IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

STATE OF NEW YORK, *et al.*,	)	
	)	**PUBLICLY-FILED VERSION**
Plaintiffs,	)	
	)	
v.	)	Civil Action No. 98-1233 (CKK)
	)	
MICROSOFT CORPORATION,	)	
	)	Next Court Deadline: June 19, 2002
Defendant.	)	Remedies Hearing
	)	

PLAINTIFF LITIGATING STATES'
PROPOSED FINDINGS OF FACT

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INTRODUCTION

Plaintiff States California, Connecticut, Florida, Iowa, Kansas, Massachusetts, Minnesota, Utah, West Virginia and the District of Columbia ("Litigating States") respectfully submit these Proposed Findings of Fact in support of their application for equitable relief against defendant Microsoft Corporation ("Microsoft"). These proposed findings, and the evidence upon which they are based, demonstrate that the States' remedies are necessary to (1) unfetter the market from Microsoft's anticompetitive conduct, (2) terminate Microsoft's illegal monopoly power, (3) deny to Microsoft the fruits of its illegal conduct and (4) ensure that no practices remain which are likely to result in monopolization in the future.

Because this is a large document, the States provide this introduction as a brief guide to its structure and key provisions. Sections I and II are largely historical, providing the Court with a summary of the procedural and substantive history of the case, including the nature of the conduct to be remedied. Section II.E outlines the effects of Microsoft's illegal conduct on consumers and competition, and Section II.E.4 specifically addresses the failed effort of Microsoft's expert, Dr. Kevin Murphy, to establish—contrary to the findings of the District Court and the opinion of an *en banc* Court of Appeals—that Microsoft's illegal activities had little or no impact on competition, consumers, and even on the two nascent platform threats that those activities were designed to thwart.

Section III focuses on the overall purposes and effects of the States' Remedies, explaining how those remedies advance the remedial objectives specified by the Court of Appeals and redress the unlawfully maintained and enhanced applications barrier to entry. Section III.C details how those remedies will enhance competition, innovation and consumer choice. Section III.D provides specific findings concerning the current threats to the Microsoft Intel-compatible personal computer operating system monopoly that are most analogous to

Netscape and Java in the mid-1990's: networks and server-based applications, web services, set-top boxes, hand-held devices and other forms of middleware. Section III.E outlines the evidence adduced during the remedies trial concerning "same or similar" conduct and the other practices directed to the same ends: namely, to prevent nascent platform threats from ripening into or facilitating the growth of real alternatives to Windows.

Section IV challenges Microsoft's contention that its proffered remedy fully responds to the findings of liability enumerated by the Court of Appeals. Based on the record and the determinations of the Court of Appeals, the States offer findings that the Microsoft Remedy does not effectively curb even the specific unlawful behaviors outlined by the Court of Appeals during the liability phase of this litigation. Indeed, with respect to some actions like commingling of code, the Microsoft Remedy explicitly authorizes conduct that was found to be unlawful. With respect to other actions like suppression of Java, the Microsoft proposal is found to be simply mute. And with respect to still others, the exceptions and conditions open avenues for behavior that would continue that which the Court of Appeals found to be anticompetitive.

Section V addresses the major criticisms mounted by Microsoft to the States' remedy proposal. This section collects the evidence concerning, among other contentions, that the States' remedies will lead to undue fragmentation and/or cloning of Windows. On this point, Section V.B contains findings making it clear that "fragmentation" in essence means OEMs offering consumers with choices that they want and do not have today. Section V.F responds to Microsoft's contention that somehow the chief law enforcement officials of nine states and the District of Columbia allowed Microsoft's competitors to "write" their remedy proposal—a contention that the evidence simply does not support.

Sections VI through XXVII discuss, in turn, each element of the States' Remedy. Within each section, a standard format is used to discuss the evidence concerning (1) the purpose of the Remedy, which includes a detailed inventory of the testimony concerning Microsoft's conduct, (2) how the Remedy achieves its purpose and addresses the identified problem[s], (3) the relationship of the proposed Remedy to the objectives outlined by the Court of Appeals and (4) responses to the criticisms of the remedy provision offered by Microsoft.

Section XXVIII offers findings concerning the contending definitions of "middleware." This section makes the case based on the record and current industry realities for treating intermediary technologies like synchronization software and network operating systems as forms of protected middleware. It explains the extent to which the definitions in the two remedy proposals overlap and differ, and why the States' definition is more consistent with the Court of Appeals' definition and remedial objectives than Microsoft's.

Finally, Section XXIX reviews the record evidence demonstrating that little, if any, weight should be accorded to the testimony of Microsoft's expert witnesses. Thus, for example, testimony is collected which shows the Microsoft expert witnesses were inexperienced in the fields in which they purported to opine, lacked independence from Microsoft, lacked knowledge, lacked adequate preparation, and failed to conduct appropriate investigations and analysis, all of which undercuts any utility to the testimony.

I. Procedural History and the Parties

A. Background of These Remedy Proceedings

1. In July 1994, the Department of Justice ("DOJ"), on behalf of the United States, filed suit against Microsoft, alleging that the company was, among other things, unlawfully maintaining a monopoly in the market for desktop operating systems through anticompetitive terms in its licensing and software developer agreements. *See United States v. Microsoft Corp.*, 253 F.3d 34, 47 (D.C. Cir.), *cert. denied*, 122 S. Ct. 350 (2001).

2. The parties subsequently entered into a consent decree, thereby avoiding a trial on the merits. *Id.* (citing *United States v. Microsoft Corp.*, 56 F.3d 1448 (D.C. Cir. 1995)).

3. On October 20, 1997, some three years after the consent decree was entered, the DOJ filed a civil contempt action against Microsoft for allegedly violating one of the decree's provisions. *Id.* On December 11, 1997, the District Court denied the motion for contempt, but entered a preliminary injunction enjoining Microsoft from requiring OEMs to pre-install Internet Explorer as a condition of licensing the Windows operating system. *See United States v. Microsoft Corp*., 980 F. Supp. 537 (D.D.C. 1997), *rev'd*, 147 F.3d 935 (D.C. Cir. 1998). On appeal, the Court of Appeals held that Microsoft's technological bundling of IE 3.0 and 4.0 with Windows 95 did not violate the terms of the consent decree. *See United States v. Microsoft Corp*., 147 F.3d 935 (D.C. Cir. 1998). However, the Court of Appeals expressly reserved the question whether such bundling might independently violate Sections 1 or 2 of the Sherman Act. *See Microsoft*, 253 F.3d at 47 (citing *Microsoft*, 147 F.3d at 950 n.14).

4. On May 18, 1998, approximately a month before the Court of Appeals issued its decision, the United States and a group of twenty states and the District of Columbia filed separate (later consolidated) complaints, alleging violations of the antitrust laws and seeking

preliminary and permanent injunctions against the company's allegedly unlawful conduct. *Microsoft*, 253 F.3d at 47.

5. Relying mainly on Microsoft's varied efforts to usurp Netscape Navigator as the dominant Internet browser, plaintiffs alleged four distinct violations of the Sherman Act: (1) unlawful exclusive dealing in violation of § 1; (2) unlawful tying of Internet Explorer to Windows 95 and Windows 98 in violation of § 1; (3) unlawful maintenance of a monopoly in the market for PC operating systems in violation of § 2; and (4) unlawful attempted monopolization of the Internet browser market in violation of § 2. *Id.* The States also brought pendent claims alleging violations of various State antitrust laws. *Id.*

6. The case was scheduled on a "fast track," with trial scheduled to commence on September 8, 1998, less than four months after the complaints had been filed. *Microsoft*, 253 F.3d at 47. Each side was limited to a maximum of 12 trial witnesses plus two rebuttal witnesses, with direct testimony to be submitted to the court in the form of written declarations. *Id.* Following the grant of three brief continuances, the trial started on October 19, 1998. *Id.*

7. On November 5, 1999, after a 76-day bench trial, the District Court entered 412 findings of fact. *Microsoft*, 253 F.3d at 47 (citing *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9 (D.D.C. 1999)). Thereafter, the District Court established a schedule for briefing on possible legal conclusions, while also referring the case to mediation with the hope that a settlement could be reached. *Id.* The Honorable Richard A. Posner, Chief Judge of the United States Court of Appeals for the Seventh Circuit, was appointed to serve as mediator. *Id.* at 47-48. The parties concurred both in the referral to mediation and the choice of mediator. *Id.*

8. Mediation efforts failed after nearly four months of negotiations. *Id.* at 48. On April 3, 2000, with the issues having been fully briefed, the District Court, upon consideration of

its prior factual findings, entered its conclusions of law finding Microsoft liable on the § 1 tying and § 2 monopoly maintenance and attempted monopolization claims, while ruling that there was insufficient evidence to support a § 1 exclusive dealing violation. *See United States v. Microsoft Corp.*, 87 F. Supp. 2d 30 (D.D.C. 2000), *aff'd in part & rev'd in part*, 253 F.3d 34 (D.C. Cir. 2001). As to the pendent State actions, the State plaintiffs stipulated that, for purposes of liability, the State law claims could be viewed as coterminous with the § 1 and § 2 Sherman Act claims, thereby eliminating the need for further State-specific analysis on liability. *Id.* at 54-55. In those few cases where certain state statutes required a showing of intrastate impact on competition, the District Court found the evidence easily satisfied this requirement. *Id.* at 55-56.

