
Addressing the Microsoft Challenge — Restoring Competition To the Software Industry



Software & Information
Industry Association

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About The SIIA Report

The Software and Information Industry Association (SIIA) is the world's largest trade group representing those companies that produce software (“code”) and information (“content”). SIIA was formed through a merger between the thirty-year old Information Industry Association (IIA) and the fifteen-year old Software Publishers Association (SPA). SPA has long been a leader in the debate over the proper role of government in encouraging innovation, investment and competition in the software and information technology marketplaces. Similarly, IIA long served as the primary voice for the development of sound public policies to foster the growth of a competitive market for the production and delivery of information products and services, especially in the digital age.

The new organization represents over 1,400 firms in the code and content industries. This report has gone through an extensive drafting, review and approval process. More than 75 individuals from dozens of large and small firms reviewed preliminary drafts of this document. These advisors provided comments to the SIIA staff or directly to SIIA's antitrust counsel, the Washington, D.C. and San Francisco law firm of Blumenfeld & Cohen—Technology Law Group.

SIIA maintains a rigorous process for reviewing and approving new public policy positions. Early drafts of this document were circulated under Non-Disclosure Agreements (NDAs) in December 1998. Comments received from preliminary reviewers helped sharpen the analysis, and several more drafts were prepared and circulated. A subset of the SIIA's Government Affairs Council (those that signed the NDA) met by telephone on February 10, 1999. A majority of those participating in the call voted by e-mail to forward the document to the Board with the following statement: “The remedies document provides a thoughtful analysis of the range of remedy options available to the Court, should liability be found.” On February 17th, the SIIA Board of Directors considered the document. Microsoft's Deputy General Counsel Brad Smith was invited to, and did, provide Microsoft's reaction to the document. The remedies document was approved for release by the Board through an e-mail vote on February 18, 1999.

Although this document has been approved by SIIA, it does not necessarily reflect the views or opinions of any individual SIIA member. The analysis, conclusions and recommendations expressed in the SIIA Report may therefore not be attributed to any specific company or companies.

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EXECUTIVE SUMMARY

The software industry is now at a crossroads. Software development has traditionally been viewed as a *laissez faire* market in which any sort of government intervention was considered inherently suspect and potentially harmful. With the emergence of effective dominance by Microsoft Corporation in a variety of different markets — most significantly personal computer (PC) operating systems (OS) and business suite applications — the software industry has been forced to reassess its traditional suspicion of governmental action. More importantly perhaps, with the trial of the landmark *United States v. Microsoft Corp.* antitrust case before United States District Judge Thomas Penfield Jackson, the software industry has increasingly been compelled to take sides in the ongoing dispute between Microsoft and its competitors.

The issues are not necessarily black-and-white. The Software and Information Industry Association (SIIA) believes it is more useful to engage in a reasoned, objective dialogue about the different forms of relief that the Court may impose should the government prevail in the *Microsoft* trial. The purpose of this SIIA Report is to guide judicial, executive and legislative decisionmakers in balancing the potential need for antitrust remedies with the possible losses in efficiency, interoperability and innovation if overbroad or inappropriate remedies are adopted.

There can be no mistake that Microsoft exerts tremendous economic and competitive influence in many software markets and throughout the entire software and PC industries. Some of this influence may be due to the company's apparent abilities to capitalize on marketplace trends and to

To be legitimate, any relief analysis must be based on a set of neutral principles that reflect the overriding economic and political values of the antitrust laws and that are completely unrelated to the characteristics of Microsoft as an antitrust defendant.

recognize changing user needs faster and better than its competitors. Yet, at the same time, Microsoft's very successes and growth have positioned it uniquely among all other software companies, as its dominance of key software markets permits Microsoft to use its economic power in ways that may circumscribe competition and harm consumers. SIIA applauds Microsoft's market successes, condemns anticompetitive conduct, and urges all software companies to vigilantly guard the free competitive markets upon which software innovation, consumer satisfaction and industry growth ultimately depend.

The SIIA Report does not prejudge the outcome of the *United States v. Microsoft* case and does not assess the evidence presented to date. Instead, the Report analyzes the pros and cons of different antitrust remedies should the government prevail in the liability phase of the trial. It is particularly appropriate for SIIA to undertake this analysis now, because the government case has concluded and the attention of the Court and the parties will shortly turn to consideration of

potential relief measures. SIIA believes that antitrust relief analysis should be based on a set of neutral principles. To be legitimate, such principles should reflect the overriding economic and political values of the antitrust laws and be completely unrelated to the characteristics of Microsoft as an antitrust defendant. Only in this way can the industry, and ultimately the public, be assured that the remedy adopted to solve the Microsoft challenge will stand the test of time and serve to restore the basic competitiveness of the software industry.

These principles, based in large part on the January 1998 “Competition Principles” approved by the Board of Directors of SPA, SIIA’s predecessor (attached as Appendix A), should include, at the very least, the following:

- Antitrust relief should be tailored to eliminate the business conduct adjudged by the Court to violate the antitrust laws and to prevent similar practices in related markets in the future.
- The remedy should not be punitive (*i.e.*, punishment for past conduct), but should be prospective in nature to ensure that the behavior found objectionable by the Court is prevented from continuing.
- Any remedy ordered by the Court should be largely self-executing, with a minimal amount of oversight by DOJ and/or the Court.
- If the Court determines that the Microsoft Windows OS family is essential to competition in the applications software market, the remedy should ensure that all competitors have reasonable, timely access to necessary OS specifications.
- If the Court determines that Microsoft has unlawfully extended its OS monopoly into other software markets, the remedy must clearly preclude future abuses.
- Antitrust relief should be adopted through a transparent process that minimizes dislocations to the equity markets and to Microsoft’s employees or shareholders.
- Remedies should not require any changes to fundamental intellectual property protections.

Applying these principles to a wide array of relief proposals reveals that DOJ and the Court are faced with a basic choice between “conduct” and “structural” remedies. Conduct remedies prescribe or proscribe certain business practices, while structural relief reorganizes the defendant, typically through divestiture, to eliminate or isolate its source of monopoly power. There are a variety of behavioral relief measures which could be applied to counteract the specific forms of conduct challenged by the government in *United States v. Microsoft*. These can be more or less effective depending on their scope and the enforcement vigilance of antitrust agencies. Yet to

make any conduct-oriented remedy effective, the list of “dos” and “don’ts” must necessarily be sufficiently broad and detailed so that the ability to use market power anticompetitively is removed.

The policy concern arising from fashioning effective conduct remedies is the risk of establishing intrusive, long-term oversight of Microsoft’s relationship with the software industry. Such an invasive governmental oversight role contradicts the traditional interaction between government and the information technology (IT) marketplace. The seeds of this risk can be seen in the 1982 *United States v. AT&T* antitrust consent decree. That remedy began as a pure divestiture but morphed, unwittingly, into a long-term charter for DOJ scrutiny and judicial oversight of every major transaction and marketing practice in telecommunications, including claims that the presiding judge was acting as a “regulatory czar.” This regime was finally supplanted by a massive congressional grant of new administrative agency authority to usurp the antitrust decree’s functions and impose even more intrusive regulations.

The common theme between the *AT&T* and *Microsoft* cases is that both deal with vertical integration in technology industries between a key monopoly product and related competitive markets. In fashioning remedies to control abuse of such monopoly power, the government and the

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courts must guard against transforming antitrust enforcement into a form of regulation that is institutionally inconsistent with the rapid pace of technical change in the software industry. SIIA does not conclude that conduct-oriented remedies for *United States v. Microsoft* should be dismissed out-of-hand, but cautions that in considering their potential effectiveness, close attention must be given to the strength, continuity and vigorousness of future enforcement. In this light, SIIA recommends that the Court seriously consider, either alone or in combination with key behavioral relief measures, structural-oriented remedies that effectively cure — once and for all — the competitive crisis plaguing the software industry.

The most effective approach is for the Court to adopt a remedy that creates a new relationship between the dominant OS provider and the rest of the industry, while eliminating the need for the government to remain as a watchdog of software business practices. In light of the neutral principles discussed in this Report, SIIA concludes that a structural reorganization of Microsoft can avoid the drawbacks associated with conduct-based, behavioral relief, while preventing future anticompetitive leveraging and creating a self-executing remedy that avoids unnecessary dislocations to Microsoft’s shareholders and the equity markets.

There are two different forms of divestiture relief available: (i) horizontal separation of Microsoft into separate companies for OS, applications, and Internet content (electronic commerce), and (ii) reorganization of Microsoft into multiple, competing vertically integrated entities. In addition, the mandatory disclosure of Windows source code as a form of “open source software” would directly transform Microsoft’s incentives and therefore deserves consideration as a structural remedy. The relative merits of each of these alternatives in terms of possible efficiency and interoperability losses are explored in detail in this Report. The choice between these three structural solutions, however, is ultimately an antitrust policy question with no clear answer, and on which SIIA takes no position. Either alone or combined with targeted conduct prescriptions, these relief alternatives deserve the most careful attention of the government and the Court.

I. OVERVIEW

This Report, prepared by the Software and Information Industry Association (SIIA), analyzes the range of relief options available to United States District Judge Thomas Penfield Jackson in the *United States v. Microsoft Corporation* antitrust trial, currently pending before the United States District Court for the District of Columbia in Washington, D.C.¹

SIIA, created by the recent merger of the Software Publishers Association (SPA) and the Information Industry Association (IIA), represents more than 1,400 companies in the software and content industries. The rationale for the formation of this new trade group is the accelerating convergence of content and software, a trend that is highly significant in consideration of Microsoft's business activities. Both of SIIA's predecessor organizations have long been leaders in the debate over the proper role of government, industry self-regulation and antitrust law in preserving and promoting the vibrant marketplace competition on which the software industry's accelerating growth has been based.

This Report is designed to guide judicial, executive and legislative decision-makers in balancing the potential need for antitrust remedies with the possible losses in efficiency, interoperability and innovation if overbroad or inappropriate remedies are adopted. SIIA's recommendations are largely based on application of the software industry's *Competition Principles* adopted by SPA's Board of Directors in January 1998 — a copy of which is included as Appendix A.

In this Report, SIIA does not prejudge the outcome of the *United States v. Microsoft* case. SIIA does NOT assume that Microsoft will or should be found liable for violating the United States antitrust laws. Rather, SIIA examines what governmental remedy should be adopted if the Court ultimately finds that Microsoft enjoys monopoly power and has used exclusionary conduct to protect and extend its OS or applications power, to the detriment of other software competitors in particular and consumers in general.² We believe that an objective, principled analysis of the benefits and drawbacks of different possible remedies is essential if the complex competitive issues in the *Microsoft* case are to be addressed in a balanced manner. Given the tremendous success of Microsoft in the software industry, SIIA and its members are confident that the American system of free market competition will — if preserved and bolstered by safeguards against exclusionary, anti-consumer practices — continue to produce innovation, efficiency and fair prices in this key industry.

A. NEUTRAL PRINCIPLES FOR ANTITRUST REMEDIES

A basic recommendation of this Report is that any antitrust relief adopted by the Court should be consistent with a number of fundamental principles. These principles, discussed in detail in Section III, ensure that relief decisions are made on a neutral, objective basis and will thus serve to maximize the economic, legal and political legitimacy of any Court-ordered remedy.

SIIA believes that these core principles should be applied to each proposed form of relief in the *Microsoft* antitrust case. If a remedy does not prevent unlawful conduct found by the Court from recurring, it clearly cannot function satisfactorily to remove the competitive constraints arising from Microsoft's market power.³ On the other hand, remedies must provide a workable mechanism for resolving future enforcement issues, without embroiling government and the software industry in intrusive, long-term regulation.

In particular, SIIA believes one of the key principles which must apply is that antitrust relief in the *Microsoft* case should not be punitive, but rather prospective in nature to open monopolized software markets to competition and to avoid recurrence of anticompetitive practices. At the same time, antitrust relief should avoid imposing unnecessary dislocations on equity markets, shareholders and Microsoft employees.

SIIA is convinced that whatever relief is adopted in the *United States v. Microsoft* case must, to the greatest extent possible, be self-executing. Ongoing, detailed governmental oversight of Microsoft is not a desirable outcome:

- First, such a government role could establish a precedent for federal regulation of the software industry, a development that threatens the basic efficiency and flexibility of an industry that is key to the information technology future of America and the world.
- Second, government is institutionally incapable of making accurate regulatory judgments and predictions in the rapidly changing information technology (IT) market. It is unlikely that oversight decisions, disputes and interpretations could be resolved rapidly or openly enough to satisfy the conflicting demands of legal due process, software product lifecycles, and the competitive needs of IT companies in timely curtailment of future anticompetitive practices.

In short, remedies that require extended, intrusive policing of Microsoft's business behavior should be approached with caution and suspicion unless government and the software industry are willing to undertake the time-consuming, burdensome process of monitoring and enforcing such behavioral rules in a rapidly changing marketplace.

B. CONDUCT VERSUS STRUCTURAL RELIEF

One of the most important questions facing the Court will be whether to require structural or conduct remedies. The difference between these approaches is that a structural solution seeks to alter the make-up of the marketplace by changing the number, size and relationships among competing firms.⁴ For instance, a remedy that forces the sale of overlapping assets, as in the Internet divestitures required as a condition of the recent MCI/WorldCom merger, may be necessary to retain competition in certain product or geographic markets by reducing or eliminating the market share of the combined entities.⁵ By the same token, a separation of the monopoly lo-

cal and competitive (long-distance, equipment, etc.) portions of the Bell System directly changed the incentive of the local companies to use their monopoly power to disadvantage other long-distance companies (which became their customers, not competitors).

In contrast, conduct or behavioral remedies restrict or restrain certain activities, but do not change the business incentives to engage in that conduct. Behavioral relief can span the spectrum from a simple prohibitory injunction (“Thou shalt not violate the law again”) to a detailed list of permissible and prohibited conduct that governs the firm’s business dealings with its affiliates, vendors, competitors and customers. For instance, an injunction against a tying arrangement, in which a firm requires the purchase of one product in order for customers to gain access to a second product, is often used to prevent repetition of unlawful practices that exclude non-integrated firms from the marketplace.

As shown in Table 1, there are a variety of potential conduct and structural remedies that can be developed to address, in whole or in part, the relief questions posed by *United States v. Microsoft*.

Table 1

Conduct Remedies	Structural Remedies
Disclosure of Windows OS Application Programming Interfaces (APIs)	Horizontal Divestiture Along Lines-of-Business (OS/Apps/Content)
Compulsory Third-Party Licensing of Windows APIs	Vertical Divestiture of Multiple, Vertically Integrated Spin-Offs
Compulsory Licensing of Windows Source Code	Establishment of Windows OS Family as “Open Source Software”
Auction of Windows Source Code	
ANSI Standardization of Windows	
Prohibition of Predatory Pricing	
Prohibition of Bundling OS and Applications/Content	
Prohibition of OEM Restrictions	
Non-Structural Corporate Separation	
Fair Contracting Obligations; Non-Discrimination	

An important consideration in selection of relief is the economic impact of different remedies on consumer welfare. A reorganization of Microsoft could jeopardize the efficiencies (economies of scale and scope), if any, arising from vertical integration in software production, and may jeopardize the compatibility or interoperability of OS and application software. Conversely, it does not appear that Microsoft's use of its power to disadvantage other potential PC platforms — e.g., Java, Internet browsers, server and networking software — as the government's evidence suggests, provides meaningful benefits for either competition or consumers. Therefore, SIIA believes that the *United States v. Microsoft* antitrust case should be used to eliminate antitrust violations arising from Microsoft's market power in Windows and successor OS software, but not as a justification for restrictions in other areas of Microsoft's businesses — for instance, cable television set-top boxes or palm-held computing OS software — where Microsoft does not appear, at least to date, to have leveraged its desktop or network OS market power to disadvantage rivals.

