominance in the operating system and control of applications markets. In particular, the OS/2 headfake was essential to Microsoft becoming the leading vendor of office productivity software, supplanting WordPerfect in word processors and Lotus 1-2-3 in spreadsheets. Here I briefly summarize the aspects of this event that are especially relevant to the applications markets.

Beginning in 1987, Microsoft's official position was that OS/2 would replace DOS as the primary x86 PC operating system and that Microsoft, in its partnership with IBM, would facilitate this transition by making OS/2 compatible with MS DOS so that MS DOS applications easily could be ported to the OS/2 environment. Microsoft continued its collaboration with ISVs and steadfastly maintained that ISVs

145

should write the next release of their applications for OS/2. In 1988, Gates wrote: "I believe that OS/2 is destined to be the most important operating system, and possibly program, of all time. As the successor to DOS, which has over 10,000,000 systems in use, it creates incredible opportunities for everyone involved with PCs."[253] Meanwhile Microsoft secretly devoted most of its applications development personnel to MS DOS and the DOS+ features for the Windows GUI. The effect of this behavior was to cause ISVs to develop their applications for the wrong operating system, causing Microsoft applications to be the only products that worked on state-of-the-art x86 PC platforms for over two years.

In December 1988 an internal document, discussing an approach to solve the 640k limit to the size of an applications program, assessed the implications of breaking the barrier: "ALL developers, due to competitive pressure, will quickly upgrade their present apps. They'll also throw in lots of features that lack of memory before forced them to omit. I'm not saying that they will drop OS/2 development, rather I'm saying that they will rearrange their priorities and come out with kick ass apps for a DOS extender before the same app appears under OS/2. (As simple anecdotal evidence I offer the fact that the OMEGA [MS applications] group changed their long range goals after they found out that Windows was going to be a real product. I also chatted recently with someone who's consulting to a half dozen companies in the bay area doing PM [Presentation Manager for OS/2] apps, he states the reason they're not doing Windows apps is because they expect Windows to disappear in 1989. Right.) And then we have to convince users to switch from these awesome apps to OS/2. Right."[254]

During the internal discussion about the future of Windows and OS/2, Microsoft knew that ISVs had been focusing on developing for OS/2. "Right now we are blessed with an incredible investment by ISVs in OS/2 – unfortunately the fruit of this investment wont [sic] be felt until mid '90 (although we can

---

253. Bill Gates, "Forward," in Ed Iacobucci, *OS/2 Programmer's Guide*, McGraw Hill, 1988.

254. Bates No. X000000566002.

146

start merchandising it now...).”[255]   And Microsoft wanted this to persist regardless of the future of

DOS+/Windows and OS/2: “We want ISVs to think that a move away from OS/2 is a neo-luddite move

away from 32-bits, paging and the obvious future.”[256]

On May 18, 1989, Gates directed the company to release 32-bit protected mode operating systems

as part of Windows 3.0, thereby permitting applications to exceed the 640k memory limit and to do multi-

tasking.[257] He offered many reasons, but two stand out: “the DOS gold mine is shrinking and our costs

are soaring – primarily due to low prices, IBM share and DR-DOS. Making Windows a strong product

benefits our gold mine and protects it...   Strength in Applications. I feel a strong applications business is

extremely helpful to our systems strength. Imagine if Microsoft applications were three times stronger on

the PC. If we take one category – spreadsheet, word processing or data base – we will achieve that. I

think we have a strong chance of doing this during the next two years.”[258]

The plan for Windows 3.0 presented two problems: it was not consistent with the partnership

plan with IBM, and it left ISVs busily writing applications for the wrong operating system. On August 4,

1989, at a meeting between Lotus and IBM executives, Lotus expressed concern about the plan to release

Windows 3.0. Lotus had spent $45 million on developing applications for OS/2, and reported that porting

a minimal version to DOS+/GUI would take 18-24 months and cost at least $7 million.

Microsoft fully realized that by misleading ISVs into developing exclusively for OS/2, they had

gained a huge first-in advantage in applications. As Microsoft expected, Windows 3.0 was a success.

Win 3.0 was seen as “the primary element in recasting the corporate computing environment... [T]he

---

255. April 20, 1989, Bates No. X000000194252.

256. This statement occurs one page before Nathan Myrhvold says that with a DOS+/Windows bundle,

users have less reason to buy OS/2. Bates No. X000000159526.