9. The District Court issued its Final Judgment on June 7, 2000. *See United States v. Microsoft Corp.*, 97 F. Supp. 2d 59 (D.D.C. 2000), *vacated*, 253 F.3d 34 (D.C. Cir. 2001).

10. Microsoft appealed and the Court of Appeals, *sua sponte*, agreed to hear the case en banc. *Microsoft*, 253 F.3d at 48. Before the Court of Appeals addressed any substantive matters, the District Court certified appeal of the case brought by the United States directly to the Supreme Court pursuant to 15 U.S.C. § 29(b), while staying the final judgment in the federal and state cases pending appeal. *Id.* The States thereafter petitioned the Supreme Court for a writ of certiorari in their case. *Id.* The Supreme Court declined to hear the appeal of the Government's case and remanded the matter to the Court of Appeals; the Court likewise denied the States' petition for writ of certiorari. *Id.* (citing *Microsoft Corp. v. United States*, 530 U.S. 1301 (2000)).

11. On appeal, after extensive briefing and two days of oral argument, the Court of Appeals, in a unanimous *en banc* decision, affirmed in part and reversed in part the judgment that Microsoft violated § 2 of the Sherman Act by unlawfully maintaining a monopoly in the

market for desktop operating systems; reversed the determination that Microsoft violated § 2 of the Sherman Act by illegally attempting to monopolize the internet browser market; and remanded the determination that Microsoft violated § 1 of Sherman Act by unlawfully tying its browser to the operating system. *Microsoft*, 253 F.3d at 46.

12. For three primary reasons—(1) the failure of the District Court to hold a remedies-specific evidentiary hearing, (2) the failure of the District Court to provide an adequate explanation for the remedies it adopted, and (3) the revision of the scope of Microsoft's liability—as well as issues relating to the appearance of partiality, the Court of Appeals vacated the Final Judgment embodying the remedial order and remanded the case for further proceedings. *Microsoft*, 253 F.3d at 46, 98, 107, 117. The Court of Appeals instructed the District Court to "conduct a remedies-specific evidentiary hearing." *Id.* at 103, 107.

13. The Court of Appeals rejected Microsoft's petition for rehearing, and the Supreme Court denied Microsoft's petition for writ of certiorari. The Court of Appeals issued its mandate on August 24, 2001, and the case was reassigned to this Court.

14. On September 6, 2001, the plaintiffs advised Microsoft that they did not intend to pursue the Section 1 rule of reason tying claim that had been remanded by the Court of Appeals and that they did not intend to seek divesture as an appropriate remedy. On September 20, 2001, the parties filed a Joint Status Report pursuant to the Court's Order of August 28, 2001. Joint Status Report, Sept. 20, 2001.

15. On September 28, 2001, the parties were ordered into a round of settlement negotiations and probable mediation. Order, Sept. 28, 2001. On November 2, 2001, the United States and Microsoft agreed on terms of a proposed final judgment. Stipulation, November 2, 2001. Further negotiations with several of the plaintiff States resulted in the submission on

November 6, 2001, by the United States, the Settling States (New York, Ohio, Illinois, Kentucky, Louisiana, Maryland, Michigan, North Carolina and Wisconsin), and Microsoft of the Revised Proposed Final Judgment (RPFJ). Stipulation and Revised Proposed Final Judgment, Nov. 6, 2001.

16. A number of other States—California, Connecticut, Florida, Iowa, Kansas, Massachusetts, Minnesota, Utah, West Virginia and the District of Columbia ("Litigating States")—continued to litigate the question of an appropriate remedy. Order, Nov. 8, 2001. The Court ordered the settlement and the continued remedy litigation to proceed on two separate tracks: "Track I" (98-1232) referred to the Court's review of the proposed settlement under the Antitrust Procedures and Penalties Act (Tunney Act), 15 U.S.C. § 16(b)-(h), and "Track II" (98-1233) referred to the continuing litigation between the Litigating States and Microsoft. Order, Nov. 8, 2001.

17. The remedies hearing commenced on March 18, 2002. Direct testimony was submitted in written format. Over 32 days the Court heard more than 140 hours of testimony from 15 witnesses put forth by the Litigating States and 19 witnesses (including the deposition testimony of the Litigating States' Rule 30(b)(6) witness Thomas Greene) put forth by Microsoft.

18. Over two days—May 15 and May 16—the Court heard argument on a number of potentially dispositive motions filed by Microsoft: (1) Microsoft's Motion to Dismiss; (2) Microsoft's Motion for Judgment as a Matter of Law; (3) Microsoft's Motion for Partial Judgment as a Matter of Law; and (4) Microsoft's Motion to Exclude Testimony on Products Unrelated to the Limited Ground of Liability upheld by the Court of Appeals. In addition, in lieu of hearing proffered expert testimony on the issue of enforcement, the Court received written

submissions and heard argument on May 17, 2002 from the parties' representatives on enforcement, John H. Shenefield and Charles F. Rule.

19. On June 10, 2002, the parties filed Proposed Findings of Fact and Conclusions of Law. On June 19, 2002, the Court heard closing arguments from the parties.

B. Plaintiffs Have Made the Requisite Showing of Harm To Be Entitled to Injunctive Relief

20. In the prior proceedings, the District Court found that Microsoft's violation of the antitrust laws has harmed consumers, companies, and competition itself in each of the Litigating States. *Microsoft*, 84 F. Supp. 2d at 110-12, Findings Nos. 408-12; *Microsoft*, 87 F. Supp. 2d at 55. As discussed below in Section II.E.3 ("Microsoft's Actions Hurt Competition and Consumers"), Microsoft's antitrust violations "have harmed consumers in ways that are immediate and easily discernible. They have also caused less direct, but nevertheless serious and far-reaching, consumer harm by distorting competition." *Microsoft*, 84 F. Supp. 2d at 111, Finding No. 409. "It is equally clear that certain companies that have been adversely affected by Microsoft's anticompetitive campaign . . . transact business in, and employ citizens of, each of the plaintiff states." *Microsoft*, 87 F. Supp. 2d at 55. The harm Microsoft has caused to consumers and others is likely to continue unless competition is restored through effective remedial proposals. Shapiro Direct Testimony (PX 1847) ("Shapiro Dir.") ¶ 24. Thus, the Litigating States, seeking to protect the well-being of their general economies, are proper parties to seek injunctive relief for Microsoft's violation of the antitrust laws.

II. Nature of the Conduct To Be Remedied—Unlawfully Maintaining a Monopoly By Thwarting Nascent Platform Threats

A. The Applications Barrier to Entry Protects Microsoft's Monopoly

21. The essence of Microsoft's unlawful monopoly maintenance was a series of deliberate steps to undercut the development of nascent technologies that had the potential to become alternative platforms for applications software development, and thereby to erode or reduce the applications barrier to entry that protects Microsoft's Intel-compatible PC operating system monopoly. Monopolies cannot be long sustained without some barrier to entry that prevents newcomers from injecting competition into the market. In the case of the market for Intel-compatible PC operating systems, the key barrier is the "applications barrier to entry," which has been discussed at some length in the prior proceedings in this matter.

22. The Court of Appeals described this barrier as follows:

> That barrier—the "applications barrier to entry"—stems from two characteristics of the software market: (1) most consumers prefer operating systems for which a large number of applications have already been written; and (2) most developers prefer to write for operating systems that already have a substantial consumer base. This "chicken-and-egg" situation ensures that applications will continue to be written for the already dominant Windows, which in turn ensures that consumers will continue to prefer it over other operating systems.

Microsoft, 253 F.3d at 55 (citation omitted).

23. As the District Court previously found, "[c]onsumer interest in a PC operating system derives primarily from the ability of that system to run applications. The consumer wants an operating system that runs not only types of applications that he knows he will want to use, but also those types in which he might develop an interest later. Also, the consumer knows that if he chooses an operating system with enough demand to support multiple applications in each product category, he will be less likely to find himself straitened later by having to use an application whose features disappoint him. Finally, the average user knows that, generally

speaking, applications improve through successive versions. He thus wants an operating system for which successive generations of his favorite applications will be released—promptly at that. The fact that a vastly larger number of applications are written for Windows than for other PC operating systems attracts consumers to Windows, because it reassures them that their interests will be met as long as they use Microsoft's product." *Microsoft*, 84 F. Supp. 2d at 19-20, Finding No. 37.

24. As the District Court previously found, "[s]oftware development is characterized by substantial economies of scale. The fixed costs of producing software, including applications, is very high. By contrast, marginal costs are very low. Moreover, the costs of developing software are 'sunk'—once expended to develop software, resources so devoted cannot be used for another purpose. The result of economies of scale and sunk costs is that application developers seek to sell as many copies of their applications as possible. An application that is written for one PC operating system will operate on another PC operating system only if it is ported to that system, and porting applications is both time-consuming and expensive. Therefore, application developers tend to write first to the operating system with the most users—Windows. Developers might then port their applications to other operating systems, but only to the extent that the marginal added sales justify the cost of porting. In order to recover that cost, ISVs that do go to the effort of porting frequently set the price of ported applications considerably higher than that of the original versions written for Windows." *Microsoft*, 84 F. Supp. 2d at 20, Finding No. 38.