Serious analysis of remedies in *United States v. Microsoft* should include an assessment of the markedly different results in two of the most significant antitrust matters of the past 20 years — the IBM and AT&T antitrust cases. The former, dismissed voluntarily by the government more

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than a dozen years after being filed,⁶ has been cited by Microsoft as proof that its current OS market share, like IBM's dominance of the mainframe computer market, cannot survive a long-run paradigm shift in the rapidly-changing IT industry. The latter, known widely for the largest government-ordered corporate reorganization in history, is a textbook example of how antitrust remedies can spur competition, innovation and new entry — as well as how well-intentioned antitrust courts can be drawn into stifling over-regulation of antitrust defendants and their industries.

The *IBM* antitrust case counsels that a solution to “the Microsoft challenge” needs to be fashioned quickly, to avoid the risk that the antitrust policy debate in *United States v. Microsoft* might rival the decade-long delay that ultimately made the *IBM* case effectively moot. Whatever may occur in the long-run is less important to antitrust relief, and software competition, than the market and consumer harms that could flow from a failure to address current software industry competition issues in a timely manner.

In evaluating the comparative benefits and risks of structural relief, DOJ and the Court should examine past divestitures, striving to avoid repeating the pattern of cyclical antitrust, legislative and regulatory conflict that has characterized other significant antitrust restructurings. It is important to note that, like *United States v. Microsoft*, the landmark *United States v. AT&T* case

was also based on the need for competitive access to an essential monopoly input. On the other hand, the geographical division of the former Regional Bell Operating Companies (RBOCs) in the *AT&T* settlement is less relevant to analysis of the Microsoft case than the division adopted there between monopoly and competitive lines of business.

Despite massive initial public skepticism, the *AT&T* settlement was successful in accelerating substantial new competition in telecommunications services and equipment. The irony of *AT&T*, however, is that judicial concern with the future economic viability of the divested RBOCs produced a decree that was not a “clean” structural solution. Instead, it produced ongoing government intervention in the telecommunications marketplace. This is because the remedy required DOJ and the Court (under Section VIII.C of the *AT&T* decree) to review and approve expansion by the RBOCs into adjacent competitive markets, thus transforming these judicial and enforcement agencies into long-term regulators of the industry. The *AT&T* consent decree tempered its structural remedy with ongoing, conduct-based injunctions, resulting in years of problems. This model of intrusive, long-term judicial supervision of conduct-based rules should not be applied to the *Microsoft* case. Instead, the Court and the government should consider a structural remedy that, once and for all, eliminates Microsoft’s ability to use its power in the OS market to dominate complementary software and content markets. The *AT&T* experience — which embroiled the telecommunications industry in intensive judicial scrutiny for 14 years, ending only with congressional legislation in 1996⁷ — demonstrates the risks of behavioral remedies in terms of their potential for invasive government oversight as a means of antitrust relief.

SIIA believes there are important lessons to be drawn from the inadvertent transformation of the *AT&T* remedy. What began as a form of structural relief became an intrusive, “regulatory” decree, administered by DOJ and the Courts for more than a decade. One of the insights gained from *AT&T* is that a mixed antitrust remedy, with both conduct and structural components, can encourage intrusive government oversight into routine industry affairs. SIIA believes that a careful selection of remedies can avoid the *AT&T* result.

II. ADDRESSING MARKET POWER IN SOFTWARE AND CONTENT

Government authorities seeking to analyze competition in the software and content industries face a dilemma that requires a thoughtful balance between competing interests. On the one hand, a successful incumbent like Microsoft should not be penalized for competing on the merits in existing markets or inhibited from striving for similar success in new markets. On the other hand, no firm wielding monopoly power should be permitted to raise rivals’ costs of reaching consumers through the employment of strategies not reasonably necessary to its own development of products or services. Smaller rivals and new entrants should be equally free to develop their own products and services unimpeded by artificial barriers to market access. This means, for example, that established incumbents should not be permitted to exploit their market power in existing markets in ways that foreclose rivals’ opportunities to reach consumers through essential distribution channels.

There can be no mistake that Microsoft exerts tremendous economic and competitive influence throughout the entire software and PC industries and in many content markets. Much of this influence may be due to the company's well-documented ability to capitalize on marketplace trends and to meet changing user needs with new products faster and better than its competitors. Yet, Microsoft's very successes and growth have positioned it uniquely among all other software companies. Microsoft's dominance of key software markets permits Microsoft to use its economic power in ways that may circumscribe competition and harm consumers.

SIIA believes it is paramount to separate an examination of Microsoft's economic power — what antitrust economists term “market power”⁸ — from the quite different question of whether Microsoft has used anticompetitive tactics to protect its dominant positions in OS and business suite software. The law is well-settled that a monopoly firm may not, even where it has obtained that monopoly lawfully, use its power to maintain or extend its monopoly through exclusionary,

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predatory or anticompetitive means.⁹ Whether a monopoly is government-granted, as in many public utility markets, or the product of superior business skill, or the result of anticompetitive practices, a monopolist is not permitted to undermine the basic charter of free market competition. Accordingly, there is no need, either in this Report or in the *United States v. Microsoft* trial, to determine whether Microsoft's 95% share of operating system (OS) software, and the nearly comparable position enjoyed by the Microsoft Office application suite, is itself the product of unlawfully exclusionary behavior.

Microsoft has demonstrated an ability to identify fundamental trends in the software market and to develop products, including but not limited to its Windows OS product family, that have enjoyed unparalleled commercial success. It is rational business and economic behavior for any firm to maximize its profits through extension of market share. The issue facing the Court is not Bill Gates' personal wealth or business persona,¹⁰ but rather whether Microsoft's dominant market position may be used to restrict or exclude competition on the merits from non-integrated rivals who do not also control access to the Windows OS. In short, how Microsoft acquired its OS market power is not relevant; how the antitrust laws should be used, if at all, to constrain the use of Microsoft's market power in the future is the only relevant criterion for relief.

Much of the controversy surrounding Microsoft's market conduct is based on the assertion that it has employed certain practices, such as software bundling and predatory pricing, to extend its market power and achieve a competitive advantage in related software and content markets. Indeed, the evidence produced to date at trial suggests that the markets threatened by Microsoft's tactics are not limited to the Internet browser market, but also include networking software (*e.g.*, Windows NT and Windows 2000), business software suites, Internet content and Internet-based

electronic commerce. While the relief developed for the *United States v. Microsoft* antitrust case should be fashioned to eliminate any violations the Court finds after hearing all evidence from both sides, it must nonetheless be broad enough to effectively prevent the use of similar tactics in new markets in the future. Unless such forward-looking relief is adopted, the government, the software industry and consumers may be forced to endure a series of antitrust enforcement actions in any instance in which Microsoft employs questionable practices linked to its OS market power.

There is no dispute that the Windows OS family (Windows 3.1, Windows 95, Windows 98 and Windows NT/Windows 2000) enjoys a dominant market share.¹¹ This Report does not address Microsoft's trial contention that this market share is not indicative of monopoly power because of possible future entry by other OS manufacturers. Whether or not Microsoft's market power may, in the long-run, be diminished by new entry, it is important to craft short-run remedies that

The evidence produced to date at trial suggests that the markets threatened by Microsoft's tactics are not limited to the Internet browser market, but also include networking software, business software suites, and Internet content (i.e., electronic commerce).

prevent the exploitation of that power in ways that harm consumers and competition. Even if new technology or consumer preferences ultimately support new entrants into the PC operating system market, it appears likely the short-run in which Microsoft retains a dominant OS market share may in reality be quite long, as a result of barriers to entry in the OS marketplace. For a new OS to succeed in the market, the new platform will need the support of thousands of independent developers to write software applications. This "network effect" poses formidable obstacles to new providers of OS software. In the best of circumstances, the positive feedback loop of a new, popular platform with a critical mass of users attracting more software developers (and vice-versa) takes years to occur.

Finally, consideration of a *Microsoft* remedy must also recognize that Microsoft's economic power in the OS market is being leveraged to build its content business. This is a relatively new part of Microsoft's strategy, in comparison with its longstanding software applications business. For instance, Microsoft has launched two major ventures that compete in the newspaper classified-advertising and electronic commerce areas: CarPoint, for the sale of vehicles, and HomeAdvisor, for the sale of real estate. Other Microsoft content includes Slate, a subscription-based political site; Microsoft Investor, which includes advertiser-supported content; Expedia, a travel service that provides online reservations and ticketing; Hotmail, a free Web-based electronic mail service; the popular encyclopedia Encarta; and a white pages and yellow pages directory service. Microsoft is a joint venture partner with NBC in the MSNBC Web site, and its Sidewalk service provides local information, aimed primarily at leisure activities and shopping, in many major cities. Along with other Microsoft ventures, these services are being consolidated under a re-launched Internet portal site, Microsoft Network (MSN).

Content producers rely on various distribution channels to achieve success in their targeted markets. Many have entered into distribution alliances with Internet portals, such as Yahoo!, Netscape and America Online, in order to maintain and expand distribution channels. Microsoft's content sites, in contrast, have not been active in seeking similar distribution alliances. One likely reason is that Microsoft already has the ability to deliver its content to the vast majority of PCs through the MSN link on the Windows 95 and Windows 98 OS desktop. This is a further indication of the potential that Microsoft's dominance of the PC desktop may expand into newer markets, such as content, by exploitation of a distribution channel not available to Microsoft's competitors.

Evidence in the antitrust trial has focused primarily on software rather than content. The content and software industries are moving closer and closer together, however. For example, Netscape and Intuit, both of which provided government witnesses in the *Microsoft* trial, have expanded from software into fast-growing content sites on the Web. Traditional publishers are increasingly incorporating the latest software tools into their Web sites to enhance the use of information by customers. Therefore, if the Court and DOJ desire to address the long-term risks for extension of the Microsoft's Windows OS market power, an antitrust remedy must take into account not only the way that power has been used in the past against software rivals, but also how OS market power may be used in the future against content rivals.

III. PRINCIPLES OF ANTITRUST RELIEF

The January 1998 SPA *Competition Principles* focused on how the business conduct of “the owner of a dominant operating system” would need to be changed in order to “maximize innovation and competition for the benefit of consumers.” The Principles — especially the need for nondiscriminatory access to interface specifications, avoiding the extension of dominant OS software into other products and services, and prohibiting technical or other discrimination against competing software applications or Internet content — remain important to an analysis of antitrust relief in the *United States v. Microsoft* case.

A. WHY PRINCIPLES MATTER

Reliance on neutral principles for antitrust relief is important for a number of reasons, all of which will enhance the economic, legal and political legitimacy of any remedy ordered by the Court.

First, the software industry is the engine of America's tremendous economic growth in IT and related high-technology industries. The risk of over-regulation is simply too great to justify inadvertent or incidental impacts on software innovation and competition.

Second, and most importantly, since much governmental policy is made in the case-by-case forum of judicial decisions, the relief options available in *United States v. Microsoft* will have a profound impact on competition policy for the IT and software industries. The key to “getting it

right” the first time is to filter all proposals through a uniform set of competitively neutral principles. The relief choices in the *Microsoft* case are especially crucial given the accelerating technological convergence among different media.

Third, developing remedies based on principles will serve the long-term interests of consumers, and the software and content industries, by providing a common backdrop against which future competitive behavior can be measured. SIIA believes that the Court and the government should strive for a solution that stands the test of time. A “surgical strike” may be possible in warfare, but there is no antitrust equivalent.¹² Consequently, while it may be that no single remedy can satisfy every one of these principles, their application will illuminate the relative merits of different relief options within a coherent framework, transcending this case and this defendant.

B. PRINCIPLES FOR SOFTWARE ANTITRUST ENFORCEMENT

SIIA’s antitrust relief principles are designed to assist in formulating a remedy that provides effective protection against repetition of whatever unlawful conduct the Court may find Microsoft has engaged in. This should be accomplished without either restricting the relief solely to Microsoft’s past business practices (and thus creating an incentive for evasion) or eliminating the opportunity for Microsoft to compete aggressively on the merits.

1. TAILOR RELIEF TO ELIMINATE ANTITRUST VIOLATIONS

Antitrust relief should be fashioned to remedy the business practices and conduct determined by the Court to violate the antitrust laws and to prevent recurrence of these practices in related markets in the future. At the same time, the government should resist the temptation to attempt to resolve *all* possible problems that may affect future competition in the software industry. Given the rapid pace of technological change, it is impossible to predict with reasonable certainty how the software industry will evolve.

An effective antitrust remedy must necessarily preclude similar competitive abuses in other software and content markets after the current *Microsoft* litigation is ended. In light of the history of the government’s prior antitrust enforcement actions against Microsoft, including Microsoft’s controversial decision to comply with the 1995 consent decree by shipping a disabled version of the Windows 95 OS,¹³ it remains incumbent to craft safeguards that are broad enough to prevent repetition of anticompetitive conduct through creative, or disingenuous, interpretation of the relief ordered. Although in some respects the DOJ case to date has been relatively narrow, the need to fashion a remedy that reduces the necessity for repetitive, disruptive government antitrust litigation in the future is an important offsetting consideration.

On the other hand, if Microsoft’s dominance is eliminated by future developments in the OS market, relief that presupposes monopoly control of a key OS product should be re-examined. In other words, if future market changes eliminate Microsoft’s OS market share and monopoly power, the remedies adopted should be re-evaluated.

2. AVOID PUNITIVE REMEDIES

The purpose of antitrust relief should be to prevent Microsoft's market dominance from endangering competition in newly developing markets, not to punish it for gaining monopoly power in the first place. As *Business Week* stated in an editorial:

There is little doubt that Microsoft has leveraged the near-monopoly of its Windows operating system to move into an ever-growing number of markets. . . . Washington has a legitimate role to play in keeping the playing field level. But the government has no business punishing a successful company just because it is successful, nor should it muck in free markets when they are free.¹⁴

Accordingly, the remedy adopted in *United States v. Microsoft* should directly address the source of violations found by the Court. From an antitrust perspective, market power that is the product of "superior skill, industry or business acumen" is not unlawful.¹⁵ Whether or not Microsoft in fact acquired its OS monopoly power lawfully — a matter not at issue in the current government case — it is well-settled that preservation or extension of that power through exclusionary or predatory means is illegal monopolization under Section 2 of the Sherman Act.¹⁶ Thus, the Court's principal relief focus should be on eliminating Microsoft's incentive and ability to curtail competition in OS-dependent markets in the future, and thus to restore effective competition in the software industry.

3. FASHION SELF-EXECUTING REMEDIES

Although Microsoft's dominant position almost surely requires that government more closely scrutinize its conduct than other companies, the software industry does not need or desire intrusive governmental oversight. Such oversight would be harmful to the industry and detrimental to consumers. Any remedy ordered by the Court should therefore be largely self-executing, with a minimal amount of continuing intervention by DOJ and the Court.

The IT industry changes too quickly for future product and service developments to be tied to governmental approval. Remedies that deterred innovation and enhancement of OS software through intrusive governmental supervision would harm consumer interests and unnecessarily impede technological development. While future litigation may occur, the Microsoft antitrust case should not be the linchpin of intrusive government intervention in the software industry. This is particularly important in connection with proposals for imposition of unbundling and pricing requirements on Microsoft's marketing practices. A component of these sorts of remedies will likely require the government to determine a "reasonable" stand-alone market price for non-OS software products. If effective and workable alternatives exist, this approach should be avoided.