257. Bates Nos. X000000159502-7.

258. Bates Nos. X000000159502-3.

question... is not whether an organization should move to Windows 3.0, but how. 'It's an inevitability,' adds [consultant Brian] Livingston."[259] Microsoft sought to use this success to gain market share in key applications: "Within a year our competitors will have their Win apps done and the rules will change. FY91 offers the only chance we'll ever have to take market share from Lotus and WordPerfect quickly and cheaply."[260] A week before Windows 3.0 was released, Lotus announced that it would port its OS/2 version of 1-2-3 to Windows, but that the product would not be ready until September 1991, which is consistent with the statements Lotus had made to IBM a year earlier.[261]

Like Lotus, WordPerfect had believed Microsoft's continued expressions of commitment to OS/2 and had focused its resources on creating its next version for that environment. Microsoft's strategy to take market share from WordPerfect was based on the expectation that WordPerfect would focus on OS/2, and that as a result Word would have a significant period in which it was the only word processor to run on Windows. "The overall objective for the next 6-9 months is to gain market share. Acquiring market share before WordPerfect ships their Windows product will be much easier (cheaper) than afterwards."[262] WordPerfect for Windows 3 would not be released until late 1991, and then in a weaker version than its OS/2 counterpart because porting to Windows was not yet complete.

Meanwhile, Microsoft's Word development team was shifted almost entirely to developing Word for Windows. Commenting on the problems with producing Word for OS/2 Presentation Manager (PM), the project leader said: "This project suffered from resource problems from the very start. It wasn't until WinWord 1.0 shipped that we started to get a real development team, but even then the team was

---

259. "The Manager's Perspective," November 12, 1990, *Information Week*, p. 36.

260. May 10, 1990, Bates No. X000000574313.

261. Patricia Keefe, "Windows Pulls Lotus into Corner; Multiple 1-2-3 Choices Could Confuse Market," *Computerworld*, May 14, 1990.

262. Bates No. X000000581324, December 25, 1989.

constantly in flux as people were pulled onto higher priority projects... The biggest hit to our team was WinWord 1.1. When the decision was done to do this update, all but two of our testers were pulled off PM Word to work on it... [T]he fact that they pulled the development lead off to work on another project says something about the priority placed on PM Word."[263]   Thus, Microsoft was focusing its resources on developing applications for Windows 3.0 while telling its competitors to write for OS/2. By keeping Windows 3.0 secret and encouraging its main applications competitors to write for OS/2, Microsoft obtained approximately an 18 month head start in applications written for the DOS+/386 platform.

Microsoft finally redirected ISVs to write for Windows in the summer of 1990. The public position then was that OS/2 and Windows would coexist and that Windows 3 would be compatible with Presentation Manager, the GUI for OS/2. In January 1991, the *Wall Street Journal* reported that Microsoft had abandoned OS/2.[264] Microsoft issued a press release denying the report and sent letters to ISVs reaffirming their commitment to OS/2.[265] Microsoft also reaffirmed its commitment to OS/2 in a letter to WordPerfect on January 28, 1991.[266] In February 1991, Ballmer again denied that OS/2 is "dropped, scrapped or dead," but finally stated publicly that "we view it as a high-end platform" that is aimed at about five percent of the market.[267] This last statement was the nail in the coffin for Lotus and WordPerfect: "it's bad news for IBM and its supporters... Those supporters include software houses such as Lotus Development Corporation and WordPerfect: they spent hundreds of millions of dollars

---

263. Microsoft Word for OS/2 Development Postmortem, January 2, 1991, Bates No. X000000584377.

264. Zachary Pascal, "Microsoft Corp. to Scrap OS/2, Refine Windows," *Wall Street Journal,* January 28, 1991.

265. Zachary Pascal, "Microsoft Confirms Plans for Windows, but Says OS/2 Will Stay," *Wall Street Journal*, January 29, 1991.

266. On http://kb.corel.com/scripts/texts.exe/kb/kb/, article ID 627748.

267. *The Guardian*, February 7, 1991.

developing OS/2 programs only to find there were hardly any customers. Worse, with encouragement from IBM and Microsoft, they ignored Windows. Now they find themselves up a blind alley while Microsoft is 'stealing' their customers."[268]

Microsoft had succeeded in the business strategy it had perceived no later than August 1988 and to which it had secretly committed no later than May 1989: to use the tie of DOS+ to the Windows GUI to gain a first-in advantage in applications for the new x86 platforms, and then to continue to develop additional features for Windows that had been promised to both IBM and ISVs for OS/2. Thus, Microsoft's secrecy and dishonesty enabled it to obtain an important advantage in both operating systems and the applications that it sought to dominate.