25. As the District Court previously found, "[c]onsumer demand for Windows enjoys positive network effects. A positive network effect is a phenomenon by which the attractiveness of a product increases with the number of people using it. The fact that there is a multitude of

people using Windows makes the product more attractive to consumers. The large installed base attracts corporate customers who want to use an operating system that new employees are already likely to know how to use, and it attracts academic consumers who want to use software that will allow them to share files easily with colleagues at other institutions. The main reason that demand for Windows experiences positive network effects, however, is that the size of Window's installed base impels ISVs to write applications first and foremost to Windows, thereby ensuring a large body of applications from which consumers can choose. The large body of applications thus reinforces demand for Windows, augmenting Microsoft's dominant position and thereby perpetuating ISV incentives to write applications principally for Windows. This self-reinforcing cycle is often referred to as a 'positive feedback loop'. *Microsoft*, 84 F. Supp. 2d at 20, Finding No. 39.

26. As the District Court previously found, "[w]hat for Microsoft is a positive feedback loop is for would-be competitors a vicious cycle. For just as Microsoft's large market share creates incentives for ISVs to develop applications first and foremost for Windows, the small or non-existent market share of an aspiring competitor makes it prohibitively expensive for the aspirant to develop its PC operating system into an acceptable substitute for Windows. To provide a viable substitute for Windows, another PC operating system would need a large and varied enough base of compatible applications to reassure consumers that their interests in variety, choice, and currency would be met to more-or-less the same extent as if they chose Windows. Even if the contender attracted several thousand compatible applications, it would still look like a gamble from the consumer's perspective next to Windows, which supports over 70,000 applications. The amount it would cost an operating system vendor to create that many applications is prohibitively large. Therefore, in order to ensure the availability of a set of

applications comparable to that available for Windows, a potential rival would need to induce a very large number of ISVs to write to its operating system." *Microsoft*, 84 F. Supp. 2d at 20, Finding No. 40.

B. Other PC Operating Systems Have Failed To Overcome Successfully the Applications Barrier to Entry

27. As the District Court explained, "[t]he experiences of IBM and Apple, Microsoft's most significant operating system rivals in the mid- and late 1990s, confirm the strength of the applications barrier to entry." *Microsoft*, 84 F. Supp. 2d at 22, Finding No. 45.

28. As the District Court found, IBM could not overcome the applications barrier to entry despite the commitment of very substantial resources to this task: "IBM's inability to gain widespread developer support for its OS/2 Warp operating system illustrates how the massive Windows installed base makes it prohibitively costly for a rival operating system to attract enough developer support to challenge Windows. In late 1994, IBM introduced its Intel-compatible OS/2 Warp operating system and spent tens of millions of dollars in an effort to attract ISVs to develop applications for OS/2 . . . . Despite these efforts, IBM could obtain neither significant market share nor ISV support for OS/2 Warp. Thus, although at its peak OS/2 ran approximately 2,500 applications and had 10% of the market for Intel-compatible PC operating systems, IBM ultimately determined that the applications barrier prevented effective competition against Windows 95 . . . ." *Microsoft*, 84 F. Supp. 2d at 22, Finding No. 46.

29. Even though Apple was not in the Intel-compatible PC operating system market, the District Court still examined Apple's inability to compete effectively with Windows and found that this inability provided further evidence of the strength of the applications barrier to entry: "The inability of Apple to compete effectively with Windows provides another example of the applications barrier to entry in operation. Although Apple's Mac OS supports more than

12,000 applications, even an inventory of that magnitude is not sufficient to enable Apple to present a significant percentage of users with a viable substitute for Windows. The absence of a large installed base, in turn, reinforces the disparity between the applications made available for the Mac OS and those made available for Windows, further inhibiting Apple's sales. The applications barrier thus prevents the Mac OS from hindering Microsoft's ability to control price, regardless of whether the Mac OS is regarded as being in the relevant market or not." *Microsoft*, 84 F. Supp. 2d at 22, Finding No. 47.

30. The District Court also made findings concerning what it described as "fringe operating systems," including Linux. The Court concluded that, although such systems could "survive" and even make a profit, the applications barrier to entry prevented such non-Microsoft, Intel-compatible PC operating systems from "drawing a significant percentage of consumers away from Windows." *Microsoft*, 84 F. Supp. 2d at 22-23, Finding No. 48.

31. The District Court described Linux as "an 'open source' operating system that was created, and is continuously updated, by a global network of software developers who contribute their labor for free. Although Linux has between ten and fifteen million users, the majority of them use the operating system to run servers, not PCs." *Microsoft*, 84 F. Supp. 2d at 23, Finding No. 50. The District Court found that, even though Linux benefited from development by ISVs in the open source community, it could not sufficiently overcome the applications barrier to entry necessary to provide effective competition for Windows: "By itself, Linux's open-source development model shows no signs of liberating that operating system from the cycle of consumer preferences and developer incentives that, when fueled by Windows' enormous reservoir of applications, prevents non-Microsoft operating systems from competing." *Id.* The District Court concluded: "In practice, then, the open-source model of applications

development may increase the base of applications that run on non-Microsoft PC operating systems, but it cannot dissolve the barrier that prevents such operating systems from challenging Windows." *Id.* at 23-24, Finding No. 51.

32. The two major rivals to Windows in the PC operating system market today are the Linux operating system and Apple's Mac OS, Shapiro Dir. ¶ 5, with only Linux being in the Intel-compatible desktop PC market. Linux still employs the open-source model. Tiemann Direct Testimony (PX 1603) ("Tiemann Dir.") ¶¶ 32-34. The source code for Linux is available on the Internet, which has allowed large numbers of geographically dispersed persons to access the Linux source code and exchange ideas about how to improve it. *Id.* Today, there are over 10,000 software developers worldwide writing Linux code. *Id.* Yet, to put the current Linux "threat" in perspective, Microsoft's Windows products currently have a share of over 95% of the Intel-compatible desktop operating system market, compared with Linux's share of less than 2%. Tiemann Dir. ¶ 31; *see also* Shapiro Dir. ¶¶ 105, 107; Tr. 1093:17-25 (Tiemann).

33. The District Court's previous finding, that even the many open-source developers cannot "dissolve the [applications] barrier that prevents [Linux] from challenging Windows," *Microsoft*, 84 F. Supp. 2d at 23, Finding No. 51, remains true today. Tr. 1099:11-1105:12, 1116:2-1118:1, 1119:17-1120:6 (Tiemann). Since the issuance of the District Court and Court of Appeals decisions in this case, Linux made slight, albeit potentially significant headway in its effort to demonstrate even the potential to compete with Windows on the desktop.

34. Most notably, in the Summer of 2000, Dell entered into a program called the One Source Alliance with Red Hat, a leading distributor of the Linux operating system. Tiemann Dir. ¶¶ 36, 68; Tr. 1119:17-1121:14 (Tiemann). Pursuant to the program, Dell began to offer personal computers with pre-installed Linux operating systems on both their website and in their

catalogue. Tiemann Dir. ¶ 69; Tr. 1120:7-17 (Tiemann). Within months, Dell dropped the offering. Tiemann Dir. ¶ 70; Tr. 1120:18-1121:14 (Tiemann). Red Hat has repeatedly been unable to convince major OEMs to pre-install Linux on a desktop given the unavailability of the body of applications necessary to make Linux a successful desktop alternative. Tiemann Dir. ¶¶ 57, 84-85.

35. Linux's lack of success as a rival in the desktop operating system market, moreover, stands in marked contrast to its success, even in the years since the liability trial in this action, in the server operating system market. Tiemann Dir. ¶¶ 41-42, 52, 55; Shapiro Dir. ¶ 107; Tr. 1094:25-1095:17, 1126:16-1127:12 (Tiemann). Linux's share of the server operating system market has risen to roughly 28% of the market. Tiemann Dir. ¶ 42. The difference between Linux's success as a competitor in the server operating system market and its total lack of success in the desktop operating system market corroborates the District Court's findings of the importance of the applications barrier in preventing other operating systems, such as Linux, from effectively competing in the PC operating system market. *See* Tr. 1099:11-1105:12 (Tiemann).

36. Thus, despite the wealth of software developers, the existing applications barrier to entry, as maintained and enhanced by Microsoft's anticompetitive conduct, prevents Microsoft's most serious rival in the Intel-compatible desktop PC market, Linux, from meaningfully challenging Windows' monopoly. Shapiro Dir. ¶¶ 105,108-09; Tr. 1094:22-1095:4, 1099:11-1105:12, 1116:2-1118:1 (Tiemann).

C. Middleware as a Threat to the Applications Barrier to Entry

37. The Court of Appeals explained how middleware can enable applications to run on multiple operating systems:

> Operating systems also function as platforms for software applications. They do this by "exposing"—*i.e.*, making available to software developers—routines or protocols that perform certain widely-used functions. These are known as Application Programming Interfaces, or "APIs." . . .
>
> "Middleware" refers to software products that expose their own APIs. Because of this, a middleware product written for Windows could take over some or all of Window's valuable platform functions—that is, developers might begin to rely upon APIs exposed by the middleware for basic routines rather than relying upon the API set included in Windows. . . . Ultimately, if developers could write applications relying exclusively on APIs exposed by middleware, their applications would run on any operating system on which the middleware was also present. Netscape Navigator and Java—both at issue in this case—are middleware products written for multiple operating systems.

Microsoft, 253 F.3d at 53 (citations omitted). By doing so, middleware had the potential to undermine the applications barrier to entry:

> Of course, were middleware to succeed, it would erode the applications barrier to entry. Because applications written for multiple operating systems could run on any operating system on which the middleware product was present with little, if any, porting, the operating system market would become competitive.

Id. at 55.