4. ENSURE EQUITABLE ACCESS TO ESSENTIAL OS INFORMATION

Should the Court determine that the Windows OS family is crucial to competition in the software application and Internet content markets, the remedy should ensure that all competitors have reasonable access to the OS information necessary to compete in these related markets.

In antitrust parlance, an “essential facility” is something necessary for competition, controlled by a firm with market power, that cannot economically (or legally) be replicated by rivals.¹⁷ Given the network externalities effects of software OS products — by which the OS becomes more valuable the more widely its is deployed — it is possible Judge Jackson could rule that the Windows OS is an essential facility. If so, antitrust law from the early 20th century to recent decades holds that competitors must be permitted “reasonable and nondiscriminatory access” to the essential facility.¹⁸ Whether the essential facilities doctrine is applied as a formal antitrust matter, however, is less relevant than fashioning remedies that provide for equal access to the essential components of the Windows OS family (including Windows NT/Windows 2000). Because effective competition in related markets requires OS interoperability and desktop access, any remedy adopted must provide for nondiscriminatory access to key OS specifications

5. PRECLUDE FUTURE MARKET POWER EXTENSION

Should the Court determine that Microsoft has used its OS monopoly power to disadvantage competitors in related markets, the antitrust remedy must clearly prevent future extensions of the Windows monopoly into the client software, server software and information content/e-commerce markets (*see* Table 2). Leveraging a firm’s products into new markets is ordinarily permissible and rational economic behavior, except where a firm uses monopoly power to exclude rivals from adjacent competitive markets. For instance, America Online, Yahoo!, Adobe and a host of other software and technology firms extend their existing products into new areas by creating complementary products that provide consumers with more value when packaged together. Where similar practices are engaged in by a firm with monopoly power, however, they can have the effect of excluding rivals that do not share that market power from competing effectively without entering both the application and OS markets simultaneously.¹⁹

Table 2

Client Software	Server Software	Content/E-Commerce
Internet Browsers	Server OS	Real Estate
Mail/Messaging Software	Mail/Messaging Servers	Automobiles
Client Development Tools	Database Servers	Directories
Business Suite Applications	Web Servers	Financial Services
Web Development Tools	Communication Servers	Travel Services
	Merchant Servers	
	Application Servers	
	Server Development Tools	

6. MINIMIZE UNNECESSARY DISLOCATIONS TO EQUITY MARKETS, SHAREHOLDERS AND EMPLOYEES

Immunity against market risks in the IT industry is impossible, but the antitrust remedy should avoid imposing inadvertent economic or social dislocations on the people involved with or employed by Microsoft.

Microsoft's stock is widely held in pension, retirement and individual portfolios worldwide. While the Court should not directly consider the impact of relief on future stock prices, it should engage in an open, deliberate process so that markets can discount the effect of the antitrust remedies. Such an approach ensures that share prices can adjust, in an orderly manner, to the anticipated future performance of Microsoft as a result of the remedies. Although antitrust relief may well diminish the market valuation of Microsoft's securities, there is of course no exemption to the antitrust laws for defendants with high capitalizations. On the other hand, government-ordered divestitures, as in *AT&T* — or voluntary divestitures, as in *Lucent Technologies*²⁰ — have often substantially *increased* shareholder value.

To avoid inadvertent harm to innocent parties and the equity markets, relief should therefore stipulate that any divestiture, spin-off or other corporate reorganization of Microsoft be approved by the Court, after notice and an opportunity for public comment, so that the interests of all investors can be protected and the potential for stock speculation based on inside information is reduced.²¹ In short, transparency in the relief process will avoid unnecessary market and investor dislocations.

7. LEAVE INTELLECTUAL PROPERTY LAW UNAFFECTED

Remedies should not require any changes to intellectual property (IP) law. IP is the bedrock of software innovation and content creation. Without the protection of IP laws, software and information publishers would have little incentive to develop and market new products. The US government is working to implement greater IP protection for such products worldwide, most recently through implementation of the World Intellectual Property Organization (WIPO) treaties. Compelled relinquishment of IP rights — for example, transfer of Windows to the public domain through standardization — therefore raises significant risks to fundamental IP protections that should not be compromised. As a group of more than 1,400 companies that share an interest in protecting the intellectual property on which software and digital content is based, SIIA believes that undermining IP protection under U.S. and international law would diminish incentives for capital investment and entrepreneurial entry in the software and information industries.

While the courts clearly have the power on a case-by-case basis to modify IP rights where they are used unlawfully, SIIA believes that this power should be exercised sparingly in order to assure continuity in economic expectations for IP investment. In particular, any remedy adopted should permit third-party use of Windows OS resources only under licensing arrangements

which include appropriate free-market compensation to Microsoft. Confiscation of Microsoft's technology and investments is plainly inappropriate.

IV. ANALYSIS OF ANTITRUST RELIEF OPTIONS

The basic conflict in fashioning appropriate antitrust relief is balancing the contradictory needs to open the OS and related software markets to effective competition without unduly interfering in the free market. From one perspective, the most radical approach, a structural divestiture of Microsoft into two or more smaller entities, is also the most conservative in terms of the relationship between government and the software marketplace. By undertaking more extensive action now, DOJ and the Court can avoid the need for setting detailed rules for software product design and pricing in the future.²²

Even some structural remedies will nonetheless require governmental “line-drawing” — particularly between permissible and impermissible functions for new Microsoft spin-offs — that is historically antithetical to the marketplace ethos of this vibrant industry. Yet purely conduct-oriented injunctions are unlikely to be as effective as structural relief, due to the inability to predict future product trends in the software market, and the administrative costs and time constraints of the governmental enforcement necessary to make an effective prophylactic decree.

In this Section, SIIA analyzes the pros and cons of a variety of both structural and non-structural remedies for the *United States v. Microsoft* antitrust case. We first address the relative comparisons between conduct and structural antitrust relief. We then address ten different behavioral remedies and three alternative structural solutions. The specific proposals, and their highlights, are summarized in Tables 3 and 4 below.

[Tables appear on following pages]

Table 3

Conduct Remedies		
	Pros	Cons
Windows API Disclosure	Level playing field for application software developers	Difficulties of timeliness, scope, viability and API definition
Compulsory API Licensing	Consistent with settled law on abuse of IP rights	Determination of “reasonable” licensing fees may exceed judicial competence
Compulsory Windows Source Code Licensing	More effectively addresses API equality for ISVs	Governmental license price setting; no OS competition
Auction of Windows Source Code Licenses	Maintains compatibility while creating alternative OS manufacturers	Uncertain long-term competitive effect in OS market
ANSI Standardization	Guarantees consistent/equitable access to essential OS specifications	Scope of competition in OS enhancements, and interoperability, would be unsettled
Bundling Prohibitions	Precludes extension of OS market power	Judicial definitions of OS and applications unwieldy, intrusive and slow
Predatory Pricing Prohibition	Prevents use of OS power through price behavior	Software “marginal costs” nearly impossible to set and not antitrust court function
OEM Restriction Prohibition	Limits control over the Windows “desktop” for applications and e-commerce	Addresses only portion of market power abuses and still retains competitive advantages for Microsoft
Non-Structural Corporate Separation	Increases visibility of intra-company interactions	Historically ineffective in controlling abuse of market power
Fair Contracting Obligations; Non-Discrimination	Details Microsoft obligations vis-à-vis OEMs and licensees	Effectiveness requires substantial oversight and enforcement commitment

Table 4

Structural Remedies		
	Pros	Cons
Horizontal Divestiture— Along Lines-of-Business (OS/Apps/Content)	Largely eliminates need for ongoing governmental oversight and decree supervision	Sacrifices possible efficiencies of vertical integration; retains OS monopoly power; transitional conduct rules needed
Vertical Divestiture— Multiple, Vertically Integrated Spin-Offs	Removes necessity for transitional and long-term judicial line-drawing; eliminates OS monopoly power	Difficult short-term reorganization; risk of oligopolization; decreased efficiency by fracturing <i>de facto</i> OS standard
Establishment of Windows OS Family as “Open Source Software”	Directly addresses issues of OS definition and non-discriminatory access without judicial oversight; constrains exercise of OS power in pricing	Enforcement oversight for timely Windows source code releases crucial; OEM licensing prescriptions still required

The proposals discussed in this section are not presented as alternatives to each other. They are, rather, complementary approaches to address the multiple issues explored in the *United States v. Microsoft* trial. Whether any particular option is adopted, care must be taken to ensure that the competitive concerns underlying each specific proposal are addressed in whatever global relief is ultimately approved by the Court.

While the effectiveness of conduct-oriented remedies requires significant and ongoing enforcement, by the industry and government, a divestiture of Microsoft would also entail dislocations in existing distribution channels and in the immediate need for government supervision of such a massive reorganization. Consequently, it would not be unreasonable to conclude that some of the conduct remedies discussed below, while clearly less effective than structural relief, should be part of a relief “bundle” fashioned by the Court. Yet SIIA also believes that the government should give serious consideration to a divestiture of Microsoft, in order to craft a less regulatory solution, while structuring the reorganization to preserve any demonstrable efficiencies arising from the integrated provision of software and OS products. As the Wall Street Journal reported, while this approach appears at the outset to “carry the greatest economic and political risk,” similar divestitures in the past actually resulted in both a tremendous boost to competition and the personal wealth of controlling shareholders.²³

A. A RELATIVE COMPARISON OF BEHAVIORAL AND STRUCTURAL ANTITRUST REMEDIES

A behavioral remedy appears less intrusive than a structural remedy exactly because it does not change the structure of the company to which it is applied. Conduct remedies on the surface seem less draconian, less interventionist, less disruptive of the company's business, and therefore less likely to result in unanticipated losses to consumers. That appearance, however, is deceptive.

A behavioral remedy leaves corporate structure intact. It attempts to make the market competitive, through changing the behavior of the vertically integrated defendant, specifically by writing rules that curtail the company's ability to use its market power to hurt its rivals in the dependent markets. But the fact that a behavioral remedy leaves the company's incentives intact not only significantly limits its effectiveness, but also makes it much more intrusive than it first appears.

In attempting to prevent the recurrence of the unlawful conduct, a behavioral remedy establishes a set of rules that describe past conduct and prohibit its repetition. These rules are then expanded to attempt to capture generically the type of conduct of which the evidence provided specific examples. In attempting to go beyond the specific to the generic, as is necessary to be effective, the rules tend to proliferate. Yet despite this proliferation, a behavioral remedy tends to be of limited effectiveness. Because the defendant remains a vertically integrated company with rivals in the markets for the dependent products and services, it continues to have the incentive to use its market power in the monopoly market to advantage itself and disadvantage its rivals. Acting rationally on its economic incentives, the company seeks ways to avoid the explicit rules of the decree.

The company may do this in several ways. It may constantly "push the envelope" of the behavioral rules, engaging in all conduct not explicitly forbidden. It may invent new forms of conduct that have not — or at least not yet — been explicitly forbidden. It may seek interpretations of the rules to give it permission to engage in conduct which may or may not be forbidden. The company undertakes such efforts because it remains in its economic interest to do so.

Put another way, it is simply not possible to order a company to act contrary to its economic incentives. The post-decree anticompetitive acts will be "new" in the sense that while the company's incentives have not changed, the rules under which it operates have changed. Therefore, the company will engage in new forms of conduct not explicitly prohibited, or at least arguably not explicitly prohibited. Each new form of conduct will have an anticompetitive effect until it is detected, interpreted to be within the proscriptions of the decree, and therefore explicitly prohibited.²⁴

A conduct-oriented decree is unlikely be effective at entirely preventing the recurrence of anticompetitive acts. On the other hand, behavioral relief does have the effect of forcing such conduct underground. Its unchanged incentives drive the defendant to use its enhanced market power, but the anticompetitive acts will become less obvious and more subversive as the com-

pany seeks to avoid being adjudged in violation of the decree. Thus, its anticompetitive conduct will become more difficult to detect. Once detected, it will become more difficult to fit within the explicit prohibitions of the decree. The company's ingenuity may easily lead to conduct that is clearly anticompetitive yet not clearly prohibited by the prior decree, thereby necessitating a new antitrust case.

Thus, as the unfortunate lesson of the *AT&T* decree teaches, enforcement agencies and the courts may find themselves involved in a constant round of supervision and litigation over the conduct-based rules. These efforts themselves result in further proliferation of more complex and granular rules, until deciphering the decree becomes an impossible challenge for the defendant, the courts and industry players. This further proliferation of targeted prohibitions increasingly re-

A structural remedy is effective because it relies on the fact that a company acts on its economic incentives, while a behavioral remedy is ineffective because it attempts to prevent a company from acting on its economic incentives.

sembles regulation. Government regulation of a dynamic, technology-based industry is difficult in the best of circumstances, and is done relatively well only by expert administrative agencies with large and extremely knowledgeable professional staffs.

There is no such agency responsible for regulating the software industry. SIIA believes the *Microsoft* litigation should not become a means for transforming DOJ and the courts into *de facto* software regulators.²⁵ Thus, while the Court may find that the unique market position of Microsoft justifies closer governmental scrutiny of its business practices, the combined need for both long-term and rapid government oversight of conduct remedies could undermine the potential effectiveness of a behavioral decree in restoring software industry competition.

What makes a structural remedy seem more intrusive than a behavior remedy also makes it more effective and less complex. If a structural remedy is fashioned properly, in changing the company's structure it also changes the company's incentives. Once the company's incentives have changed, the company's behavior necessarily also changes. Put another way, a structural remedy is effective because it relies on the fact that a company acts on its economic incentives, while a behavioral remedy may be ineffective because it attempts to prevent a company from acting on its economic incentives. Thus, a structural remedy can be effective with a more limited set of transitional rules to guide the company's conduct while its corporate culture adjusts to its new incentives. Once that adjustment occurs, the new incentives will not drive the company towards anticompetitive conduct, and so few rules and little oversight are necessary.

B. CONDUCT REMEDIES

1. NON-DISCRIMINATORY AND TIMELY ACCESS TO WINDOWS APIS

Application Programming Interfaces (APIs) are the basic hooks used by software application programs to access OS functions. APIs allow programmers to share code necessary for common tasks. In order for third-party developers to be able to take advantage of OS functionality to the same extent as developers within the OS company, access to APIs must be open and non-discriminatory. Consumers benefit from equal access because the functionality of all applications then depends solely on the skills of the application developers. As a result, there are greater incentives for competition on the merits among all software firms, regardless of their corporate relationship to the Microsoft Windows OS.

Inequality in access to APIs harms consumers in several respects. Without API equality, consumers will be deprived of the right to choose among applications based on their inherent quality, rather than on the level of their access to OS functionality. Without non-discriminatory access to APIs, Microsoft's applications may appear to be superior because of their preferred access to OS functionality. The cost of developing third-party applications may be higher when developers cannot take advantage of the full set of OS features. In addition, without full information about OS capabilities, third-party developers may not be able to write applications that integrate as tightly or seamlessly with the OS.

There are several dimensions to equality of access, including timeliness, scope and viability. Each of these aspects is required to ensure that an API disclosure remedy would be workable and effective. In particular, equality in timeliness of access to APIs requires that new APIs be disclosed to all application developers at the same time. Equality of scope in access to APIs requires that all application developers have access to the same quality and quantity of technical information about APIs. Equality of viability requires that all application developers have the same level of knowledge about the longevity of the API, *i.e.*, the duration of support Microsoft will provide for APIs within a given OS.