This advantage caused Microsoft's competitors to lose substantial market share to Microsoft in 1990 and 1991, as shown in Table 3. According to an article in August 1991, "Sales of Windows applications more than tripled in the second quarter... [while] for the first time ever sales of DOS applications software... showed a slight decline."[269] In spreadsheets and word processors, all of this sales growth went to Microsoft, for no other company released Windows-compatible products until late 1991. As an executive from Caltex Services put it, "Although 1-2-3 is the company-wide standard, we're moving to Excel almost by default."[270] Likewise, according to a United Technologies analyst, "'We have

---

268. Jack Schofield, "Computer: Windows Is Curtains for OS/2 – The Victory of Microsoft's Evolutionary Windows 3 over OS/2 to Become the Next PC Software Standard," *The Guardian*, February 7, 1991. Schofield concluded that ISVs did not have a fair complaint about being misled over OS/2, but gave as his reason that MS also had developed a host of applications for OS/2, too. But Schofield apparently was not aware of the paucity of resources allocated to develop Word for OS/2.

269. "Microsoft Windows Spurs 15% Rise in Software Sales," *Wall Street Journal*, August 23, 1991, Bates No. X000000504458.

270. Richard Cockeroft, supervisor of system integration at Caltex, as quoted in *Lotus* v. 7, no. 6, p. 43.

a lot of divisions that use 1-2-3 around the world...' Some Windows users are willing to wait, she says, but others are telling their office-systems managers that they want to switch to a true Windows spreadsheet now."[271]

Printing Headfake

In the development of Windows 95, Microsoft pursued a more narrowly focused tactic of misleading Novell about the functionality of Windows 95. Microsoft published documentation for APIs to control printing that it never developed. WordPerfect had created a data format called Qcodes for Windows 3.1 that made printing easier and faster.[272] For Windows 95, Novell sought to use this approach to create improved, integrated network printing for all of its applications.[273] Microsoft promised that Qcodes could be used on Windows 95 and that the APIs that Novell was using to implement its printing plan would work – indeed, were near completion.   Then less than two months before the release of Windows 95, Microsoft informed Novell that these APIs would not be ready by the release of Windows 95.[274] Indeed, these APIs never were made functional. As a result, Novell was forced to implement an inferior process for managing printing, causing printing from Novell's applications that ran on Windows 95 to be degraded.

Applications FUD. As had been the case with operating systems, Microsoft's public position was to blame their competitors for the problems of competing applications that arose from bugs in MS DOS/Windows, from undocumented APIs, and from the absence of Windows-compatible products as a result of the OS/2 headfake. Regarding Lotus 1-2-3, an "Excel Brainstorm" in October 1991 noted that

271. Virginia Morton, as quoted in *Lotus* v. 7, no 6, p. 43.

272. Bates Nos. NOV00431599-624.

273. Bates Nos. NOV-B01433967-987.

274. Bates Nos. NOV-00-516222-225.

"123/W 1A is still buggy. We need to capitalize on this to drive home the perception that Louts [sic] is really incompetent as a Windows developer... Position them as the high-risk choice... Raise the comfort level of choosing Excel as the natural upgrade from Lotus... Use Garygi consultants (Miller and Zeeman) to develop a political style PR campaign that undermines Lotus."[275] Soon Lotus personnel were discovering the effects of this strategy. "We have had four customers in the last few days tell us that they attended Microsoft Windows 3.1 seminars and were told at the seminars (to the effect) that Lotus apps were not well written and that Lotus needed to get their act together to run on Windows 3.1."[276]

Microsoft also adopted a strategy to emphasize the inability of WordPerfect to take advantage of Windows 3.0.   Microsoft decided to turn the delay in creating WordPerfect for Windows into a marketing tool: "this is a BIG problem because it makes training and support costs higher, and prevents you from being able to do important things – like tie your word processor and your e-mail together, or to automate your purchasing system, etc."[277] Of course, WordPerfect could do these things on the version it had written for OS/2, but not on Windows.   Four months after introducing Windows 3, Microsoft adopted a plan to attack WordPerfect as a dinosaur: "Reposition WordPerfect as the 'past leader of character-based word processing,' and unprepared for the new GUI word processing era... Since we will have been shipping for over a year before WordPerfect for Windows ships, we have an opportunity to be perceived as the Windows word processing standard."[278]

Another inaccurate attack on competitors arose from changes in characters and fonts between Windows 3.0 and 3.1. These changes caused problems for many applications, including Microsoft