38. As the District Court previously found, "[o]perating systems are not the only software programs that expose APIs to application developers. Netscape's Web browser and Sun Microsystems, Inc.'s Java class libraries are examples of non-operating system software that do likewise. Such software is often called 'middleware,' because it relies on the interfaces provided by the underlying operating system while simultaneously exposing its own APIs to developers. Currently no middleware product exposes enough APIs to allow independent software vendors ('ISVs') profitably to write full-featured personal productivity applications that rely solely on those APIs." *Microsoft*, 84 F. Supp. 2d at 17, Finding No. 28.

39. As the District Court also previously found, "[e]ven if middleware deployed enough APIs to support full-featured applications, it would not function on a computer without an operating system to perform tasks such as managing hardware resources and controlling peripheral devices. But to the extent the array of applications relying solely on middleware comes to satisfy all of a user's needs, the user will not care whether there exists a large number of other applications that are directly compatible with the underlying operating system. Thus, the growth of middleware-based applications could lower the costs to users of choosing a non-Intel-compatible PC operating system like the Mac OS. It remains to be seen, though, whether there will ever be a sustained stream of full-featured applications written solely to middleware APIs. . . ." *Microsoft*, 84 F. Supp. 2d at 17-18, Finding No. 29.

40. As the District Court previously found, "[m]iddleware technologies, as previously noted, have the potential to weaken the applications barrier to entry. Microsoft was apprehensive that the APIs exposed by middleware technologies would attract so much developer interest, and would become so numerous and varied, that there would arise a substantial and growing number of full-featured applications that relied largely, or even wholly, on middleware APIs. The applications relying largely on middleware APIs would potentially be relatively easy to port from one operating system to another. The applications relying exclusively on middleware APIs would run, as written, on any operating system hosting the requisite middleware. So the more popular middleware became and the more APIs it exposed, the more the positive feedback loop that sustains the applications barrier to entry would dissipate. Microsoft was concerned with middleware as a category of software; each type of middleware contributed to the threat posed by the entire category. At the same time, Microsoft focused its antipathy on two incarnations of middleware that, working together, had the potential to weaken the applications barrier severely

without the assistance of any other middleware. These were Netscape's Web browser and Sun's implementation of the Java technologies." *Microsoft*, 84 F. Supp. 2d at 28, Finding No. 68.

D. Microsoft's Anticompetitive Efforts to Prevent Navigator and Java from Developing as Platform Threats

41. The essence of Microsoft's unlawful monopoly maintenance was deliberately to undercut the development of nascent technologies that had the potential to become alternative platforms for applications software development, and thereby to erode or reduce the applications barrier to entry that protects Microsoft's Intel-compatible PC operating system monopoly.

1. Microsoft's Efforts to Thwart Navigator

42. Microsoft's campaign to eliminate the competitive threat posed by Netscape Navigator and to establish its own Internet Explorer ("IE") software as the dominant Internet browser was the central component of its monopoly-maintenance strategy. Most of Microsoft's illegal conduct found by both the District Court and the Court of Appeals to have violated antitrust law was specifically targeted toward achieving these goals. As the Court of Appeals explained,

> Microsoft's efforts to gain market share in one market (browsers) served to meet the threat to Microsoft's monopoly in another market (operating systems) by keeping rival browsers from gaining the critical mass of users necessary to attract developer attention away from Windows as the platform for software development.

Microsoft, 253 F.3d at 60.

43. Bill Gates recognized the threat posed by Navigator in May 1995 and sounded the alarm in a memorandum titled "The Internet Tidal Wave," which he widely distributed to Microsoft executives. *Microsoft*, 84 F. Supp. 2d at 29, Finding No. 72; *see also* DX 1487. In this memo, Mr. Gates warned that Netscape was "'pursuing a multi-platform strategy … to commoditize the underlying operating system.'" *Microsoft*, 84 F. Supp. 2d at 29, Finding No. 72

(quoting Gates memorandum). Microsoft feared that Navigator would develop its browser into a platform for software development that might compete with Windows for ISVs' attention and thereby ultimately help lower the applications barrier to entry. *Id*.

44. The District Court identified the "three key middleware attributes" Navigator possessed that made it a threat to Windows:

> First, in contrast to non-Microsoft, Intel-compatible PC operating systems, which few users would want to use on the same PC systems that carry their copies of Windows, a browser can gain widespread use based on its value as a complement to Windows. Second, because Navigator exposes a set (albeit a limited one) of APIs, it can serve as a platform for other software used by consumers. A browser product is particularly well positioned to serve as a platform for network-centric applications that run in association with Web pages. Finally, Navigator has been ported to more than fifteen different operating systems. Thus, if a developer writes an application that relies solely on the APIs exposed by Navigator, that application will, without any porting, run on many different operating systems.

Microsoft, 84 F. Supp. 2d at 28, Finding No. 69.

45. Microsoft's first response was to attempt to convince Netscape that it should not develop platform-level browsing software, *i.e.*, a browser that exposed its own APIs, for the Windows operating system. *Microsoft*, 84 F. Supp. 2d at 30, Finding No. 79. After failing to convince Netscape to abandon its efforts, Mr. Gates recognized that Microsoft's first task was to improve their product and thus "'to offer a decent client.'" *Id*. at 43, Finding No. 134 (quoting Gates memorandum). Mr. Gates realized, however, that parity "'alone won't get people to switch away from Netscape.'" *Id*. (quoting Gates memorandum). Accordingly, Microsoft shifted its priorities to make increasing browser share "job # 1." *Id*. at 44, Finding No. 138.

a. Licensing restrictions on OEMs

46. Microsoft feared that, no matter what other steps it took to limit use of Navigator and compel use of IE, its efforts might fail to achieve their purpose if OEMs remained free to

enable users to choose Navigator instead of IE when the user first booted the new computer. *Microsoft*, 84 F. Supp. 2d at 58-59, Findings Nos. 202-03.

47. Microsoft therefore imposed "stringent limits" on the ability of OEMs to configure Windows in ways that would promote the use of Navigator rather than IE. *Microsoft*, 87 F. Supp. 2d at 39. The restrictions Microsoft placed on OEMs "are of particular importance in determining browser usage share because having an OEM pre-install a browser on a computer is one of the two most cost-effective methods by far of distributing browsing software." *Microsoft*, 253 F.3d at 60. The District Court identified five different license restrictions that were imposed on the OEMs as part of Microsoft's efforts:

> First, Microsoft formalized the prohibition against removing any icons, folders, or "Start" menu entries that Microsoft itself had placed on the Windows desktop. Second, Microsoft prohibited OEMs from modifying the initial Windows boot sequence. Third, Microsoft prohibited OEMs from installing programs, including alternatives to the Windows desktop user interface, which would launch automatically upon completion of the initial Windows boot sequence. Fourth, Microsoft prohibited OEMs from adding icons or folders to the Windows desktop that were not similar in size and shape to icons supplied by Microsoft. Finally, when Microsoft later released the Active Desktop as part of Internet Explorer 4.0, it added the restriction that OEMs were not to use that feature to display third-party brands.

Microsoft, 84 F. Supp. 2d at 61, Finding No. 213.

48. The Court of Appeals noted that these types of restrictions on OEMs could be anticompetitive because, by their use, "Microsoft reduced rival browsers' usage share not by improving its own product but, rather, by preventing OEMs from taking actions that could increase rivals' share of usage." *Microsoft*, 253 F.3d at 62.

49. First, the Court of Appeals held that Microsoft's prohibition of "the removal of desktop icons, folders, and Start menu entries" was anticompetitive. *Microsoft*, 253 F. 3d at 61. "By preventing OEMs from removing visible means of user access to IE, the license restriction

prevents many OEMs from pre-installing a rival browser and, therefore, protects Microsoft's monopoly from competition that middleware might otherwise present." *Id.*

50. Second, the Court of Appeals held that prohibiting OEMs from modifying the boot sequence was anticompetitive because it "has a substantial effect in protecting Microsoft's market power, and does so through a means other than competition on the merits." *Microsoft*, 253 F.3d at 62.

51. Lastly, the Court of Appeals held that the other license restrictions—prohibiting "OEMs from causing any user interface other than the Windows desktop to launch automatically, from adding icons or folders different in size or shape from those supplied by Microsoft, and from using the 'Active Desktop' features to promote third-party brands"—were anticompetitive because they "reduced rival browsers' usage share not by improving its own product but, rather, by preventing OEMs from taking actions that could increase rivals' share of usage." *Microsoft*, 253 F.3d at 62.

52. The Court of Appeals held that with the exception of one restriction prohibiting an automatically launched interface that prevents the Windows desktop from ever being seen by the user, "all the OEM license restrictions at issue represent uses of Microsoft's market power to protect its monopoly, unredeemed by any legitimate justification" and therefore "violate[d] § 2 of the Sherman Act." *Microsoft*, 253 F.3d at 63-64.

b. Integration of IE and Windows

53. Microsoft realized early on that its greatest advantage over Netscape was its operating system monopoly, and therefore bundled IE 1.0 with the version of Windows 95 that it licensed to OEMs. *Microsoft*, 84 F. Supp. 2d at 49, Finding No. 158. Recognizing that OEMs had no viable alternatives to Windows operating systems and therefore had to accept whatever licensing terms it offered, Microsoft included a clause in its licenses that prohibited OEMs from

modifying or deleting IE prior to shipment. *Id*. This measure ensured that IE would be present on every new PC that shipped with the Windows operating system. *Id*. It also substantially reduced the likelihood that OEMs would pre-install Navigator, because including two browsers on a single computer would likely increase the OEMs' support costs. *Id*. at 49-50, Finding No. 159.