Equality in timeliness is difficult to achieve when the OS owner is integrated with applications development. Operating system development and application development tends to be an interactive process in such an environment. Just as OS developers will keep application developers informed about new functionalities, so too will applications developers keep OS developers informed about planned applications capabilities. Interaction between the developer teams takes place both in formal settings, such as development meetings, and in numerous informal exchanges among colleagues accustomed to keeping each other "in the loop." In addition:

- Consumers benefit from interactive and parallel development of both OS and applications. The point of an API disclosure, therefore, is not to eliminate interactive development, but rather to increase it to include all application developers. Consumer benefits are increased from competition on the merits,

while the only effect on Microsoft is that its software applications business is forced to compete on the quality of its applications.

- The challenge in achieving equality in timeliness is that while it may be possible to establish formal “disclosure events” and require equal opportunity for all application developers to participate, it is not easy, and probably not possible, to create or even simulate the informal exchange process for third-party application developers. Even requirements such as visitation rights for developers cannot capture the informality, regularity or spirit of the natural and spontaneous collegial collaboration among Microsoft’s OS and application developers.

Equality in the scope of disclosure is as important, as beneficial to consumers, and probably as difficult to achieve as equality in timeliness. Even if new APIs are disclosed to all application developers at the same time, the relief mechanism would have to ensure that all developers received the same quality and quantity of information. While formal disclosure events could be monitored for such equality, once again frequent collegial exchanges to explain, clarify and amplify the formal disclosures will be impossible either to mandate or monitor.

Equality in the viability and longevity of APIs is also crucial. Application developers have to know whether and for how long APIs will be supported. This would appear to be more amenable to behavioral rules. There are, however, two sorts of problems that can arise.

- An approach requiring that APIs, once published, must be supported forever, even in new OS releases, would actually stifle OS innovation in an effort to increase competition in applications. Similarly, efforts to mandate a fixed, uniform period of API support could embroil the government in making judgments better left to software developers.
- The same frequent informal exchanges within a vertically integrated entity that make it difficult to monitor equality in timeliness and scope of disclosure make it equally problematic to eliminate, or minimize, the likelihood that Microsoft’s developers will have more advance warning of changes in API support than unaffiliated application developers.

In each of these three areas — timeliness, scope and viability — conduct-oriented relief will be effective only to the extent that it can establish a level playing field of API knowledge between affiliated and unaffiliated application developers. It is impossible to create for unaffiliated developers the same opportunities for frequent informal interactions enjoyed by the affiliated developers. It is almost as difficult to write rules that limit informal exchanges within the integrated company.

Behavioral rules that attempt to give third-party application developers the same opportunities for informal exchange would necessarily be effective only in proportion to the intrusiveness of

their government enforcement. Ensuring that such opportunities are available to third-party developers would likely require some combination of tracking and auditing. Tracking would have to include careful notes, by all parties, detailing the information disclosed in both directions. To be effective, auditing would also have to include unannounced visits by auditors, who would be present at a statistically significant number of informal exchanges. They would also have to be qualified to make a sound judgment about the information exchanged. Obviously, in many ways this is the antithesis of the freewheeling informal interactions that can most efficiently transfer information between OS and application developers, and which result in better applications for the benefit of consumers.

Conduct rules limiting disclosure to formal events may appear to be relatively easier to monitor, but suffer from two flaws. First, as noted, limiting API disclosure to formal events will likely result in fewer and less effective exchanges between OS and application developers, to the detriment of consumers. Second, the problematic issue is whether such formal events are in fact the only disclosure events available to the affiliated developers. Therefore, enforcement would once again have to include unannounced visits by auditors.

An additional issue in constructing behavioral rules to govern API disclosure is the question of defining an API. Traditionally, the definition of an API is tautological: the code creating an OS functionality is defined as an API when the OS owner is willing to publish it and commit to supporting it in the future for all application developers. This leaves in the hands of the OS owner what may be the most crucial judgment. Given the vertically integrated OS owner's incentives, it could disclose OS functionality to its affiliated developer long before the functionality is declared to be an API.²⁶

A solution to these problems would be to remove from Microsoft the discretion to declare an API, substituting an alternative decision maker. The most likely alternatives are the enforcement agency, a neutral expert, or the unaffiliated application developers. All three are intrusions into the OS development process, and all three are inappropriate decisionmakers. The first and second probably merge, because it is likely that the enforcement agency would nominate an expert to fulfill the function, but in either event they create a "czar" of the software industry. The third would allow Microsoft's competitors in the application field to dictate APIs which Microsoft would then be required to support. And without regard to who, other than Microsoft, has the power to declare APIs, the OS owner would have to be given the right to contest the selection, thus requiring an adjudication process that is likely to be contentious and expensive.

2. COMPULSORY LICENSING OF APIS

Compulsory licensing of APIs, like non-discriminatory access to APIs, would ensure that all application developers have the same access to APIs as do Microsoft application developers. Licensing more explicitly defines the developers' rights to use the APIs, while simultaneously restricting Microsoft's right to unilaterally cease supporting them.

While compulsory licensing might seem draconian and unique to the *Microsoft* case, that perception is misplaced. For example, it is well-settled doctrine both in patent and antitrust law that "misuse" of a patent can be remedied by court-mandated restrictions on the patent. Thus, rights to intellectual property can be curtailed to remedy the patent holder's abuse of those rights, either in their acquisition or subsequent use.²⁷ Moreover, courts have equitable power to remedy abuse by curtailing those rights, despite the fact that a patent is an explicit government grant of a monopoly over intellectual property. Thus, a court clearly has power over APIs, even if the APIs are protected by copyright.

While the courts have such power, there remain serious questions concerning the effects of the exercise of that power in the *Microsoft* case. Compulsory licensing of APIs may harm consumer welfare if it reduces Microsoft's incentives to innovate and enhance the OS. In addition, a court would have to determine the "reasonable" licensing fees, with DOJ participation, and those determinations would have to be repeated for each change in the OS. This iterative process essentially makes the enforcement agency into a quasi-regulatory agency, as a judicially determined price would need to be set for each new release of the OS software. Such determinations are not impossible, but their complexity suggests they should be avoided if equally effective relief alternatives exist that would impose less need for judicial and DOJ oversight than compulsory licensing requirements.

3. COMPULSORY LICENSING OF WINDOWS SOURCE CODE

Mandatory licensing of the Windows source code²⁸ at reasonable fees addresses the API issue directly. As a remedy designed to permit competing applications developers to maintain OS compatibility on par with Microsoft's own products, OS source code licensing would afford third-party independent software vendors (ISVs) equivalent access to all Windows code. This would allow all ISVs to "tap into" any OS code functionality, regardless of whether it has been declared an API. Consequently, a licensing remedy would avoid the definitional and oversight limitations of an API access requirement. Licensing would also give third-party application developers the greatest freedom to take advantage of the OS in their applications, and would likely lead to increased innovation in application software. As with compulsory licensing of APIs, a court has equitable power to remedy abuse of the market power created by that intellectual property.²⁹

Like other proposed behavioral remedies, there are significant drawbacks to this approach. Such an alternative could be considered even more intrusive than structural relief by mandating licensing of proprietary intellectual property. Furthermore, the process for establishing a licensing

fee would involve further governmental involvement and court proceedings, which would likely be repeated with each change in the OS. There are few if any economically accepted models for pricing of software products, and in any event the institutional competence of the federal courts and DOJ — which are law enforcement and adjudicative bodies, not price regulators — to establish prices in lieu of the market is questionable at best. Unlike other relief options (*e.g.*, source code license auction or structural reorganization), moreover, compulsory licensing would not affect the basic source of Microsoft's OS market power, and would do nothing to enhance competition in the OS software market itself.³⁰

4. AUCTION OF WINDOWS SOURCE CODE LICENSES

One conduct remedy that appears to have gained some support among antitrust analysts as a means of promoting OS competition is an “auction” of Windows licensing rights. Such a plan would have DOJ or the Court supervise a one-time auction for a perpetual license to the Windows code base as it exists at the time of the auction. The successful bidders would compete with one another, and against Microsoft, for sale of new OS products and upgrades for the existing installed base of Windows users. The new competitors would presumably differentiate their OS products from one another with new features, while striving to maintain backwards compatibility with the large Windows 3.1/95/98/NT installed base. Because the licensing fees would be set in a competitive auction, this proposal avoids the price-setting problems associated with compulsory licensing, but in turn creates a second-order problem of how many winning bidders would be awarded licenses and exactly what would be included in the licenses.³¹

Whether a license auction could be effective depends on whether it would create incentives for substantial competition in OS development and distribution. Licensing would break any current linkage between OS market power and the applications and Original Equipment Manufacturer (OEM) markets, as these firms would have an alternative to Microsoft for supply of the Windows product family. Yet because it would encourage differentiation in the OS, a licensing auction would create a significant risk of fracturing the *de facto* Windows standard, leading to long-term interoperability costs. Moreover, licensees of the Windows source code would be required to market their own OS products without the trademark, consumer registration and site license information advantages currently enjoyed by Microsoft, which may prove an overwhelming competitive barrier. Finally, this remedy would place Microsoft in the position of competing against the Windows “clones,” and since its fundamental economic incentives would remain unchanged, of profiting from the failure of its licensees in the marketplace.

Therefore, there is considerable doubt whether the new Windows OS competitors could gain significant acceptance in the marketplace. Coupled with Microsoft's current market share and overall barriers to OS entry, this in turn makes it unlikely that large OEMs would be inclined to participate in the auction. Major Windows licensees, such as Dell and Compaq, would appear strongly disinclined to initiate an OS war, especially since it would mean competing against their major supplier and an extremely well-entrenched market leader. Other firms that currently market their own OS software, such as Sun Microsystems and Apple Computer, have preferred to separate

their specifications from the Windows standard and target their products to different market segments. Consequently, while in theory an auction of Windows source code licenses may spur OS competition, it appears doubtful that this alternative could successfully introduce effective competition into the OS software market.

5. ANSI STANDARDIZATION OF WINDOWS

Formal standardization of Windows — perhaps under the auspices of the American National Standards Institute (ANSI) — is similar to, though more intrusive than, compulsory licensing. Like compulsory licensing, it makes Windows widely available as a resource to all application developers. But it goes beyond compulsory licensing in stripping Microsoft of discretion both in the use and future development of the source code.

ANSI standardization transforms Windows from a *de facto* standard to an industry-managed resource. It thus guarantees that the Windows code will be available to all application developers. But it goes further, transferring to the entire industry the management of the contents of the code. In fact, ANSI's standing rules preclude the use of proprietary technology in an American National Standard unless the IP holder disclaims its interest, in effect donating its IP rights to the public domain, or makes licenses available on fair, reasonable and non-discriminatory terms.³²

If this remedy is approached as a single set of source code developed under industry-wide aegis, the result is a program written by committee. While the development of an OS within a single company undoubtedly relies on the input of dozens or hundreds of programmers, writing OS code across multiple companies is a different exercise. Were there to be an ANSI standardized Windows, the development process would more likely evolve to an ANSI-accredited Standards Developing Organization (SDO) dictating the specifications of the OS, and delegating to a set of programmers to write to those specifications. There are three models under which the code could be written:

- The programmers could be Microsoft employees, and the OS would have to pass not just Microsoft standards, but also be certified by the ANSI SDO.
- The programmers could be hired and managed by the industry group, rather than by Microsoft. In that case, the resulting code would be owned jointly by Microsoft and the industry committee.
- Each ANSI SDO member company could develop variants of the OS, although all would be required to meet the ANSI specifications for all final shipping products.

An open question under the formal standardization model is whether the ANSI standard would define the minimum or the maximum feature set, *i.e.*, the functionalities of the OS. If it defined the maximum feature set, multiple companies would compete only on the efficiency and price of

their versions, since all would be identical in features and functions. If the ANSI specifications defined only the minimum feature set, multiple companies would compete on functionality as well as efficiency and price. Of course, the more competition on features is permitted, the less standardization there is. Thus, mandatory Windows standardization raises serious interoperability issues, and may serve to replace government oversight of OS development with ANSI oversight. This would have profound consequences for compatibility and application developer entry if multiple versions of the same OS are permitted.

An additional consideration is whether the companies licensing and developing competing Windows versions would also be permitted to develop and market applications. Each company could become a “mini-Microsoft” developing code that met the industry standards, but that still contained additional features specific to that company’s applications. The companies would then compete for OS sales on efficiency, price and features, with customers free to choose their OS based on its optimization to the customers’ preferred applications.³³

6. PROHIBITION OF PREDATORY PRICING

Predatory pricing is defined in antitrust precedent as the offering of a product at below-cost prices in order to drive rivals from the market and gain the ability, in the long term, to recoup losses with later price increases.³⁴ Thus, relief that includes a prohibition on predatory pricing would address concerns that Microsoft has priced software applications, including free distribution of key Windows NT/Windows 2000 and Internet software products, at such a low price that competitors are foreclosed or discouraged from entering the market. Clearly consumers are harmed by a reduction in competition. The apparent consumer benefit of the low predatory software prices must not be confused with the real consumer benefit of increased innovation, low price, and increased choice that result from real competition.

Unfortunately, while a judicial prohibition on predatory pricing is relatively easy to describe, it is very difficult to implement. There is consensus in current antitrust law and doctrine that pricing is predatory when it is below the company’s marginal cost of producing the product or service.³⁵ The determination of marginal cost is always difficult, because the exercise is always a retrospective look at pricing decisions, while marginal cost determination is inherently a prospective exercise. This difficulty is even greater for software products, given the realities of software economics in which the costs of producing a given unit of software, including production of the CD, box and manual, are dwarfed by the R&D cost of developing the product. Under these economics, the marginal economic cost of a unit of software is just a few dollars. In the absence of economically valid marginal cost standards, there are immense difficulties applying traditional predatory pricing theories to the software industry.

Antitrust law deals with this problem in non-software markets by empowering courts not to set the “right” price in predatory pricing cases, but rather to award damages retrospectively to compensate for injury to a monopolist’s competitors. However, to prevent future predatory pricing (rather than to remedy past predatory pricing), a behavioral remedy would require the court to

approve the prices for many Microsoft applications. The difficulty of making accurate and timely pricing decisions would threaten the effectiveness of this approach. Relief options that require the Court to set or approve Microsoft's prices should, for this reason, be adopted only if the burdens of judicial price-setting outweigh the drawbacks of other conduct or structural alternatives.

The *Microsoft* antitrust case poses an even greater level of difficulty because the issue here is not classic predatory pricing, but rather the more subtle issue of "limit entry pricing." Limit pricing involves setting prices not below marginal cost, but just low enough to deter new entry and retain market share. The argument is sometimes made that limit entry pricing is not an example of anticompetitive or predatory pricing, rather a concession that a company's prices are constrained by potential entry, and therefore are competitive. Yet limit pricing directly affects the incentives of competitors to invest in markets dominated by a monopolist that distributes important products for free or at minimal prices. Whatever the validity of this theory of predatory pricing, limit pricing again demonstrates the difficulty of applying predatory pricing law to software.

7. PROHIBITION OF BUNDLING OS AND APPLICATIONS/CONTENT

A prohibition on bundling the OS and applications, while superficially appealing, essentially amounts to a pricing rule. Microsoft would be prohibited from offering Windows along with other software products in the absence of cost-justified prices for each product. For instance, Windows could not be discounted based on the purchase of applications, nor could complementary applications such as Internet Explorer or Outlook Express be offered free to Windows users, as their inclusion would be predatory. Conversely, the price of the applications could not be dependent on their being purchased in combination with the OS. The purpose of such an anti-bundling prohibition would be to directly address the concern illuminated in the government's evidence about Microsoft using its market power in Windows to extend its market power into applications.