---

275. Hank Vigil, Lotus and Windows and OS/2 Conference Trip Report, August 26, 1991, MS00005043763-4.

276. April 21, 1992, Bates No. IBM7510252241.

277. July 24, 1990, Bates No. X000000565885.

278. Beat WordPerfect Marketing Plan, September 29, 1990, Bates Nos. X000000565965, 7.

Word.[279] Lotus reported problems in running AmiPro on Windows 3.1, and Microsoft created a fix.[280] Nevertheless, publicly Microsoft blamed Lotus: "I have also heard twice in the last week that Microsoft Support personnel are telling customers that AmiPro is not Windows 3.1 compatible and if they had WFW [Word for Windows], they would not have any problems."[281]

The combination of the OS/2 headfake and subsequent FUD worked. The leading independent source of data and analysis pertaining to the computer industry, IDC, concluded: "Although the word processing market shifted from being dominated (in terms of unit shipments) primarily by DOS in 1990 to being dominated heavily by Windows in 1991, the spreadsheet market was slower to switch platforms. However, the turn from DOS to Windows based products occurred in full force for the spreadsheet market in 1992."[282] A survey of people who procured applications for organizations found that buyers of Microsoft products checked the reason "Worked better on Windows than other products" in statistically significant higher proportions than those buying competitors' applications, especially among buyers who switched applications vendors (as compared with first-time purchasers).[283]

In the second half of 1993, after most organizations had committed to Windows and Microsoft Windows applications, competitors introduced a full array of products that were at least as good as Microsoft's applications: "The core horizontal applications – word processing, spreadsheets, presentation graphics, PC databases, and query tools – have reached parity, with little noticeable difference between applications from one leading vendor to another, including Aldus, Borland International, Lotus,

---

279. Bates Nos. X000000207505-6 (August 6, 1991) and MSPCA01113893 (February 27, 1992).

280. May 8, 1992, Bates No. MS000000130212.

281. April 21, 1992, Bates No. IBM7510252241.

282. "PC Software: 1992 Spreadsheet Market: DOS, Windows. OS/2 and Macintosh," May 1993, Bates No. MSPCA02464799.

283. The Brand Decision, April 1995, Bates No. FLAG 000054627-39.

Microsoft, Software Publishing, and WordPerfect."[284] "Microsoft's competitors released credible Windows products for the first time between the 1993 and 1994 AAU studies... Microsoft's Windows applications are no longer the decisive winners in their categories."[285]

Microsoft thought Lotus 1-2-3 was an excellent product, having "Best Windows interface,... Best 3-D spreadsheet,... Best workgroup spreadsheet."[286] In internal tests of spreadsheets to set performance goals for Excel in 1995, Microsoft gave the nod to both 1-2-3 and QuattroPro, finding that Excel was "behind either 1-2-3 or QPro in most tests... While Excel did not finish third in any of these tests, neither did it win any of the four... There are single sheet models... that we recalc orders of magnitude slower than Lotus... 123 Rel 4 and QPW average [multisheet] recalc in under I second. Excel averages 2 seconds..."[287] Microsoft also reached a similar assessment regarding WordPerfect: "The current suite of applications in PerfectOffice are world class."[288] Thus, Microsoft's internal assessments of its competitors contradicted their public statements.

Despite its favorable view of PerfectOffice, Microsoft attacked it publicly in 1995, just before Windows 95 was released. Just before the release of Windows 95 in August, Microsoft released an incorrect and out-of-date list of bugs in PerfectOffice.[289]

Logo.   By the time Windows 95 was released, Microsoft had spent six years undermining the

---

284. PC Strategic Analysis Report, November 15, 1993, Bates Nos. FLAG000017923-4.

285. Analysis of the 19940000 AAU "\'Best' Results, July 21, 1994, Bates No. FLAG000031550.

286. Defusing the Lotus Launch, undated (probably late 1993), Bates No. FLAG000032665.

287. Performance Improvement Areas for Excel 19950000, undated but probably late 1994, Bates No. FLAG000078650.

288. Office Product Unit 19950000 Three Year Plan (version 47), March 1995, Bates No. MSPCA01568661.

289. Bates No. NOV00516410.

performance of its most important competitors in applications and middleware and then blaming the

competitors for functional degradations that it had created, as it had done to PerfectOffice just prior to the

release of Windows 95. Thus, a major problem for Novell and other competitors was to convince

potential customers that their programs would run on Windows 95. Microsoft developed the Windows 95

logo program to assist developers gain customer confidence. This program allowed a vendor to display

the Windows logo and the phrase "Designed for Microsoft Windows 95" on packaging and advertising

for its product if the product actually exploited the new capabilities made possible by Windows 95.[290]

Microsoft's standards for qualifying a product for the logo were not just that the program run

successfully using the enhanced capabilities of the new Wintel platform, but that the program also use

two proprietary Microsoft standards: MAPI (for messaging) and OLE 2.0 (for files). In addition,

Microsoft insisted that the product also operate on Windows NT and "degrade gracefully" when

encountering a failure in NT.[291] The latter requirement was a change from prior policy, which had a

separate process for qualifying for the Windows NT logo. This dual requirement was puzzling, since at

the time Windows NT had minuscule sales and was being marketed primarily as an operating system for

servers and work-stations, not PCs. Windows NT also was very different from Windows 95, so that

software could not easily be ported from one to the other.