54. Not content to rely on mere contractual restrictions to prevent the removal of IE, "Microsoft set out to bind Internet Explorer more tightly to Windows 95 as a technical matter." *Microsoft*, 84 F. Supp. 2d at 50, Finding No. 160. As one Microsoft employee summarized the strategy, "'We will bind the [Windows] shell to the Internet Explorer, so that running any other browser is a jolting experience.'" *Id*.

55. The "binding" of IE to Windows 95, which the Court of Appeals also referred to as "commingling," *see Microsoft*, 253 F.3d at 66, involved putting software code pertaining to web browsing functions in the same files with code that related to operating system functions, *Microsoft*, 84 F. Supp. 2d at 50, Finding No. 161, as a result of which if a user attempted to delete the IE code, the user would also "delete vital operating system routines and thus cripple Windows 95." *Id*. at 50, Finding No. 164.

56. Jim Allchin, a senior Microsoft executive, argued that IE could not beat Navigator unless it was bound even more tightly to Windows. In late December 1996, he wrote to Paul Maritz, another senior Microsoft executive:

> "I don't understand how IE is going to win. The current path is simply to copy everything that Netscape does packaging and product wise. Let's [suppose] IE is as good as Navigator/Communicator. Who wins? The one with 80% market share. Maybe being free helps us, but once people are used to a product it is hard to change them. Consider Office. We are more expensive today and we're still winning. My conclusion is that we must leverage Windows more. Treating IE as just an add-on to

> Windows which is cross-platform [means] losing our biggest advantage—Windows marketshare. We should dedicate a cross group team to come up with ways to leverage Windows technically more. . . . We should think about an integrated solution—that is our strength."

Microsoft, 84 F. Supp. 2d at 51, Finding No. 166 (alterations in original).

57. Allchin followed this with another message to Maritz on January 2, 1997:

> "You see browser share as job 1. . . . I do not feel we are going to win on our current path. We are not leveraging Windows from a marketing perspective and we are trying to copy Netscape and make IE into a platform. We do not use our strength—which is that we have an installed base of Windows and we have a strong OEM shipment channel for Windows. Pitting browser against browser is hard since Netscape has 80% marketshare and we have <20%. . . . I am convinced we have to use Windows—this is the one thing they don't have. . . . We have to be competitive with features, but we need something more—Windows integration.
>
> If you agree that Windows is a huge asset, then it follows quickly that we are not investing sufficiently in finding ways to tie IE and Windows together. This must come from you. . . . Memphis [Microsoft's code-name for Windows 98] must be a simple upgrade, but most importantly it must be killer on OEM shipments so that Netscape never gets a chance on these systems."

Microsoft, 84 F. Supp. 2d at 51, Finding No. 166 (alterations in original).

58. Maritz agreed with Allchin, and the decision was made to hold the release of Windows 98 until IE 4.0 was ready and could be bound to the operating system. *Microsoft*, 84 F. Supp. 2d at 51-52, Findings Nos. 167-68. As Maritz put it,

> "[T]o combat Nscp, we have to [] position the browser as "going away" and do deeper integration on Windows. The stronger way to communicate this is to have a 'new release' of Windows and make a big deal out of it. . . . IE integration will be [the] most compelling feature of Memphis."

Id. at 52, Finding No. 168 (ellipsis & brackets in original).

59. Microsoft conducted market studies to test the theory, and the studies confirmed that binding IE more tightly to Windows was the surest route to increased market share. In reporting on one of these studies, Microsoft's Christian Wildfeuer wrote:

> The stunning insight is this: To make [users] switch away from Netscape, we need to make them upgrade to Memphis. . . . It seems clear to me that it will be very hard to increase browser market share on the merits of IE 4 alone. It will be more important to leverage the OS asset to make people use IE instead of Navigator.

Microsoft, 84 F. Supp. 2d at 52, Finding No. 169.

60. The Court of Appeals held that Microsoft's commingling of IE code with Windows 98 operating system code had an anticompetitive effect, for "the commingling deters OEMs from pre-installing rival browsers, thereby reducing the rivals' usage share and, hence, developers' interest in rivals' APIs as an alternative to the API set exposed by Microsoft's operating system." *Microsoft*, 253 F.3d at 66.

61. Along with increased commingling of IE code with operating system code in Windows 98, Microsoft also stopped enabling users to uninstall IE from Windows using the "Add/Remove Programs" utility. *Microsoft*, 84 F. Supp. 2d at 52, Finding No. 170. Microsoft took this step despite the fact that an OEM had specifically requested that IE be removable, and despite the fact that it allowed end users to remove numerous other Windows features that it claimed to be "integrated" into the operating system. *Id*.

62. The Court of Appeals held that, like its unlawful commingling, Microsoft's exclusion of IE from the Add/Remove Programs utility had an anticompetitive effect:

> This change reduces the usage share of rival browsers not by making Microsoft's own browser more attractive to consumers but, rather, by discouraging OEMs from distributing rival products. See *id*. ¶ 159. Because Microsoft's conduct, through something other than competition on the merits, has the effect of significantly

> reducing usage of rivals' products and hence protecting its own operating system monopoly, it is anticompetitive . . . .

Microsoft, 253 F.3d at 65 (citation omitted).

c. Agreements with IAPs

63. As the Court of Appeals noted, the other primary channel of distribution for competing browsers was through Internet-access providers, or IAPs, which typically bundled a browser with their Internet-access software. *Microsoft*, 253 F.3d at 60. In late 1995, many of the most popular IAPs were shipping the Navigator browser with their own access software. *Microsoft*, 84 F. Supp. 2d at 69, Finding No. 242.

64. Microsoft moved to cut Navigator off from this distribution channel by securing what Microsoft executive Cameron Myhrvold referred to as "exclusive arrangements" with a broad range of IAPs. *Microsoft*, 84 F. Supp. 2d at 69-70, Findings Nos. 242-44.

65. The most successful of Microsoft's deals with the IAPs was its deal with AOL "to distribute and promote Internet Explorer to the near exclusion of Navigator." *Microsoft*, 84 F. Supp. 2d at 77, Finding No. 272. Because AOL "accounted for a substantial portion of all existing Internet access subscriptions and . . . attracted a very large percentage of new IAP subscribers," this exclusive arrangement "caused an enormous surge in Internet Explorer's usage share and a concomitant decline in Navigator's share." *Id*.

66. In evaluating the anticompetitive effect of Microsoft's exclusive deals with IAPs, the Court of Appeals found:

> By ensuring that the "majority" of all IAP subscribers are offered IE either as the default browser or as the only browser, Microsoft's deals with the IAPs clearly have a significant effect in preserving its monopoly; they help keep usage of Navigator below the critical level necessary for Navigator or any other rival to pose a real threat to Microsoft's monopoly.

Microsoft, 253 F.3d at 71.

67. Microsoft's only justification for these deals was that it "wants to keep developers focused upon its APIs—which is to say, it wants to preserve its power in the operating system market." *Microsoft*, 253 F.3d at 71. The Court of Appeals held that this explanation was not procompetitive. *Id*.

d. Dealings with ISVs and Apple

68. Microsoft's next line of attack on Navigator was to "ensure[ ] that many of the most popular Web-centric applications will rely on browsing technologies found only in Windows and . . . increase[ ] the likelihood that the millions of consumers using these products will use Internet Explorer rather than Navigator." *Microsoft*, 84 F. Supp. 2d at 93-94, Finding No. 340.

69. The District Court found,

> In dozens of "First Wave" agreements signed between the fall of 1997 and the spring of 1998, Microsoft has promised to give preferential support, in the form of early Windows 98 and Windows NT betas, other technical information, and the right to use certain Microsoft seals of approval, to important ISVs that agree to certain conditions. One of these conditions is that the ISVs use Internet Explorer as the default browsing software for any software they develop with a hypertext-based user interface. Another condition is that the ISVs use Microsoft's "HTML Help," which is accessible only with Internet Explorer, to implement their applications' help systems.

Microsoft, 84 F. Supp. 2d at 93, Finding No. 339.

70. The Court of Appeals held that these exclusive agreements that Microsoft signed with various ISVs were anticompetitive because they had a "substantial effect in further foreclosing rival browsers from the market," thereby "preserving Microsoft's monopoly . . . ." *Microsoft*, 253 F.3d at 72.

71. Finally, Microsoft also took steps to ensure that Navigator did not achieve widespread distribution by Apple, which was both an ISV and an IHV. The District Court explained why Apple merited particular attention:

> [O]nce Netscape confirmed its determination to offer a middleware layer that would expose the same set of APIs on Windows, the Mac OS, and other platforms, Microsoft recognized that it needed to stifle the attention that developers would be inclined to devote to those APIs, even when they rested on top of a non-Windows platform like the Mac OS. After all, if Navigator became so popular on the Mac OS that developers made extensive use of the APIs exposed by that version of Navigator, those developers would be disposed to take advantage of identical APIs exposed by the version of Navigator written for the dominant platform, Windows. Microsoft thus committed itself to convincing developers that applications relying on APIs exposed by Navigator would not reach as many Mac OS users as applications that invoked technologies found exclusively in Microsoft's browsing platform. To this end, Microsoft set out to recruit Mac OS users to Internet Explorer, and to minimize Navigator's usage share among Mac OS users.

Microsoft, 84 F. Supp. 2d at 94, Finding No. 341.