This approach may initially appear to constitute a straight-forward approach to eliminating abuse of market power stemming from exclusionary bundling of OS and applications software. Yet the practical administration of such a remedy suggests that its effectiveness would likely be limited. It could lead to significant government involvement because the rule hinges on the determination of whether new capabilities are appropriately considered OS enhancements or applications. Government differentiation between the two is required because the former would be permissible, while the latter could only be offered on a stand-alone basis. Some such distinctions are relatively easy to draw, for example between Windows and Microsoft Word. Others are more difficult, for instance between Windows and an editing tool that is enriched over time so that it has the power and functionality of a "word processor lite."

While there is no question that both Netscape Communicator and Microsoft Internet Explorer were developed as applications, it is also easy to visualize some level of Internet access capability being appropriately considered an integral part of an operating system. TCP/IP has been part

of the UNIX operating system for years. As a more timely example, consider a word processor offering a “find” function that searches for a concept on the hard disk, on a CD-ROM (such as an encyclopedia), and on the Internet, all without explicitly launching either a stand-alone dictionary/spell checker or a stand-alone browser. In this example, the ability to go out to the Internet would likely be considered an OS capability — much as Apple has bundled its new “Sherlock” Internet mega-search engine as part of the Macintosh OS 8.5 basic “find file” functionality — while at the same time, the kernel of that capability could also serve as a basis for the development of a stand-alone application. Similarly, during the last 20 years of the PC industry dozens of applications have been developed as stand-alone products (such as disk defragmentation, screen savers, etc.) by independent developers, but which were ultimately acquired or emulated by Microsoft in later revisions to Microsoft DOS and the Windows OS. Some of these stand-alone products disappeared as a result, while others have survived and even thrived.

The issue is not whether readily available, objective criteria could be developed to distinguish among OS and applications. It is rather the difficulty of developing a set of criteria that are self-executing. In other words, under almost any criteria, there would likely be good faith disagreements about classification, given the divergent interests of Microsoft and unaffiliated software developers. Thus, government involvement would be necessary to establish initial criteria, in the ongoing process of refining those criteria to remain current, and to apply those criteria to each new development in Windows capability. As *Business Week* observed, “[m]any lawyers and techies alike abhor the idea of government trying to define what is ‘operating-system’ software and what is ‘application’ software.”³⁶ Without objective, verifiable criteria to apply on an ongoing basis to make such determinations, there is a significant risk that a straight anti-bundling prohibition would not produce the market-opening benefits that are a principal objective of antitrust relief.

8. PROHIBITION OF OEM RESTRICTIONS (BOOT-UP SEQUENCE, ETC.)

The *Microsoft* case centrally concerns the sale of software and competition in the software market. The rapid growth of computers as an advertising and information medium, however, means that access to “the desktop,” the customer’s computer screen, is critical to the success of many content providers and Internet-based commercial services. Control over access to the desktop, therefore, can enhance a dominant OS company’s market power. Microsoft has exploited the importance of the desktop by conferring preferred desktop placement to its selected channel partners.³⁷

SPA’s *Competition Principles* recognized that in the new economy, the battleground for customers will begin with the valuable real estate of the Windows desktop. SPA declared that the owner of the dominant OS:

should not include its own services or products as part of the operating system or user interface unless it gives the same ability to integrate products and services

into the operating system to competing vendors. Competition for the valuable “virtual real estate” of the desktop should instead occur downstream in the distribution system.

Desktop control means that an OS monopoly can preclude companies competing with its own Internet content ventures from achieving adequate distribution arrangements with Original Equipment Manufacturers (OEMs). As the 1995 *Microsoft* decree reveals, Microsoft’s licensing restrictions can foreclose competitive access to OEMs as a distribution channel. Thus, one possible remedy would be to restrict Microsoft’s ability to control the use by OEMs of all “desktop” resources—from the icons on the user’s screen to other desktop functionalities.

This remedy directly addresses Microsoft’s extension of its Windows monopoly through its assertion of “ownership” of the boot-up sequence, the splash screen and the initial desktop. This control permits Microsoft to favor its applications over others’ by requiring exclusive use of its own applications during boot-up and on the desktop. By prohibiting Microsoft from dictating that OEMs use only Microsoft-approved boot-up sequences and applications, a measure of competition from third-party suppliers of OS-compatible shells, directories and other desktop “space”

Desktop control means that an OS monopoly can preclude companies competing with its own Internet content ventures from achieving adequate distribution arrangements with Original Equipment Manufacturers (OEMs)

products can be achieved. Furthermore, if Microsoft were required to distribute the Windows OS family only as stand-alone products, OEMs would then be responsible for adding applications, content and Internet links to the PC desktop. Such an approach would permit vigorous competition among OEMs, and e-commerce companies, for product differentiation and desktop “shelf space.”

The prohibition could also be accompanied by a requirement that prior Microsoft licenses that assert such control would be subject to a “fresh look” requirement that permitting the OEMs to eliminate these provisions from their agreements. Modeled after a similar policy adopted by the FCC upon opening certain telecommunications markets to competition,³⁸ a fresh look requirement would enable third-party competitors to compete despite the existence of long-term licensing agreements between Microsoft and major OEMs. The fresh look would permit entry — allowing all OEMs to purchase from competitors — by eliminating the lock in or lock out effects of existing OEM/Microsoft licenses.

This remedy addresses the issues of technological and price leveraging that are at the core of the *United States v. Microsoft* antitrust trial, but only affects one subset of Microsoft’s asserted anticompetitive conduct. Furthermore, although it offers relief for some applications competitors and content companies, a prohibition on boot-up and desktop licensing restrictions would still impose a more inefficient OEM distribution scheme on Microsoft’s Internet content competitors,

which unlike Microsoft would not be permitted to add content directly to the Windows OS desktop with one transaction. Those competitors would still need to undertake an entire series of negotiations, either with Microsoft or with each OEM, to achieve what Microsoft can achieve with a single licensing transaction. This deficiency can be cured by prohibiting distribution of the Windows OS family to OEMs from being accompanied by *any* application or proprietary content. Very simply, Microsoft would be required to sell the OS as a stand-alone product, and OEMs would choose the bundle of applications and content, and their relative placement on the desktop, in the retail market.

9. NON-STRUCTURAL CORPORATE SEPARATION REQUIREMENTS

A commonly proposed alternative to divestiture is a variety of corporate separation safeguards that retain common ownership of monopoly and competitive business, but which require either separate subsidiary or non-structural (accounting safeguard) constraints on interactions among the affiliates of a firm. Analogous to FCC requirements for the separation of monopoly local telephone services from enhanced data services,³⁹ this approach would require Microsoft to operate its applications and OS business on an arm's-length basis, as if they were separate, unaffiliated corporate entities.

The basic problem with both these non-structural safeguards is that they attempt to emulate the results that would otherwise be achieved by actual corporate separation, such as divestiture. Thus, this approach would do nothing to eliminate Microsoft's incentive for anticompetitive conduct. Any short-run losses in one subsidiary or business unit would still be offset by profits arising from retention and extension of the Windows monopoly. As the FCC history reveals, moreover, even separate subsidiary requirements are at most a weak approximation of the benefits of divestiture, and require activist regulatory oversight and enforcement of detailed rules for arms-length, market-based interactions among sister affiliates.

According to Judge Greene, who in 1982 rejected just such a proposed alternative during the *AT&T* consent decree proceedings, separate subsidiaries are an imperfect substitute for effective antitrust relief. "A separate subsidiary does not eliminate economic incentives for anticompetitive conduct; it is simply a method for revealing intracompany transactions so that regulators may more effectively prevent cross subsidization and other improper behavior."⁴⁰ History has demonstrated this prediction to be quite accurate, as the FCC's efforts to establish a so-called "open network architecture" scheme for the RBOCs failed, and was ultimately replaced by Congress in 1996 with detailed statutory rules requiring the provision of unbundled monopoly elements to all telecommunications rivals at prices set by regulators.⁴¹ If this same chronology — corporate separation, legislation and regulatory price-setting — were to occur in the software industry, it would be a tragedy for all concerned.

10. FAIR CONTRACTING OBLIGATIONS; NON-DISCRIMINATION

One remedy that has gained support in some quarters would require Microsoft to engage in what is called “fair contracting.” This approach is often presented as a laundry list of prohibitions on Microsoft’s ability to bundle, or license its products and technology on a preferential or exclusive basis. One potential form of relief would be to prohibit a list of specific practices that the Court concludes maintain Microsoft’s OS monopoly or that extend its OS power into additional product markets.

During the present trial, both sides have discussed at length the role of the Windows desktop as a distribution vehicle for software products such as browsers, content such as travel and investment information, and services that enable the user to connect to the Internet. A remedy that might be applied, in conjunction with others, would be to prohibit Microsoft from entering into exclusive or preferential arrangements tied to the Windows desktop. This would include agreements to make a favored product or service (whether or not such product or service is owned by Microsoft or a favored licensee) a “default” that the user would have to affirmatively change.

A monopoly in OS software can be a platform for unprecedented control over the flow of information to consumers. Control over the desktop can be leveraged to near total control over the computer screen. Dominating the screen means controlling consumers’ “eyeballs” — what they see and when they see it. Consumers buy what they see, and most often what they see first, whether it is information displayed on a computer screen or products displayed on a grocery store shelf.

This is not just a theory. The federal government adopted this same approach more than 20 years ago with the first widely used computer network in the country — computer reservation systems (CRS) developed by several major airlines in the 1970s. When the airlines developed CRS technology, they found that even the subtlest forms of bias in the display of information on the computer screen could have a dramatic effect on the purchasing patterns of travel agents and consumers. As CRS systems became the major distribution channel for airline tickets, air carriers that owned a CRS were able to charge excessive fees and disadvantage competitors. Some competitors were charged a fee for screen placement of their flights. Others, whose flights were in direct competition, found their screen placement to be less favorable. In this case, the federal government acted — in a limited way — to ensure fair competition and consumer choice. Today, CRS owners are required to display flight information in an objective order based on the services provided, guaranteeing equal access to consumer “eyeballs.”

Because of its similar control over the Windows desktop, Microsoft is also in a unique position to offer inclusion in the OS desktop in exchange for favorable distribution terms. Microsoft has and can use the Windows “real estate” to obtain agreements under which its products or services are the preferred, exclusive or default choice for Internet Service Providers, OEMs and other software distributors. One way to prevent Microsoft from using its desktop monopoly power to impose discriminatory contracting terms that disadvantage its competitors would be to prohibit them.

In addition to these type of non-discrimination provisions, other fair contracting safeguards might be useful in fashioning relief. Fair contracting remedies could include: (i) a prohibition on the sale of Windows as a bundle with any other product; (ii) a prohibition on the sale of the Microsoft Office, or other integrated business suite software, with incentives for other Microsoft products; (iii) a prohibition against pre-announcement of products more than six months prior to actual shipping; (iv) a prohibition against OEM and developer licenses that extend for more than one year; and (v) a prohibition against enterprise licenses that include either Microsoft Office or Windows as part of the “covered products.”

These practices have been described in the SPA *Competition Principles*. The difficulty with relying on these remedies alone, however, is that the industry moves too fast and contracting practices change too quickly to ensure effective compliance. A contracting practice that is prohibited today could be replaced by another practice tomorrow that would literally be permissible, but would have the same anticompetitive marketplace impact. As discussed in the prior section, this illustrates a basic problem with all conduct remedies, namely that their efficacy depends on a level of ongoing, interventionist government oversight that is difficult to reconcile with the institutional role of antitrust enforcement agencies and with the rapidity of technological change in the software industry.

C. STRUCTURAL REMEDIES

There are three fundamentally different approaches to a structural remedy in *United States v. Microsoft*. The first two are divestitures: (1) splitting the company along business lines (OS/Applications/Content), or (2) dividing the company into multiple, competing vertically integrated companies. The third is the imposition of “open source code” software obligations on the Windows OS family, so that third-party developers would formally enjoy rights to use (but not resell without license) all releases of the Windows code. Although each approach has the clear benefit of cleanly removing incentives for anticompetitive conduct,⁴² they would have different impacts in terms of the difficulty of implementation, the possible impact on efficiency and interoperability, and the need for governmental intervention in order to fashion and apply the remedies to a changing software market.

1. DIVESTITURE ALONG BUSINESS LINES (OS/APPS/CONTENT)

Reorganizing Microsoft along business lines, *i.e.*, a horizontal divestiture, is one logical approach to a structural solution to the anticompetitive activities for which the government has offered proof at trial.

A vertically integrated Microsoft has the incentive, stemming from its presence in competitive applications and content markets, to stifle competition in these related markets. It also has the ability (stemming from its monopoly control of the OS market) to disadvantage applications and content competitors through denying them equal access to knowledge about, and involvement in

the process of developing, the OS. Dividing Microsoft along business lines changes those incentives. The divested OS company no longer has an incentive to discriminate among application companies, because none is an affiliate and none is a competitor. The application company has an incentive to advantage itself over its competitors (as does every company faced with competitors), but has no ability to do so other than by competing on the merits — being better, smarter and faster than all of them.

To be fully effective as a prophylactic remedy, divestiture along business lines should also contemplate the additional simultaneous spin-off of Microsoft's Internet content and electronic commerce businesses (Microsoft Expedia, MSN, Microsoft CarPoint, etc.). At the time of divestiture, the applications company will have substantial initial market share and therefore, in an industry with significant network externalities, some degree of market power. If the applications company remained vertically integrated with the content developers, the application company would retain the ability to raise the costs of rival content and e-commerce companies through the same pattern of bundling, exclusive dealing, pricing and other stratagems previously used by the OS company to impede its application rivals.

This sort of divestiture is a good example of how judicial relief can remedy the Microsoft practices currently being litigated at trial, while also preventing repetition of similar exclusionary conduct in related markets in the future. Although DOJ has focused its attention almost exclusively on the Windows OS family, the facts suggest that Microsoft has achieved a comparable degree of market power in software applications through its Microsoft Office (Word, Excel, PowerPoint, Access, etc.) product. This dominance has had the effect of eliminating virtually all serious competition for basic business applications. The remaining independent software vendors (ISVs), such as Corel, have adopted radically lowered price points in an as yet unsuccessful effort to increase their minimal share of the business suite market. While the government has not yet sought to show that Microsoft acquired its office suite market power through unlawful conduct, a divestiture that separated OS from applications products would, by definition, eliminate Microsoft's ability to extend its OS market power through unlawful leverage of its dominance in either applications suites or OS software.

A. IMPACT ON GOVERNMENTAL SUPERVISION

As a result of eliminating the OS company's *incentive* to discriminate among competitors and the application and content companies' *ability* to discriminate, a horizontal divestiture accomplishes the fundamental remedial purpose of preventing the recurrence of anticompetitive conduct with little or no need for numerous rules prescribing or proscribing certain conduct over the long term.

To ensure that the new incentives are recognized and internalized into the corporate cultures of the newly-created corporations, the newly divested companies should be prohibited from sharing personnel, assets, office space and all other resources. In each of these categories, the personnel and resources would be assigned to one of the companies as of the date of divestiture, with no ability to switch back and forth among them. It is also critical that both legal and practical con-

trol of the post-divestiture companies' activities be separate and distinct; any significant overlap recreates the integration divestiture is designed to eliminate. Consequently, some criteria limiting common ownership of the divested companies to a non-controlling level (for instance, to 5% or less), including by dominant shareholders such as Bill Gates, would be required. This will be a challenging undertaking, given the concentration of Microsoft stock ownership among a handful of key executives, and may therefore indicate the need to use more creative approaches to avoid mandated "fire sales" of Microsoft shares and resulting dislocations to equity markets.