Microsoft also adopted an exemption program, whereby a product could be exempt from running

on NT if the source of its problem were a "significantly different .. architecture" between NT and

Windows 95.[292] In the case of Novell, PerfectOffice could be made to run on NT only if parts of it were

rewritten, due to the differences in the design of the two operating systems.[293] Thus, PerfectOffice

---

290. Bates No. PX2141.

291. Bates Nos. MS-PCA 1474638-647 and NOV00709867-884.

292. Bates Nos. MSC 00700613-618 at 613.

293. Bates Nos. NOV 00019380-382.

seemingly qualified for an exemption because its incompatibilities with NT were due to the differences in its design from Windows 95, but Microsoft refused to grant it, even though PerfectOffice satisfied all of the other requirements for certification. The failure to be certified was an inaccurate signal to customers that PerfectOffice would not exploit the capabilities of the new Wintel platform, which gave false credibility to Microsoft's erroneous and roughly simultaneous FUD attack on the product.

Effects on Competition

Microsoft anticompetitive strategies have harmed customers of PC systems. Microsoft's anticompetitive conduct with respect to the office productivity applications that were offered by Novell were part of a broad pattern of conduct against other competitors in office productivity software, desktop operating systems, network operating systems, browsers, and other software. This conduct enabled Microsoft to extend and maintain its monopoly power in the market for x86-compatible PC operating systems. As a result, customers face less choice, higher prices, and less innovation in both operating systems and other software.

At the time that each major innovation in the Wintel platform has occurred, Microsoft has given itself an advantage in middleware and applications programs by undertaking the anticompetitive acts described above. Rapid technological advances in microprocessors have allowed personal computers to become much more powerful, thereby making possible advances in the capabilities of applications. When a major new version of Microsoft's operating system is released, applications that take advantage of the increased functionality of the Wintel platform are in great demand. If competitors do not have applications available to run on the new platform, Microsoft has a good opportunity to capture their customers. Figure 2 and Figure 3 show the monthly competitive upgrades – conversions from a competing product – in the number of licenses sold and total revenues for Microsoft's applications products. In August 1995, Microsoft set a new record for conversions.
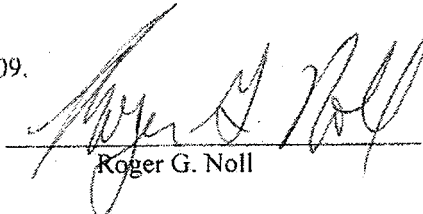
By disadvantaging ISVs who have proven to be extremely capable of producing high quality

156

software that competes with Microsoft's products, Microsoft has caused customers to face less choice in the products that are availably to them. Moreover, by demonstrating its ability to undermine the success of competitors, Microsoft has discouraged innovative firms from even attempting to compete with it. "Most harmful of all is the message that Microsoft's actions have conveyed to every enterprise with the potential to innovate in the computer industry."[294]

Microsoft's impact on Novell after the release of Windows 95 illustrates the power of its anticompetitive acts. Microsoft's share of sales in word processors rose from 65 to 90 percent between 1994 and 1996, succeeding in permanently driving WordPerfect's market share into single digits. Novell's sales of GroupWise plummeted so badly that in the third quarter of 1997 the company had to revise the accounting methods it used to anticipate returns of unsold products.[295]

Microsoft used its market power in operating systems as a powerful weapon to gain market power in applications and middleware, notably browsers, spreadsheets, word processors and groupware. Microsoft followed basically the same strategies in these markets – exclusionary contracts and agreements, technical actions that disadvantaged competing applications and middleware, secrecy about operating system and middleware functionality, and false statements about plans and capabilities for its operating system and GUI. Microsoft used the substantial delay that its competitors suffered in creating products for Windows 3.x environment to become dominant in the most important Windows applications, and then solidified these gains by undermining its competitors again with the release of Windows 95.

Executed at Palo Alto, California, on May 1, 2009.

_____
Roger G. Noll

---

294. "Findings of Fact," paragraph 412.

295. Form 10-Q, Novell Inc., September 15, 1997.

157