72. After meeting with Apple executives in 1996, Mr. Gates wrote to a number of Microsoft executives: "I have 2 key goals in investing in the Apple relationship—1) Maintain our applications share on the platform and 2) See if we can get them to embrace Internet Explorer in some way." *Microsoft*, 84 F. Supp. 2d at 94, Finding No. 343. Mr. Gates made it clear that he wanted Apple to "agree to immediately ship IE on all their systems as the standard browser." *Id*.

73. Microsoft found a point of leverage over Apple in Mac Office, a version of Microsoft's popular Office productivity software that ran on the Mac OS. The District Court found that "ninety percent of Mac OS users running a suite of office productivity applications had adopted Microsoft's Mac Office," *Microsoft*, 84 F. Supp. 2d. at 94, Finding No. 344, and

thus its continued availability on the Mac OS was of critical importance to Apple's survival. *Id.* at 95, Finding No. 345. Ben Waldman, the Microsoft executive responsible for Mac Office, told Gates, "'The threat to cancel Mac Office 97 is certainly the strongest bargaining point we have, as doing so will do a great deal of harm to Apple immediately. I also believe that Apple is taking this threat pretty seriously. . . .'" *Id.* at 95, Finding No. 346 (ellipsis in original).

74. When discussions with Apple did not go as Microsoft had hoped, Mr. Gates wrote an email to his executives, stating that, "'Apple let us down on the browser by making Netscape the standard install.'" *Microsoft*, 84 F. Supp. 2d at 95, Finding No. 349. Mr. Gates then called Gil Amelio, at the time Apple's C.E.O., and asked him "how we should announce the cancellation of Mac Office. . . ." *Id.* (ellipsis in original). Within a month of Mr. Gates' threat, Microsoft had reached an agreement with Apple under which:

> Microsoft's primary obligation is to continue releasing up-to-date versions of Mac Office for at least five years. . . . [and] Apple has agreed . . . to 'bundle the most current version of [IE] . . . with [Mac OS]' . . . [and to] 'make [IE] the default [browser]' . . . . Navigator is not installed on the computer hard drive during the default installation, which is the type of installation most users elect to employ . . . . [The] Agreement further provides that . . . Apple may not position icons for non Microsoft browsing software on the desktop of new Macintosh PC systems or Mac OS upgrades.

Microsoft, 253 F.3d at 73 (alterations in original) (quoting *Microsoft*, 84 F. Supp. 2d at 95-96, Findings Nos. 350-52).

75. The Court of Appeals held that the exclusive deal between Microsoft and Apple had a "substantial effect in restricting distribution of rival browsers," that it furthered Microsoft's monopoly, and therefore that it was anticompetitive. *Microsoft*, 253 F.3d at 73-74.

76. Microsoft's multi-front browser strategy—including commingling IE into the operating system, cutting Navigator off from the OEM and IAP distribution channels, and

limiting Navigator's appeal as cross-platform middleware by limiting its distribution on the Mac OS—succeeded in both drastically reducing Netscape's market share and in establishing IE as the dominant browser. In January 1996, Navigator's share was over 80% of the browser market, while IE's share was around 5%. *Microsoft*, 84 F. Supp. 2d at 98-99, Finding No. 360. By August 1998, Navigator's share had dropped to 48%, and IE's had increased to 49%. *Id*. at 100, Finding No. 364. Today, Navigator has been reduced to approximately 10% of the browser market, Barksdale Direct Testimony ¶ 29 (PX 1515) ("Barksdale Dir."), and IE's share has grown to almost 90%. Shapiro Dir. ¶ 124.

77. As the District Court found, it was Microsoft's anticompetitive business tactics, rather than its software development, that allowed IE to surpass Navigator, especially in such a short time period:

> [I]f Microsoft had taken no action other than improving the quality and features of its browser, Internet Explorer's share of usage would have risen far less and far more slowly than it actually did. While Internet Explorer's increase in usage share accelerated and began to cut deeply into Navigator's share after Microsoft released the first version of Internet Explorer (3.0) to offer quality and features approaching those of Navigator, the acceleration occurred months before Microsoft released the first version of Internet Explorer (4.0) to win a significant number of head-to-head product reviews against Navigator. This indicates that superior quality was not responsible for the dramatic rise Internet Explorer's usage share.

Microsoft, 84 F. Supp. 2d at 102, Finding No. 375.

78. Microsoft's success at subverting Navigator and installing IE as the dominant browser "forestalled a serious potential threat to the applications barrier to entry." *Microsoft*, 84 F. Supp. 2d at 103, Finding No. 377.

2. Microsoft's Efforts to Thwart Java

79. As the Court of Appeals and District Court recognized, the desktop Java platform is cross-platform middleware that, by exposing its own APIs, has the potential to enable software developers to be indifferent with regard to which operating system is running a PC; hence, Java constituted a major threat to Microsoft's PC operating system monopoly by significantly reducing the applications barrier to entry. *Microsoft*, 253 F.3d at 53; *Microsoft*, 84 F. Supp. 2d at 28, 30, 110, Findings Nos. 68, 77, 407.

80. The Java platform includes a programming language; a set of Java APIs provided in class libraries; a compiler that translates Java-based source code (instructions written by, and understandable to, software developers) into Java-based byte code (instructions that the computer can understand); and a Java virtual machine ("JVM") that translates Java-based byte code into instructions that the underlying operating system can understand. The JVM and the set of Java class libraries used by a Java-based application running on the JVM comprise the Java runtime environment ("JRE"). A Java-based application can only operate effectively on a particular computing device if a compatible JRE is installed. Green Direct Testimony (PX 1512) ("Green Dir.") ¶ 13; Tr. 359:20-361:16 (Green); *Microsoft*, 84 F. Supp. 2d at 29-30, Findings Nos. 73-77.

81. The JRE is a middleware platform on which applications run. It was designed to run on a number of different operating systems so that applications developers could write Java-based applications that would operate effectively with any number of different operating systems. Hence, the Java platform lowers the cost of porting applications to different operating systems, because applications written to cross-platform Java's APIs will run on any operating system to which the JRE itself has been ported. Moreover, Java lowers the cost of substituting one operating system for another, because an individual or enterprise seeking to switch its operating system need not purchase new applications or convert its data files, to the extent the

applications it used previously were written to cross-platform Java rather than the underlying operating system itself. Green Dir. ¶¶ 12, 47-55, 71-75.

82. The Court of Appeals concluded that Microsoft violated the antitrust laws in seeking to preclude Java from presenting a competitive platform that would attract applications and thereby lower the applications barrier to entry. For example, Microsoft entered into First Wave agreements that granted dozens of important ISVs early access to Windows beta versions and technical information, and the right to use certain Microsoft seals of approval, in exchange for the ISVs' agreements to: (i) make their applications reliant on Microsoft's Windows-specific Java to the exclusion of Sun's cross-platform Java, and (ii) refrain from distributing JVMs that complied with Sun's cross-platform standards. *Microsoft*, 253 F.3d at 75; *see also Microsoft*, 84 F. Supp. 2d at 108-09, Findings Nos. 401-03.

83. Microsoft also "deceived Java developers regarding the Windows-specific nature of [its Java development] tools." *Microsoft*, 253 F.3d at 76. As a result, "developers who relied upon Microsoft's public commitment to cooperate with Sun and who used Microsoft's tools to develop what Microsoft led them to believe were cross-platform applications ended up producing applications that would run only on the Windows operating system." *Id.*; *accord Microsoft*, 84 F. Supp. 2d at 106-07, 108, Findings Nos. 394, 398.

84. In addition, "Microsoft threatened Intel that if it did not stop aiding Sun on the multimedia front [thereby enhancing the capabilities of cross-platform Java], then Microsoft would refuse to distribute Intel technologies bundled with Windows." *Microsoft*, 253 F.3d at 77. Thus, Microsoft forced Intel to abandon its work in developing a high-performance, cross-platform version of Java by threatening to withhold support for forthcoming Intel technologies and products. *Id.*; *Microsoft*, 84 F. Supp. 2d at 107, 109-10, Findings Nos. 396, 404-06.

85. Moreover, as the District Court held, prior to Microsoft's anticompetitive acts undertaken to destroy Netscape's Navigator, Navigator was the primary distribution vehicle for Java. *Microsoft*, 84 F. Supp. 2d at 30, Finding No. 76; *see* Green Dir. ¶ 16; Schwartz Direct Testimony (PX 1831) ("Schwartz Dir.") ¶ 64. Hence, Microsoft's destruction of Navigator had a profound, negative effect upon the distribution of cross-platform Java, and severely diminished competition with Microsoft's non-standard, Windows-specific (*i.e.*, non-cross-platform) Java runtime environment. *See* Green Dir. ¶¶ 16, 98-103; Schwartz Dir. ¶ 64.

86. The results of these behaviors were: (1) Microsoft gained control over the browser, the most important distribution channel for JREs, Green Dir. ¶¶ 96-105; (2) ISVs that might otherwise have written to, or distributed, Sun's cross-platform Java instead wrote to and distributed Microsoft's non-cross-platform Java because of the exclusive agreements Microsoft secured, *Microsoft*, 84 F. Supp. 2d at 108-09, Finding No. 401; (3) software developers were left with little incentive to write desktop applications using Java because the distribution of Windows and of Microsoft's incompatible JRE dwarfed that of cross-platform Java, Green Dir. ¶ 117, *Microsoft*, 84 F. Supp. 2d at 108, Finding No. 398; and (4) compatible JREs are no longer widely available on desktop PCs, Tr. 382:21-383:24 (Green).