The most significant advantage of a structural remedy is the significant reduction in the amount of ongoing government involvement necessary to restore competition to the marketplace. A horizontal divestiture remedy would not require intrusive government oversight to set prices, define APIs or adjudicate licensing terms and conditions. For example, the employees of an OS com-

A horizontal divestiture remedy would not require government oversight to set prices, define APIs or adjudicate licensing terms and conditions.

pany not affiliated with any applications company would have no incentive, and therefore no reason, to be more or less willing to regularly exchange information with any one applications company as compared with any other. Therefore, the onerous ongoing definitional and supervisory activities described in Section IV.B.1 on APIs are simply not necessary.

In a horizontal divestiture, therefore, there would be no need for government micro-management of the software development process. There is no chilling effect on the incentives of the OS company to continue to innovate. Divestiture is therefore a significant improvement over **all** the compulsory disclosure and licensing alternatives addressed above. And there is no diminution of intellectual property rights, since divestiture (at least initially) puts the multiple stocks in the hands of the original owners and because licensing decisions can continue to be made by the IP owners, not the government. As a result, there should be no reduction in the incentives of any of the post-divestiture companies to innovate.

A horizontal divestiture remedy would necessarily require some judicial line-drawing. The Court would need to approve the initial separation among OS, applications and content/e-commerce products, a process that is likely to be contentious, as each of the three divested companies pushes the definitional boundaries.⁴³ Over the longer term, however, there would be little need for governmental oversight, as the divested entities would generally not need to be prohibited from expanding into the other three lines of business — except by means of purchasing another divested company.

Because of the dangers of premature re-integration, however, some transitional conduct rules may be appropriate. Barring the divested OS company from bundling its products with those of the divested applications company (*e.g.*, a Windows OS and MS Office bundle) would prevent marketing tactics from evading the basic purposes of the divestiture in breaking the connection

between Microsoft applications and the OS.⁴⁴ Conversely, there would be no need for comparable prohibitions against business affiliations with third-party products or with internally developed applications. However, it may be appropriate to establish temporary rules against integrating stand-alone products (*i.e.*, products previously provided separately) into the OS to allow emerging technologies, such as voice recognition, video streaming, bio-metric authentication, e-commerce authentication and others, to establish an independent market presence before being subsumed in the OS. Over the longer term (*i.e.*, after three years), such a transitional moratorium should sunset automatically, to maintain incentives for OS innovation.⁴⁵ Clearly, it is in the interest of consumers to permit the continued development of the Windows OS even during the transition to a competitive market structure.

Thus, a horizontal divestiture maintains incentives for technological innovation, permits the long-run incorporation of new functionalities into the OS after divestiture, and would require only moderate judicial oversight in its implementation. Significantly, horizontal divestiture is an attractive relief option because it restores competition to the software industry while preserving the market's preference for a *de facto* OS standard. Antitrust remedies should not interfere with an apparent consumer preference for an OS standard.⁴⁶ While preserving the economic value of a uniform OS standard, a horizontal divestiture would cleanly remove the ability of any resulting entity to leverage into related markets, except through the formation of new partnerships and business relationships.

B. IMPACT ON SHAREHOLDERS AND EFFICIENCIES

Unfortunately, divestiture along business lines would eliminate whatever economies of scope might exist between OS and applications development. To the extent vertical integration yields cost savings that produce lower prices and improved products for consumers, a horizontal divestiture would, by definition, make it economically impossible for the reorganized Microsoft to realize efficiencies, if any, that arise from joint provision of OS and application software products. Whatever the extent of such efficiencies may be, a horizontal divestiture would plainly sacrifice them in order to restore a competitive market structure.⁴⁷

On the other hand, a horizontal divestiture would leave one company with control of the dominant OS in the PC market. While the divested OS entity would have no incentive to discriminate in favor of or against any particular application or content companies, it would nevertheless still be able to exercise market power against all application and content companies. If the exercise of market power takes the form of higher prices for OS products, there would be a net loss of consumer welfare. Nonetheless, the prospect of higher prices for the OS would likely be counterbalanced by a reduction in prices for software applications, as new competition for Microsoft's present suite of business applications developed. To be sure, the OS, applications and content businesses would operate in a dynamic market, and reliable economic projections of new competitors and their impact on pricing is very difficult to gauge.

Some concerns have surfaced in the public debate over the possible effects of divestiture on near-term or long-term shareholder value. The most effective answer to such concerns, and the

most effective source of reassurance, is the actual experiences of divestitures of the scale discussed here. For example, there have been two significant divestitures in AT&T's structure over the past 15 years. One was the court-mandated divestiture between AT&T and the RBOCs in 1984. The other was the voluntary divestiture between AT&T and Lucent in 1997. In both cases, stockholders who kept their shares of all the post-divestiture companies have experienced dramatic gains.⁴⁸ There is little reason, therefore, to believe that a horizontal divestiture would harm shareholder or equity market interests.

2. DIVESTITURE OF MULTIPLE, VERTICALLY INTEGRATED ENTITIES

An alternative divestiture remedy for the *Microsoft* antitrust case is to reorganize the current vertically integrated Microsoft into multiple “clones” of itself. Each post-divestiture company would initially be as vertically integrated as the pre-divestiture Microsoft. The post-divestiture companies have been described in some discussions as “Baby Bills,” a tongue-in-cheek imitation of the “Baby Bells” created by the AT&T divestiture.⁴⁹

This approach is in some respects more purely structural than a horizontal divestiture along business lines. As there would be no need to oversee separation of lines of business or to define the boundary between OS and software applications products, there would be a reduction in the need for and nature of initial governmental oversight. In addition, a vertical divestiture leaves the companies' intellectual property to some extent intact (albeit shared, each company having IP rights that are non-exclusive), and therefore retains some incentives for innovation in the OS and applications software markets. Significantly, because it retains a vertically integrated structure for each “Baby Bill,” a vertical divestiture would overcome concerns that the antitrust remedy could sacrifice economies of scope arising from integration of OS and software applications. On the other hand, the efficiencies arising from a *de facto* OS standard would be lost, as a vertical divestiture would almost certainly lead to splintering of the Windows OS family over the long-run.

A. IMPACT ON GOVERNMENTAL SUPERVISION

A vertical divestiture would, by its very nature, remove the government from the difficult task of defining the boundary between OS and software applications. Conversely, a divestiture of multiple, vertically integrated companies could actually require more substantial judicial involvement in the short-run corporate reorganization. If each divested company were permitted to control and market each existing Microsoft product, there would be a clear risk of market fragmentation. A vertical divestiture would therefore appear to presuppose some decree rules that assign specific software products, especially niche products such as Microsoft Flight Simulator, to one of the divested entities.

A vertical divestiture would create a quite different risk of long-term governmental supervision of the software industry. Because each of the divested companies will be as vertically integrated as the pre-divestiture Microsoft, each will have the same incentives and abilities to favor its own

applications and content companies over the unaffiliated companies. Accordingly, the government may be called upon to enforce the antitrust laws again if one of the divested entities succeeds in re-creating Microsoft's existing dominance or, more likely, if the divested companies tacitly agree not to compete directly against each other in one or more markets.

The antitrust policy risk is that two post-divestiture vertically integrated software companies will replace today's Microsoft monopoly not with competition, but rather with a comfortable oligopoly. Of course, the risk of oligopoly decreases as the number of post-divestiture companies increases. The reason is that two companies might be content to share the market in a roughly even

A vertical divestiture would create a quite different risk of long-term governmental supervision of the software industry.

split, on the assumption that at the time of divestiture there is no distinction between the companies, and therefore each is likely to have a roughly equal share going forward, at least initially. But the more companies there are, the smaller is each company's share, and the less likely that each company will be content to have a fixed share that size. In addition, the difficulty of achieving and maintaining the tacit agreement required for successful oligopolization is directly proportional to the number of firms involved.⁵⁰

The risk of oligopolization can accordingly be reduced by a careful decision on how many vertically integrated entities to divest. Three "Baby Bills" are better than two, and four are better than three. The limit, at least analytically, is a number so large that each retains just enough economies of scale or scope to compete efficiently. As a practical matter, four is very likely to be a sufficient number, and three might be enough. These numbers may seem inconsistent with current sound antitrust policy that generally considers mergers anticompetitive if they result in three firm or even four firm industries. The significant difference in this case, however, is the unique fact that at the time of divestiture the companies will be, for all practical purposes, identical in scale, scope and assets, including talent.

The post-divestiture firms are likely to compete rather than act as an oligopoly for another reason as well. In a traditional oligopoly, the companies have given market shares, in terms of revenues and customer relationships, and conclude that they will profit maximize by stabilizing their shares through tacit agreement rather than by attempting to increase their shares through competition. In this post-divestiture software market, however, on the first day after divestiture, no company has any advantage in market share, revenue or customer relationships. All customers will be looking for support and fulfillment of site licenses, distribution contracts and developer agreements. Thus, from the outset some number of Microsoft "clones" with identical resources will have to find ways to differentiate themselves in order to attract and retain customers. OEMs, developers and consumers will, for the first time, be able to choose among multiple manufacturers of Microsoft products. The companies will quickly begin to differentiate themselves, initially in their business practices and soon in their software and content.

B. IMPACT ON EFFICIENCIES AND INTEROPERABILITY

While a vertical divestiture eliminates the risk that a divested OS company would be able to exercise market power by raising prices (precisely because there will be multiple OS providers), it nonetheless presents different practical and policy concerns. If there are multiple providers of the Windows OS family of products, then there is a conflict between antitrust relief and the network externalities associated with software production. Specifically, with multiple versions of Windows available, a vertical divestiture may fragment Windows and eliminate the market efficiencies available that result from Windows' status today as a *de facto* standard. There would necessarily be substantial consumer and ISV uncertainty arising from the existence of multiple vendors for Windows OS products, with customers forced to purchase all OS products or to choose a single vendor, at the risk of sacrificing interoperability.

This risk would not apply to compatibility between new applications software and the existing, installed base of Windows OS products. Any divested company that innovated without paying attention to the issue of backward compatibility would risk losing its inherited economies of scale and scope, with resulting penalties in the market.⁵¹ Going forward, however, the incentives of each post-divestiture entity to innovate in the OS — while desirable from a competitive perspective — would naturally reduce the function of Windows as a uniform, interoperable platform for applications development.

Just as the UNIX market, and more recently Linux, have seen multiple versions of the OS with varying degrees of interoperability produced by different companies, so too would a vertical divestiture lead to differentiated, potentially incompatible Windows products. In addition to making consumer choice more difficult, this would increase costs to applications developers, who would be required to write software code for different Windows platforms. Consumers would also face higher costs as differentiation leads to the need to support multiple OS within a corporate environment. Support, training, acquisition and other costs are likely to rise as consumers lose the *de facto* Windows standard. Whether or not these lost efficiencies arising from long-term interoperability are desirable depends, in part, on whether one concludes that software economics can support multiple OS vendors, since the “price” of the current monopoly standard is exactly the competitive disputes that are being tried before Judge Jackson.

It is worth noting that these compatibility concerns are resolved in a horizontal divestiture. Indeed, in comparing vertical and horizontal divestitures, it is clear that the efficiency impact of these two relief measures is quite different. While a horizontal divestiture could eliminate economies of scope arising from vertical integration, there has as yet been no demonstrable proof that such economies exist or that Microsoft has passed the benefits of any such efficiencies on to consumers. On the other hand, a vertical divestiture would act directly to eliminate the efficiencies gained from interoperability among Windows OS machines — economies that are particularly significant in the business and network software markets — and in the long term almost certainly defeat the *de facto* market standard for OS software.

3. WINDOWS AS OPEN SOURCE SOFTWARE (OSS)

The concept of “open source software” is not a new one, but its application as an antitrust remedy would be novel. Open source software is a distribution model under which a software developer makes available to the public, including ISVs and others, the actual source code for its software on a periodic basis. With such visible examples as Linux and Netscape’s Communicator Internet browser (mozilla.org), the OSS movement is gaining strength in the industry, and presents an alternative structural model for the Court and DOJ to consider. As the L.A. Times recently editorialized, “there is one way to reform Microsoft without dampening any free-market spirit: require it to open up its operating system to other software developers so programs can be written to work with Windows.”⁵²

While an OSS requirement would begin with a behavioral mandate — the requirement for Microsoft’s release of Windows code into the public domain, subject to reasonable resale licensing restrictions — it would change the structural role of the OS in the software industry by limiting the development of proprietary OS features. It would also create an incentive for all firms, including Microsoft, to innovate in non-OS areas, in essence transforming Windows into a commodity on top of which any other firm could equally build value-added products. In an OSS environment, Microsoft’s business success in the applications, networking and e-commerce markets would depend on its ability to compete on the merits, rather than extensions of its OS monopoly power. Thus, since it changes the basic structure of and incentives in the market, OSS is appropriately considered an alternative to divestiture as a form of structural relief.

An open source software remedy need not contradict Microsoft’s existing IP rights in the Windows OS family. In the developing OSS concept, there appear to be several methods, all keyed to licensing, for distribution of open source software. First, ISVs that used the “open” code to ensure product interoperability with current OS specifications would be permitted to do so without payment of royalties, so long as they did not actually incorporate Windows code into their shipping products. Second, OS competitors that developed Windows “enhancements” and sought to market OS products incorporating the open source code would be required to pay licensing fees to Microsoft. Third, OEMs that shipped PCs with the OSS version of Windows installed would be required to enter into licensing and compensation agreements with Microsoft. In each of these examples, a licensing condition could be a mandatory “grant back” on improvements to the Windows source code itself, so that all ISVs and OS competitors would benefit from refinements in the Windows kernel software.

Imposition of an open source mandate on Microsoft for the Windows OS family would directly address two of the more complex issues raised in the *United States v. Microsoft* litigation. First, whether or not any functionality can be incorporated into Windows would largely be immaterial. Because the source code would be open and available, Microsoft would be unable to advantage itself, as all developers would have access to the same technical specifications. For example, whether the Internet browser or other applications are properly classified as OS functionalities would no longer be a contentious issue. If Microsoft is correct that Internet browser functionality belongs in the OS, it could fully integrate Explorer into Windows. In that instance, every

third-party ISV would have access to the same Explorer source code, so that Microsoft could not use product integration to disadvantage rivals technically. Conversely, if Microsoft believes that sale of Internet Explorer directly to end users better serves its interests, it could retain Explorer as a stand-alone application, in which case it would compete on an even playing field with other applications developers. Simply put, in an OSS world, integration is irrelevant, except as a matter of predatory pricing. That is, OSS does not eliminate Microsoft's financial incentive to harm competition in adjacent markets by undercutting efficient market prices for complementary products, but does make it impossible for Microsoft do so by discriminatory technological bundling of stand-alone products into the Windows OS itself.

Second, OSS makes it possible to have a single mechanism for ensuring nondiscriminatory access to OS specifications, without requiring detailed judicial determinations of what constitutes operating system software. So long as Microsoft were required to provide each release of the Windows family (alpha, beta and service packs) in source code to the industry, there would be no

Imposition of an open source mandate on Microsoft for the Windows family would directly address two of the more complex issues raised in the *United States v. Microsoft* litigation — OS definition and non-discriminatory access.

need for judicial oversight of product design or definition. Any ISV, including Microsoft, would be permitted to use the source code for product development and interoperability testing, but would be required to compensate Microsoft under license only if it incorporated the code into a shipping product. Thus, there is nothing inconsistent with an OSS mandate and preservation of the basic IP protections accorded to software products, because Microsoft would still retain the right to charge competitors for commercial sale of Microsoft's licensed OSS products.

The potential downsides of an OSS solution are different from all of the conduct and structural alternatives explored previously. Initially, it would be imperative that there remain some degree of DOJ and judicial oversight to ensure equality and timeliness in Windows source code releases. Because OS development is a process, not a static market, guidelines for release would need to be developed and observed. This oversight would likely be less intrusive than that required under a conduct-oriented remedy (for instance, mandatory API disclosure) because Microsoft's incentives to compete at the OS level would be diminished. More importantly, there is a plain risk to interoperability if, as is feasible under an OSS model, multiple ISVs were permitted to develop different enhanced versions of Windows based on release open source code. By creating incentives for fracturing the OS, an open source solution could raise consumer costs and decrease market efficiency.

This points out an obvious, and at first impression potentially fatal, objection to an OSS requirement. If Windows were declared open source code software, would there be diminished incentives for technological innovation in operating system software? SIIA believes the answer is clearly "No." An OSS requirement would lead to substantial third-party innovation in OS en-

hancements. More importantly, it would vastly increase the ability of third-party ISVs to engage in application innovation. By enforcing an equal access requirement for the basic Windows building blocks, an OSS model may encourage innovation because applications developers would develop new products that function just as OS features do in today's industry structure — seamlessly integrated with the OS. The difference is that this "integration" would result not from the combination of different products within a single company, but rather through the competitive process. In either case, the functionalities would be transparent to the end user, thus meeting the central antitrust objective of maximizing consumer welfare. Rather than stifle innovation, an OSS requirement would re-direct innovation to markets where innovation could only operate to help consumers without harming competition. It does, however, raise concerns about interoperability, which as noted above tends to raise consumer costs in terms of support, training, acquisition and efficiency.

On the other hand, an OSS model would clearly not be self-executing. In addition to requiring enforcement of source code release timeliness, an OSS mandate would necessitate restrictions on Microsoft's licenses with OEMs and others. For instance, if Microsoft were able to compel OEMs to use only "100% Pure Microsoft" Windows-based products, then the basic purpose of an open source requirement would be defeated. Consequently, a prohibition on restrictive Microsoft licenses that precluded OEMs from using other versions of OS software or non-Microsoft applications would be required, at least as a transitional measure.

CONCLUSION

The *United States v. Microsoft* antitrust case presents a fundamental challenge to government policy-makers and the software industry. If DOJ prevails in demonstrating that Microsoft has maintained and extended its Windows operating system monopoly through exclusionary and anticompetitive means, the Court will be required to fashion relief that will both open foreclosed markets to effective competition and prevent recurrence of any unlawful conduct. At the same time, an antitrust remedy that works to extend the current pattern of repetitive, costly and lengthy governmental oversight of Microsoft's business practices could work a disservice on all participants in the software industry, including Microsoft's rivals, by setting an undesirable precedent for intrusive government "regulation by decree" of the software industry.

It is reasonable to conclude that much of the vibrant growth and flexibility that the American software industry has exhibited over the past decade — in which consumers have enjoyed quantum leaps in functionality and power — has been due precisely to its almost complete lack of government oversight of product design, pricing and marketing. Learning from the failures of the *United States v. AT&T* consent decree, SIIA is concerned that governmental intervention in monitoring, interpreting and enforcing a behavioral remedy would not be justified in view of the limited effectiveness of purely conduct-oriented relief. SIIA does not conclude that conduct-oriented remedies for *United States v. Microsoft* should be dismissed out-of-hand, but cautions that in considering their potential effectiveness close attention must be given to the strength, continuity and vigor of future relief enforcement. Indeed, the following chart illustrates that the

issues discussed in this report can, in many instances, be addressed through either conduct or structural remedies, or a combination of both. The differences lie not only in their possible efficacy, but as well in the varying costs that relief alternatives impose on innovation, interoperability and efficiency in the software and content industries.

Table 5

Competitive Issue	Conduct Remedy	Structural Remedy
Bundling	Bundling Prohibition	Horizontal Divestiture
	Non-Structural Corp. Separation	Vertical Divestiture
	Fair Contracting Obligations	
Predatory Pricing	Pricing Regulation	Horizontal Divestiture
Technological Integration	Windows API Disclosure	Horizontal Divestiture
	Compulsory API Licensing	Open Source Software
	ANSI Standardization	
OEM and Desktop Restraints	Fair Contracting Obligations	Horizontal Divestiture
	OEM Restriction Prohibition	Vertical Divestiture
Internet Content Access	OEM Restriction Prohibition	Horizontal Divestiture
OS Competition	Windows OS License Auction	Vertical Divestiture

Although both a horizontal divestiture along business lines and a divestiture of multiple, vertically integrated entities are more effective and less intrusive than a conduct remedy, their relative merits are different. In some ways, the selection between these two forms of divestiture is a Hobson’s choice. While a horizontal divestiture would sacrifice scope economies and retain single firm dominance of the OS market, a vertical divestiture could splinter Windows as a *de facto* standard and could lead to long-term interoperability risks. The choice between these two solutions, therefore, is ultimately an antitrust policy question with no clear answer, and on which SIIA takes no position. Whether alone or combined with targeted conduct prescriptions, these structural relief alternatives deserve the most careful attention of the government and the Court.

APPENDIX A

SPA'S COMPETITION PRINCIPLES

ADOPTED BY THE SPA BOARD OF DIRECTORS, JANUARY 30, 1998

BACKGROUND:

Government authorities seeking to analyze the competitive nature of the software industry face a dilemma that will require a thoughtful balance between competing interests. On the one hand, an exceptionally successful incumbent should not be penalized for its past success in existing markets or inhibited from striving for similar success in new markets. On the other hand, such an incumbent should not be permitted to raise rivals' costs of reaching consumers through the incumbent's employment of strategies not reasonably necessary to its own development of new or improved products or services. Smaller rivals and new entrants should be equally free to develop their own products and services unimpeded by artificial barriers to market access. This means, for example, that established incumbents should not be permitted to exploit their market power in existing markets in ways that foreclose rivals' opportunities to reach consumers through essential distribution channels. All of the principles set forth below are aimed at striking a workable balance between these interests.

These principles are proposed to guide government officials in the executive, judicial and legislative branches setting antitrust enforcement policy. The principles are not intended in any manner to be a code of conduct to limit competition among competitors in the software industry.

1. Maximize Innovation

The overriding objective of competition policy as applied to our industry should be to maximize innovation and dynamic competition for the benefit of consumers.

2. Nondiscriminatory Licensing of Interface Specifications to Third Party Software Developers

If the owner of a commercially available dominant operating system licenses the intellectual property in its interface specifications to any third party for the purposes of developing application software, then it should (i) provide that licensee, and any other licensee, with the licensed information regarding these specifications without delay but within a commercially reasonable time from the time it first provides the information to its own application developers, and (ii) permit that licensee, and any other licensee, to use its certification marks to represent truthfully that the application is interoperable or compatible with the operating system. Compatibility laboratories managed by the operating system vendor should adhere to publicly available procedures to ensure that laboratory certifications are applied on a fair and nondiscriminatory basis.

3. Leveraging an Operating System into the Sale of Products and Services

The owner of a dominant operating system may have the ability to leverage the operating system into the sale of favored products and services, including those utilizing electronic commerce. Operating systems should not be used to unfairly favor its own products and services (or its favored partners) over those of competing vendors. The operating system vendor should not include its own services or products as part of the operating system or user interface unless it gives the same ability to integrate products and services into the operating system to competing vendors. Competition for the valuable “virtual real estate” of the desktop should instead occur downstream in the distribution system. In addition, artificial barriers should not be established that unreasonably limit the ability of a hardware manufacturer or end-user to reconfigure the desktop to utilize other software, content or services, except where such a reconfiguration would impair the core functions of the operating system.

4. Competitive Licensing of Software Applications to Original Equipment Manufacturers (OEMs)

Each original equipment manufacturer only has limited hard disk space and limited software licensing dollars to devote to bundled applications. Practices such as tying the pricing of the operating system to the price of software applications, and the tying of certain applications to the sale of other applications, have the effect of restraining competition among independent software vendors (ISVs) for the "virtual shelf space" of the OEM. It is critical to the long-term health of the computer software industry that this competition with and among ISVs be encouraged rather than allowing the OEM to be monopolized by a single vendor.

5. Equal Access to Retail Customers

Many software publishers still depend upon retail stores to reach their customers. Competition is undermined by practices that monopolize limited retail space.

6. Disadvantaging Competing Software Products

A software vendor should not intentionally disable, cripple or otherwise interfere with the intended functionality and execution of other products, when the purpose or effect would be to limit interoperability, open standards, competition or innovation. Similarly, a vendor should not suggest that other products may be incompatible that are in fact known to be compatible. Representations of compatibility or incompatibility should be truthful and based on reasonable testing and evaluation. In particular, no software vendor should include error messages, warnings or other messages to users that are not completely truthful. Such messages should fully disclose to the user the consequences of following any instructions suggested in the message. The promotion of interoperability and open standards generally enhances competition and innovation in the software industry.

7. Discriminatory Access to Internet Content

A dominant operating system should not be used to favor Internet content that is owned, offered by, or preferentially licensed to the operating system vendor. Consumers should be given the greatest possible ability to set and choose links to Internet content and to replace any links provided by the operating system vendor with links of their own choosing. The distribution of proprietary technology that works only with the operating system could have the effect of restricting consumer choices in how and through what technology content may be viewed. Similarly, a dominant operating system vendor should not be permitted to discourage web sites from exploiting the information access capabilities of competing products. Nor should such vendor be permitted to compel web sites to display and promote products and services of the dominant operating system provider, or discourage the use of competing products and services.

8. Pre-Announcements and Vaporware

Pre-announcements of specific products or features are, at times, very relevant to a broad range of industry players in terms of assisting them in determining technology trends. However, the intentional pre-announcement of products that do not yet exist can have the effect of freezing the market. When a product pre-announcement is knowingly false, it may harm competition and restrict the availability to the market of innovative products from other vendors.

APPENDIX B — ENDNOTES

¹ *United States v. Microsoft Corp.*, Civil Action No. 98-1232 (TPJ)(D.D.C. 1998); *New York ex rel. Attorney General Dennis C. Vacco, et al. v. Microsoft Corp.*, Civil Action No. 98-1233 (TPJ)(D.D.C. 1998). The “Microsoft case” actually comprises two consolidated lawsuits, the first brought by the United States Department of Justice on behalf of the federal government and the second brought by 23 state attorneys’ general. In September 1998, Judge Jackson denied the plaintiffs’ joint motion for a preliminary injunction, denied Microsoft’s motion for summary judgment and set the antitrust claims for trial.

The present trial is the third federal antitrust enforcement action commenced against Microsoft in the past five years. The first action was initiated on July 15, 1994 when the Department of Justice (DOJ) filed a complaint alleging that Microsoft unlawfully maintained a monopoly in the market for PC operating systems through anticompetitive licensing practices with original equipment manufacturers (OEMs). To settle this matter, on August 21, 1995 Microsoft entered into a consent decree that, most notably, prohibited conditioning receipt of OS licenses upon the purchase of other Microsoft products or prohibiting OEMs from licensing non-Microsoft operating systems. *United States v. Microsoft Corp.*, Final Judgement, Civil Action No. 94-1564 (D.D.C. 1995). This decree was initially rejected by the district court, but ultimately upheld on appeal. *United States v. Microsoft Corp.*, 159 F.R.D. 318 (D.D.C.), *rev’d*, 56 F.3d 1448 (D.C. Cir. 1996). On October 20, 1997, DOJ filed a contempt motion arguing that the Microsoft had violated the consent decree by requiring OEMs to license and distribute Microsoft’s Internet Explorer as a condition to receiving OS licenses. On December 11, 1997 the district court denied DOJ’s contempt motion, but issued a preliminary injunction ordering Microsoft to permit OEMs to purchase Windows independently of Internet Explorer. *United States v. Microsoft Corp.*, 980 F. Supp. 537 (D.D.C. 1997). In response, Microsoft gave OEMs three choices: (1) an outdated version of Windows 95; (2) an ineffective version of Windows 95; or (3) Windows 95 with Internet Explorer. DOJ contended that this was false option and filed a second contempt of court motion. Microsoft and DOJ then submitted a stipulated proposed order adding two options: (4) delete the browser from the most recent version of Windows 95, or (5) remove the Internet Explorer icons from the desktop and “Start menu.” *United States v. Microsoft Corp.*, Stipulation and Order, Civil Action No. 94-1564 (TPJ) (D.D.C. 1998). Thereafter, Microsoft appealed the preliminary injunction order and on May 12, 1998 was granted a stay of the order as applied to Windows 1998. *United States v. Microsoft Corp.*, 56 F.3d 1448 (D.C. Cir. 1998).

² The government recently announced that, if it prevails at trial, it will seek a separate relief phase to permit Court consideration of remedies.

³ Similar restrictions should not be applied to firms that do not enjoy market power or that have not wielded any such power to exclude marketplace competition. For instance, if the Court were to ban certain bundling practices by Microsoft, there would be no reason (at least without proof that other firms had similarly abused positions of market dominance), to extend these same safeguards to other software manufacturers.

⁴ The most well-known examples of structural antitrust remedies are the government-ordered divestiture of the Standard Oil Trust in the late 19th Century and the consensual dissolution of the former AT&T Bell System by the 1982 AT&T consent decree. See *Standard Oil Co. or New Jersey v. United States*, 221 U.S. 1 (1911); *United States v. American Tel. & Tel. Co.*, 552 F. Supp. 131 (D.D.C. 1982), *aff’d sub nom. Maryland v. United States*, 490 U.S. 1001 (1983).

⁵ See, e.g., DOJ Press Release, “Department of Justice Clears WorldCom/MCI Merger After MCI Agrees to Sell Its Internet Business,” Dec. 3, 1998; “MCI Close to Deal to Sell Its Internet Business,” *New York Times*, July 14, 1998.

⁶ On January 21, 1952, DOJ filed a complaint against IBM alleging several antitrust violations, including tying. To resolve this matter, in 1956 IBM and DOJ entered into a consent decree requiring IBM to sell its machines, as well as lease them. In addition, the decree required IBM to provide service and sell parts for IBM computers even after they were no longer owned by IBM, to offer its computer services in an affiliate separate from its equipment and software, and to allow independent computer service organizations to purchase parts from IBM. *United States v. International Business Machines Corp.*, Final Judgment, Civ. 72-344 (S.D.N.Y. 1956) (DNE). In 1969, DOJ filed a second complaint against IBM alleging that the company misused its position as the monopoly provider of mainframes to extend its monopoly in the computer systems industry. *United States v. IBM Corp.*, Civ. 69-200 (S.D.N.Y. 1969) (DNE). However, as DOJ pursued IBM for misuse of monopoly, microprocessors began to revolutionize the computer industry, eventually making IBM's mainframe dominance irrelevant. As a result, in 1982, after 13 years of litigation, DOJ voluntarily dismissed its lawsuit against IBM, stating that the case was "without merit" and offered "little prospect of victory or meaningful recovery." *In re IBM Corp.*, 687 F.2d 591, 594 (quoting DOJ's stipulation of dismissal).

⁷ Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56, codified at 47 U.S.C. § 251 *et seq.*

⁸ "Market power" is defined classically as the power of a single firm to raise prices or exclude competition. *United States v. E.I. duPont de Nemours & Co.*, 351 U.S. 377, 391 (1956). "Monopoly power" is a common synonym for market power.