87. Given "the evolution of the software industry over the past few years, as exemplified by Microsoft's own strategy," it is now clear that Java "could have matured into, or helped enable, significant competition for Windows." Shapiro Dir. ¶ 83; Tr. 1104:15-1105:12 (Tiemann). But Microsoft's illegal tactics took "critical momentum away from Java," Shapiro Dir. ¶ 83, "denying . . . Java the ability to take advantage of self-reinforcing favorable network effects." *Id.* ¶ 82.

E. Effects of Microsoft's Anticompetitive Monopoly Maintenance on Nascent Technologies, Competition and Consumers

88. In assessing the effects of Microsoft's anticompetitive conduct, it is critical that (a) much of this conduct began six or seven years ago, in the period 1995-96, (b) that it adversely affected two unusually strong threats to Microsoft's monopoly, Navigator and Java, *see* Shapiro Dir. ¶ 33, and (c) that these two nascent threats, as well as various other platform threats that could have built upon their growth, lost the advantages of the positive feedback loop and network effects that often further the adoption of successful new software. *See, e.g.*, Shapiro Dir. ¶ 82 ("Furthermore, Navigator and Java clearly had the prospect of benefiting from network effects.")

1. Microsoft's Actions Harmed Navigator and Java

89. As the various determinations by the Court of Appeals made clear, Microsoft's actions had a significant adverse effect on Navigator and Java. In evaluating which of Microsoft's actions were unlawful, for example, the Court of Appeals had to determine whether each had the requisite significant anticompetitive effect. *See, e.g.*, *Microsoft*, 253 F.3d at 62 ("Because this prohibition [on modifying the boot sequence] has a substantial effect in protecting Microsoft's market power, and does so through a means other than competition on the merits, it is anticompetitive"); *id.* at 65 ("Because Microsoft's conduct [taking IE out of the Add/Remove utility], through something other than competition on the merits, has the effect of significantly reducing usage of rivals' products and hence protecting its own operating system monopoly, it is anticompetitive . . ."); *id.* at 66 ("[T]he commingling deters OEMs from pre-installing rival browsers, thereby reducing rivals' usage share and hence, developer's interest in rivals' APIs as an alternative to the API set exposed by Microsoft's operating system."); *id.* at 71 ("By ensuring that the "majority" of all IAP subscribers are offered IE either as the default browser or as the

only browser, Microsoft's deals with IAPs clearly have a significant effect in preserving its monopoly; they help keep usage of Navigator below the critical level necessary for Navigator or any other rival to pose a real threat to Microsoft's monopoly."); *id.* at 72 ("In that light, one can tell from the record that by affecting the applications used by 'millions' of consumers, Microsoft's exclusive deals with the ISVs had a substantial effect in further foreclosing rival browsers from the market. . . ."); *id.* at 73 ("This exclusive deal between Microsoft and Apple has a substantial effect upon the distribution of rival browsers."); *id.* at 75 ("While the District Court did not enter precise findings as to the effect of the First Wave Agreements upon the overall distribution of rival JVMs, the record indicates that Microsoft's deals with the major ISVs had a significant effect upon JVM promotion."); *id.* at 76 ("As discussed above, however, Microsoft undertook a number of anticompetitive actions that seriously reduced the distribution of Navigator, and the District Court found that these actions thereby seriously impeded distribution of Sun's JVM.").

2. Microsoft's Actions Maintained and Enhanced the Barrier to Entry

90. Microsoft's actions to thwart Navigator and Java maintained and enhanced the applications barrier to entry. Shapiro Dir. ¶ 22 ("[T]he applications barrier to entry has been *strengthened* by Microsoft's illegal conduct, most obviously by Microsoft's gaining control over one of the most important applications in the era of the Internet, the browser.")

91. At the time Microsoft embarked on its anticompetitive efforts to retard the growth of Navigator and Java, Microsoft clearly viewed these technologies as critical threats to its platform dominance. Shapiro Dir. ¶¶ 72-74; DX 1487 at 4 (Mr. Gates' "Internet Tidal Wave" memo; describing Netscape as "pursuing a multiplatform strategy where they moved the key API into the client to commoditize the underlying operating system"); GX 337 (also identified as PX 2009) at MS7 007443 (Mr. Gates: "The company [Netscape] hopes that its browser will become

a de facto standard for software development, ultimately replacing Windows as the mainstream set of software standards."); GX 354 (also identified as PX 2018) at MS6 6012955 (Mr. Gates: "I am still wondering how explicit their [Netscape's] plans are to go all the way and become a full blown operating system with scheduling, printing, local storage management and drivers."); Tr. 4737:1-19 (Gates). Indeed, although Mr. Gates had stated in his written testimony that "Navigator and Java *supposedly* had the potential to become general-purpose software development platforms," Gates Direct Testimony (DX 1507) ("Gates Dir.") ¶ 143 (emphasis added), he acknowledged on cross-examination that Navigator and Java had such potential in 1995, Tr. 4736:20-4737:4 (Gates), and that he would be "glad to strike the word supposedly" from his written testimony, Tr. 4740:7-17 (Gates), thereby conceding that Navigator and Java had the potential to become general-purpose software development platforms.

92. Both Navigator and Java had built up some significant momentum, and would have been in a position to take advantage of the positive feedback loop that often benefits software, but for Microsoft's anticompetitive actions. Shapiro Dir. ¶ 82; *see also* Tr. 1103:5-1105:12 (Tiemann). Moreover, the technologies involved—a browser and a runtime environment particularly suited to Internet applications—have if anything become even more important in the years since Microsoft's anticompetitive actions aimed at limiting their growth. Shapiro Dir. ¶ 83.

93. Microsoft's browser, Internet Explorer, in part as a result of Microsoft's anticompetitive actions, is today by far the most widely used browser. Some estimates of browser usage put Internet Explorer's share at nearly 90%. Shapiro Dir. ¶ 124. In short, Microsoft has used anticompetitive means to help gain control over one of the most important applications of the Internet era. Shapiro Dir. ¶¶ 22, 37.

94. Microsoft was also able, in significant part through its anticompetitive actions, to limit the spread and usage of Java on the desktop, notwithstanding Java's success in other areas. Microsoft has recently released a runtime environment as part of its .NET initiative, the Common Language Runtime ("CLR"), which in many ways is intended to compete with Java. Shapiro Dir. ¶ 83.

95. By its campaign of anticompetitive actions aimed at Netscape and Java, Microsoft helped retard the development of technologies that had the potential to facilitate entry into the market for Intel-compatible PC operating systems. Thus, Microsoft's anticompetitive actions increased or augmented the applications barrier to entry that would have otherwise protected Microsoft's desktop operating system monopoly. Shapiro Dir. ¶¶ 7, 22-24 ("In summary, Microsoft's illegal conduct 'has retarded and perhaps altogether extinguished' the development of a pair of threatening technologies—Netscape's Navigator and Sun's Java—that were in the process of lowering the barriers to entry into the market monopolized by Microsoft Windows. In the language of economics, Microsoft's illegal conduct *raised the entry barriers protecting the Windows desktop monopoly.*")

3. Microsoft's Actions Hurt Competition and Consumers

96. The actions Microsoft took had a variety of adverse effects on competition and consumers. As the District Court previously found, "To the detriment of consumers, however, Microsoft has done much more than develop innovative browsing software of commendable quality and offer it bundled with Windows at no additional charge. As has been shown, Microsoft also engaged in a concerted series of actions designed to protect the applications barrier to entry, and hence its monopoly power, from a variety of middleware threats, including Netscape's Web browser and Sun's implementation of Java. Many of these actions have harmed consumers in ways that are immediate and easily discernible. They have also caused less direct,

but nevertheless serious and far-reaching, consumer harm by distorting competition." *Microsoft*, 84 F. Supp. 2d at 111, Finding No. 409.

97. As the District Court also previously found, "[b]y refusing to offer those OEMs who requested it a version of Windows without Web browsing software, and by preventing OEMs from removing Internet Explorer—or even the most obvious means of invoking it—prior to shipment, Microsoft forced OEMs to ignore consumer demand for a browserless version of Windows. The same actions forced OEMs either to ignore consumer preferences for Navigator or to give them a Hobson's choice of both browser products at the cost of increased confusion, degraded system performance, and restricted memory. By ensuring that Internet Explorer would launch in certain circumstances in Windows 98 even if Navigator were set as the default, and even if the consumer had removed all conspicuous means of invoking Internet Explorer, Microsoft created confusion and frustration for consumers, and increased technical support costs for business customers. . . . By constraining the freedom of OEMs to implement certain software programs in the Windows boot sequence, Microsoft foreclosed an opportunity for OEMs to make Windows PC systems less confusing and more user-friendly, as consumers desired. By taking the actions listed above, and by enticing firms into exclusivity arrangements with valuable inducements that only Microsoft could offer and that the firms reasonably believed they could not do without, Microsoft forced those consumers who otherwise would have elected Navigator as their browser to either pay a substantial price (in the forms of downloading, installation, confusion, degraded system performance, and diminished memory capacity) or content themselves with Internet Explorer. Finally, by pressuring Intel to drop the development of platform-level NSP software, and otherwise to cut back on its software development efforts, Microsoft deprived consumers of software innovation that they very well may have found

valuable, had the innovation been allowed to reach the marketplace. None of these actions had pro-competitive justifications." *Microsoft*, 84 F. Supp. 2d at 111, Finding No. 410.