⁹ *E.g., Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585 (1985).

¹⁰ News and popular press analysis of the *United States v. Microsoft* trial have been filled with allusions to animosity between the principal players and to governmental recrimination against what is frequently viewed as Microsoft's "hard-nosed" litigation tactics. *See, e.g., "Bill in the Bull's Eye,"* Newsweek, Nov. 30, 1998, at 48. These factors, whatever their truth, have no appropriate role to play in fashioning an antitrust remedy that will serve the public interest in competitive, efficient and innovative software markets.

¹¹ Microsoft itself refers to its "family" of Windows OS products, including both desktop and server OS network software, *i.e.*, Windows NT and Windows 2000 <<http://www.microsoft.com/windows/windows2000/ready>>.

¹² *See "Scenario 2: Justice Slows the Giant With 'Surgical Strikes,'"* Business Week, April 20, 1998 <<http://www.businessweek.com/1998/16/b3574001.htm>>.

¹³ In response to a preliminary injunction order requiring Microsoft to make Windows available for licensing independent of Internet Explorer, Microsoft offered OEMs the option of accepting a version of Windows 95 over two-years-old, or an ineffective version of Windows 95 as an alternative to Windows 95 with Internet Explorer. *See* note 1. Subsequently, after DOJ filed a contempt motion arguing that Microsoft failed to comply with the injunction because it presented OEMs with choices that were not commercially viable, Microsoft agreed to allow OEMs to license the most recent version of Windows 1995 without Internet Explorer or delete the Explorer icons from the desktop and start-up menu. Stephen Labaton, "U.S., Microsoft Clash in Court Over Internet Browser," Jan. 14, 1998; Joel Brinkley, "Microsoft Bows to U.S. Order on Browser," New York Times, Jan. 23, 1998.

¹⁴ Editorial, Business Week, Jan. 19, 1998, at 96

¹⁵ *United States v. Griffith*, 334 U.S. 100 (1948).

¹⁶ *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585 (1985).

¹⁷ See, e.g., *MCI Telecommunications Corp. v. American Tel. & Tel. Co.*, 708 F.2d 1081, 1132 (7th Cir.), cert. denied, 464 U.S. 891 (1983).

¹⁸ *United States v. Terminal Railroad Assoc.*, 224 U.S. 383, 411 (1912)(finding that competing railroads should have access to terminal facilities on “just and reasonable terms”). *MCI Communications Corp. v. AT&T*, 708 F.2d at 1132 (holding that firms controlling essential facilities have an “the obligation to make the facility available on nondiscriminatory terms”)

¹⁹ Similarly, DOJ’s Merger Guidelines provide that where an acquisition results in forcing competitors to enter two markets simultaneously in order to compete with an integrated firm, such “two-tiered” entry can be a substantial barrier to competition that can render a merger unlawful under the Clayton Act. U.S. Dept. of Justice, Merger Guidelines, 49 Fed. Reg. 26, 823 (1984)(“economies of scale in the secondary market may constitute an additional barrier to entry to the primary market in some situations requiring two-level entry”).

²⁰ In 1996, AT&T spun off its telecommunications equipment and software operations as Lucent Technologies. The spin-off significantly increased revenue opportunities for the Lucent as companies were more willing to purchase equipment from an entity that was not a threat in the services industry, as AT&T. In addition, the spin off also allowed for significant reorganization efficiencies. Catherine Arnst, “A Shining Moment, Slimming Down has Helped the AT&T Spin-Off Thrive,” Business Week, Apr. 21, 1997. The market capitalizations of both AT&T and Lucent have increased substantially since the spin-off.

²¹ A similar process was utilized in the *United States v. AT&T* case, where Judge Greene required that the government make the “Plan of Reorganization” negotiated with AT&T available for public comment and subject to judicial approval before implementation. *United States v. American Tel. & Tel Co.*, 552 F. Supp. 131, 143-47 (D.D.C. 1982).

²² See “U.S., 19 States Discuss Possible Sanctions Plan for Microsoft,” Washington Post, Feb. 15, 1999, at A1 (“The logic [of divestiture] would be that it would end once and for all the alleged practice that is at the heart of the case — Microsoft’s using its operating system monopoly to build monopoly in applications software.”); Reuters, “Government Ponders Remedies Against Microsoft,” Feb. 15, 1999 < <http://www.zdnet.com/zdnn/stories/news/0,4586,2209030,00.html>>.

²³ “What Happens To Microsoft If It Loses Antitrust Case?,” Wall St. J., Nov. 16, 1998, at A40.

²⁴ See “How to Break Up Microsoft,” New York Times, May 24, 1998.

²⁵ A behavioral decree poses for the software industry the possible result of a process very much like regulation. It raises not only the factual question of whether DOJ has or is willing to assemble the staff necessary to effective ongoing decree administration, but also the much more difficult institutional question of whether DOJ, as a law enforcement agency, wishes to become a quasi-regulatory agency. Ultimately, after administering the *AT&T* consent decree for more than a decade, DOJ was forced to concede that a transfer of decree-related responsibilities back to the expert regulatory agency was most consistent with their respective institutional roles and competencies. In the software industry, in contrast, there is no FCC or other expert agency to fall back upon.

²⁶ Such advance preferential disclosure can be captured in an API rule, for example by making the rules applicable to all OS functionality that is, will or could be declared an API. The statement of such a rule, however, reveals its multiple shortcomings. By significantly expanding the definition of an API, there are few OS functions that have no possibility of becoming APIs. Further, the expanded rule is probably useful only retrospectively. Once a new API is declared, it would be possible to examine whether there had been any disclosure of its details prior to

its formal declaration as an API. Such an examination would be intrusive and time-consuming. And even if the examination established that there had been disclosure to the affiliated application developer prior to the formal declaration of an API, it would be impossible to retroactively give unaffiliated application developers equality.

²⁷ Patents that are acquired through fraud are rendered unenforceable, and may serve as a basis for antitrust claims. *Walker Process Equip., Inc. v. Food Mach. & Chem. Corp.*, 382 U.S. 172 (1965)(allegations of fraud in patent procurement in an infringement suit are sufficient to state a claim under Section 2 of the Sherman Act); *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 882 F.2d 1556 (Fed. Cir. 1989). If the patentee's conduct in procuring a patent does not rise to the level of common law fraud, courts may still curtail patent holders rights by applying the equitable doctrine of "unclean hands" and withholding remedies that the holder would ordinarily be entitled to in actions for patent infringement or breach of a license agreement. This inequitable conduct doctrine applies both in the instances of inequitable procurement as well as misuse, such as activities involving price-fixing or tying. *United States Gypsum v. National Gypsum*, 352 U.S. 457 (1957); *BB Chem. Co. v. Ellis*, 314 U.S. 495 (1942); *Morton Salt Co. v. G.S. Suppiger Co.*, 314 U.S. 488 (1942).

²⁸ Source code is the underlying set of computer instructions that make up the OS software.

²⁹ See note 27.

³⁰ The effect of this approach on Microsoft's corporate and business incentives is not easy to determine. Compulsory licensing of the Windows source code could decrease Microsoft's incentives to innovate in the OS, knowing it will have to divulge and license the source code. At the same time, the OS could become even more valuable as a retail product if the result of compulsory licensing is increased innovation in application software. A reduction in innovation and enhancement in the OS would clearly mean a net loss in consumer welfare

³¹ "What If Microsoft Loses? —The Trial Has Just Begun, But Remedies are Being Crafted," U.S. News & World Rep., Nov. 2, 1998, at 47.

³² "Prior to approval of such a proposed American National Standard, the Institute shall receive from the identified party or patent holder . . . either: assurance in the form of a general disclaimer to the effect that such party does not hold and does not currently intend holding any invention the use of which would be required for compliance with the proposed American National Standard or assurance that: a) a license will be made available without compensation to the applicants desiring to utilize the license for the purpose of implementing the standard; or b) a license will be made available to applicants under reasonable terms and conditions that are demonstrably free of any unfair discrimination." ANSI, Procedures for the Development and Coordination of American National Standards, § 1.2.11.1 (April 1998).

³³ It would seem clearly inappropriate to limit a company's right to develop and market both operating systems and applications, except in the singular circumstance here of monopoly power in the operating system that has been extended into the application market. Under this proposal, where multiple companies would be competing in the sale of both operating systems and applications, the singular circumstance is absent, and therefore there would be no reason to prohibit the companies' vertical integration.

³⁴ *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574 (1986).

³⁵ *Northeastern Tel. Co. v. AT&T*, 651 F.2d 76, 87 (2d Cir. 1981)("Prices that are below reasonably anticipated marginal costs, and its surrogate, reasonably anticipated average variable cost, are presumed predatory."). See P. Areeda & D. Turner, *Predatory Pricing and Related Practices Under Section 2 of the Sherman Act*, 88 Harv. L. Rev. 697 (1975) (providing a basis for the modern approach of finding predatory pricing where prices are below marginal costs). Where marginal costs are difficult to determine, courts have used average costs. *McGahee v. Pro-*

pane Gas Co., 858 F.2d 1487, 1504 (11th Cir. 1988), *cert. denied*, 490 U.S. 1084 (1989); *Chillicothe Sand & Gravel Co. v. Martin Marietta Corp.*, 615 F.2d 427, 432 (7th Cir. 1980); *Janich Bros. v. American Distilling Co.*, 570 F.2d 848, 858 (9th Cir. 1977), *cert. denied*, 439 U.S. 829 (1978); *International Air Indus. v. American Excelsior Co.*, 517 F.2d 714, 724 (5th Cir. 1975), *cert. denied*, 424 U.S. 943 (1976).

³⁶ Business Week, April 20, 1998 <<http://www.businessweek.com/1998/16/b3574007.htm>>.

³⁷ This desktop preference is in some ways very similar to the antitrust concern arising from discriminatory use of computer reservation systems (CRS) by airline carriers, a matter also resolved through DOJ antitrust intervention in the 1980s.

³⁸ *Competition in the Interstate Interexchange Marketplace*, 6 FCC Rcd. 5880 (1991); *Expanded Interconnection with Local Telephone Company Facilities*, 7 FCC Rcd. 7369 (1992).

³⁹ *E.g.*, *Amendment of Section 64.702 of the Commission's Rules and Regulations (Computer II)*, 77 F.C.C.2d 384 (1980).

⁴⁰ *United States v. American Tel. & Tel. Co.*, 552 F. Supp. at 193 n.251.

⁴¹ 47 U.S.C. § 251; *see Iowa Utilities Board v. FCC*, 120 F.3d 753 (8th Cir. 1997), *rev'd*, ___ S. Ct. ___ (Jan. 25, 1999).

⁴² *See* “Judge Bork: Break Up Microsoft,” Reuters, Jan. 15, 1999.

⁴³ “Many lawyers and techies, alike, abhor the idea of government trying to define what is ‘operating-system’ software and what is ‘application’ software. They fear this would inevitably lead to a situation in which a federal District Court Judge made key business decisions, much as Judge Harold H. Greene did while supervising AT&T for years.” Business Week, April 20, 1998 <<http://www.businessweek.com/1998/16/b3574007.htm>>.

⁴⁴ The horizontal divestiture remedy would not directly address Microsoft’s power in the office suite software market, but would encourage competition with Microsoft Office by permitting the divested OS company to bundle the Windows OS with third-party applications or internally developed new suite applications. (The “new” Windows company, for instance, could add a new word processor to the OS.) Since the applications company would have a formidable market share and installed base in suite software, it is unlikely that the OS company would be able to displace the applications company. Indeed, some observers believe that the more effective monopoly is in Microsoft Office, suggesting as a remedy that the divested applications company be required to develop the ubiquitous Microsoft Office suite for the Linux and UNIX operating systems, thus providing key applications support for alternative platforms. We do not believe such a remedy would be necessary, since the market power of each of the divested entities would likely constrain the exercise of monopoly power by other divested units.

⁴⁵ Under this approach, a three-year moratorium period would be established, beginning at divestiture, during which the OS company (a) could bundle its products only with third-party or internally developed applications, and (b) could not incorporate into the Windows OS family any application currently offered by Microsoft as a stand-alone product. Other transitional conduct rules, such as an API disclosure requirement, could likewise be coupled with divestiture to enable third-parties more rapidly to develop competing applications and prevent premature restoration of the old monopoly. Of course, such transitional safeguards should be kept to a minimum, because the more detailed and long-lived such transitional rules become, the more a horizontal divestiture approach loses its comparative benefit of reduced governmental oversight and regulation.

⁴⁶ There are cost efficiencies in maintaining a consistent environment in corporate deployments, such as lower total cost of ownership, economies of scale in purchasing, and a reduction in training and support costs, that would be impaired by splintering Windows as a *de facto* OS standard. These are particularly significant, as discussed in Section IV.C.2, in comparing the relative efficiency impacts of horizontal versus vertical divestiture alternatives.

⁴⁷ The ultimate objective of antitrust law is to allow the market to determine the most efficient provision of goods and services, thus making efficiencies a key consideration of any antitrust relief measure. Whether or not such economies exist within a vertically integrated Microsoft is itself a matter of heated debate, but it is logical to assume that in some circumstances vertical integration can yield cost savings that produce lower prices and improved products for consumers. While there should be no presumption that a vertically integrated Microsoft is necessarily more efficient than its competitors, relief should nonetheless avoid making it economically impossible for Microsoft to realize whatever efficiencies may arise from the joint provision and marketing of OS and other PC software products.

⁴⁸ Perhaps even more to the point, in contemplation of the AT&T divestiture, there was relatively widespread agreement that while splitting AT&T from the RBOCs was likely on balance to be positive, splitting Western Electric from AT&T was likely on balance to be strongly negative. The Lucent spin off was, of course, almost exactly the divestiture of Western Electric once contemplated by the government.

⁴⁹ See, e.g., “What Happens To Microsoft If It Loses Antitrust Case?,” Wall St. J., Nov. 16, 1998, at A40.

⁵⁰ Once past “day one” after divestiture, each company is likely to begin looking for ways to increase its share at the expense of the other companies (even assuming a dynamic rather than static market size). This is the usual basis of competitive markets, and it is why markets with numerous participants of roughly equal size tend to be more competitive than markets with fewer participants, or with a few very large participants (or, put another way, markets in which a few participants with much larger market shares collectively account for a significant share of the total market).

⁵¹ While each of the divested entities will have an incentive to differentiate their OS products, in a vertical reorganization the post-divestiture companies will retain scale and scope economies because their potential customer base consists of everyone using Microsoft OS and compatible applications. If one of the companies innovates in such a way that its OS is not compatible with existing applications, or its applications are not compatible with the existing Windows OS family, that company risks having the effective scale of a very small niche player rather than of a vendor to the entire current installed base.

⁵² Editorial, Los Angeles Times, Jan. 11, 1999. See, e.g., “Code Warriors,” Newsweek, Jan. 12, 1999 <http://cgi.newsweek.com/cgi-bin/nwframe?url=http://newsweek.washingtonpost.com/nw-srv/issue/03_99a/printed/int/socu/ty0103_1.htm>; M. Ricciuti, “Microsoft Memo Touts Linux” C|net, Nov. 5, 1998 <<http://www.news.com:80/News/Item/0,4,28397,00.html>>; A. Harmon “For Sale: Free Operating System,” New York Times, Sept. 28, 1998 <<http://search.nytimes.com/search/daily/bin/fastweb?getdoc+site+site+55188+1+wAAA+%22open%7Esource%7Esoftware%22>>.