98. As the District Court further previously found, "[m]any of the tactics that Microsoft has employed have also harmed consumers indirectly by unjustifiably distorting competition. The actions that Microsoft took against Navigator hobbled a form of innovation that had shown the potential to depress the applications barrier to entry sufficiently to enable other firms to compete effectively against Microsoft in the market for Intel-compatible PC operating systems. That competition would have conduced to consumer choice and nurtured innovation. The campaign against Navigator also retarded widespread acceptance of Sun's Java implementation. This campaign, together with actions that Microsoft took with the sole purpose of making it difficult for developers to write Java applications with technologies that would allow them to be ported between Windows and other platforms, impeded another form of innovation that bore the potential to diminish the applications barrier to entry. There is insufficient evidence to find that, absent Microsoft's actions, Navigator and Java already would have ignited genuine competition in the market for Intel-compatible PC operating systems. It is clear, however, that Microsoft has retarded, and perhaps altogether extinguished, the process by which these two middleware technologies could have facilitated the introduction of competition into an important market." *Microsoft*, 84 F. Supp. 2d at 111-12, Finding No. 411.

99. Finally, as the District Court previously concluded, "[m]ost harmful of all is the message that Microsoft's actions have conveyed to every enterprise with the potential to innovate in the computer industry. Through its conduct toward Netscape, IBM, Compaq, Intel, and others, Microsoft has demonstrated that it will use its prodigious market power and immense profits to harm any firm that insists on pursuing initiatives that could intensify competition

against one of Microsoft's core products. Microsoft's past success in hurting such companies and stifling innovation deters investment in technologies and businesses that exhibit the potential to threaten Microsoft. The ultimate result is that some innovations that would truly benefit consumers never occur for the sole reason that they do not coincide with Microsoft's self-interest." *Microsoft*, 84 F. Supp. 2d 112, Finding No. 412.

4. Dr. Murphy's Causation Challenge Fails

100. Microsoft has claimed through a number of witnesses, but most particularly through one of its experts, Dr. Kevin Murphy, that its anticompetitive conduct had no significant effect on Navigator, Java or on Microsoft's monopoly position in the market for Intel-compatible PC operating systems. Dr. Murphy's analysis, however, contradicts a variety of findings by the Court of Appeals, ignores many facts in the record, and utilizes methods that were previously rejected during the liability phase of these proceedings. Moreover, even Microsoft's other economic expert, Dr. Kenneth Elzinga, acknowledged that Microsoft's conduct had the effect of augmenting the barrier to entry that might have otherwise existed. Tr. 6680:10-18 (Elzinga).

101. Dr. Murphy conducted a far different "causation" analysis than anything that the Court of Appeals suggested might be appropriate. According to Dr. Murphy, it is now timely to assess whether "Navigator's declining share and Java's lack of success on the PC platform are the result of Microsoft's anticompetitive actions." Murphy Direct Testimony (DX 1529) ("Murphy Dir.") ¶ 32. For this reason, the most significant part of his analysis revolved around whether Plaintiffs had proved that Microsoft's anticompetitive acts affirmed by the Court of Appeals had caused the decline in market share for Netscape Navigator and desktop Java.

102. In so doing, Dr. Murphy ignored the determinations by the Court of Appeals that Microsoft's anticompetitive conduct had "caused" Netscape and Java to lose usage share, as Microsoft had intended. For example, the Court of Appeals found that Microsoft's boot

sequence restrictions on OEMs "has a substantial effect in protecting Microsoft's market power, and does so through means other than competition on the merits." *Microsoft*, 253 F.3d at 62. It found that the IAP agreements "clearly have a significant effect in preserving [Microsoft's] monopoly." *Id*. at 71. It found that the ISV First Wave Agreements "had a substantial effect in further foreclosing rival browsers from the market" and "have a substantial effect in preserving Microsoft's monopoly." *Id.* at 72. It found that Microsoft's exclusive agreement with Apple "has a substantial effect upon the distribution of rival browsers." *Id.* at 73. And it found that Microsoft's actions "seriously reduced the distribution of Navigator" and therefore "seriously impeded distribution of Sun's JVM." *Id.* at 75-76.

103. Dr. Murphy's analysis directly contradicts those findings of the Court of Appeals. In his direct testimony, Dr. Murphy opined that the boot sequence restriction, Murphy Dir. ¶ 57, IAP agreements, *id.* ¶¶ 47, 53, ISV First Wave agreements, *id.* ¶ 91, and the Apple agreement, *id.* ¶ 84 had at best only a small effect on Navigator's share. He also opined that Microsoft's acts against Navigator had a limited effect on Navigator, and therefore on Java's share as well. *Id.* ¶ 94. He was presented with these discrepancies with the Court of Appeals' opinion during cross-examination, and Dr. Murphy testified that he viewed his statements as completely consistent with the Court of Appeals' opinion. Tr. 3874:14-3890:14 (Murphy).

104. Dr. Murphy further testified that under the Court of Appeals opinion, "standards that would be employed at the liability phase would be different than the standards that would be employed for the causation connection question at remedy." Tr. 4068:9-12. For example, he found it was "absolutely" appropriate to interpret words used by the Court of Appeals, such as "significant" or "substantial," differently for purposes of remedy than the Court had in assessing liability. Tr. 4068:13-23 (such a reinterpretation "was precisely what I attempted to do"). This

reinterpretation of the Court of Appeals' opinion by Dr. Murphy, who is an economist, is of no particular assistance to the Court in resolving the issues of causation or remedy here.

105. For the grounding of many of his opinions that Microsoft's conduct did not affect the market share of Netscape and Java, Dr. Murphy relies on little more than unsupported assertions. For example, Dr. Murphy dismisses the anticompetitive effect of Microsoft's commingling violation, Murphy Dir. ¶¶ 68-78, because he finds that OEMs would have shipped Navigator with IE on new computers despite this commingling. *Id.* ¶¶ 75-76. He dismisses as "anecdotal" that OEMs were reluctant to ship a second browser because of costs and customer confusion—ignoring the District Court and Court of Appeal's finding of such reluctance as somehow only relevant to liability. *Id.* ¶ 74. Without any clear basis, he states that OEM were reluctant to ship Navigator because Netscape was unwilling to pay for such placement on OEM machines—directly before citing an instance in which Netscape paid consideration for placement on Compaq PCs. *Id.* ¶¶ 77-78. Dr. Murphy similarly dismisses off-hand that Microsoft's icon restrictions had no effect on Navigator's market share because he simply "know[s] of no credible theory, much less any evidence or study, to explain why OEMs would have been unwilling to pre-install Navigator using normal icons, but would have chosen to do so if allowed to use larger icons." *Id.* ¶ 81. Apparently Dr. Murphy was not convinced by the Court of Appeals, which stated that this restriction and others "impose significant costs upon the OEMS; prior to Microsoft's prohibiting the practice, many OEMs would change the appearance of the desktop in ways they found beneficial." *Microsoft*, 253 F.3d at 62.

106. In the two sections of his testimony upon which Dr. Murphy actually provides analysis, that analysis is based on flawed assumptions. Dr. Murphy explains away the impact of Microsoft's anticompetitive IAP agreements by conducting an analysis of the data on the subject

used during the liability trial that is wholly at odds with the analysis previously accepted by the District Court. Dr. Murphy (a) dropped the District Court's control group from his analysis and chose a new control more favorable to Microsoft's position, (b) moved an ISP to a new data group more favorable to Microsoft's position, and (c) altered the weighting of the data to a method rejected by the District Court, but more favorable to Microsoft's position. Tr. 3986:3-20 (Murphy). Dr. Murphy also separated ISPs from OLS's in his analysis—which was not done by the District Court—neutralizing the significant impact of Microsoft's anticompetitive agreements with AOL. Tr. 3971:3-3972:23 (Murphy). It should come as no surprise that Dr. Murphy came to more favorable results of the impact of these agreements than that previously found by the District Court. For all these reasons, his conclusions about the supposed lack of causation here are entitled to little weight.

III. Overall Purpose & Effect of the States' Remedy

A. The Remedy Here Must Be Designed To Satisfy the Court of Appeals' Remedy Objectives

107. The Court of Appeals clearly outlined the objectives for the remedy in this matter: "a remedies decree in an antitrust case must seek to 'unfetter a market from anticompetitive conduct,' to 'terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation, and ensure that there remain no practices likely to result in monopolization in the future.'" *Microsoft*, 253 F.3d at 103 (quoting *Ford Motor Co. v. United States*, 405 U.S. 562, 577 (1972), and *United States v. United Shoe Mach. Corp.*, 391 U.S. 244, 250 (1968)) (citations omitted).

108. Because of the length of time Microsoft employed these exclusionary practices, *see supra* Section II.E ("Effects of Microsoft's Anticompetitive Monopoly Maintenance on Nascent Technologies, Competition and Consumers"), Microsoft's success in using these unlawful means to maintain and enhance the applications barrier to entry above and beyond what it would have otherwise been, *see supra* Section II.E.2 ("Microsoft's Actions Maintained and Enhanced the Barrier to Entry"), and the changes in the marketplace in the intervening years, *see infra* Section III.D ("The States' Remedy Properly Takes Account of Changes in the Marketplace, Including the Nature of the Current Platform Threats to Microsoft's PC Operating System Monopoly"), the Court of Appeals' remedial objectives cannot be achieved merely by ordering Microsoft to halt the specific exclusionary practices that Microsoft directed at Navigator and Java.

109. The States have proposed a comprehensive set of remedies, each of which is discussed in more detail below, that limits continued commingling of middleware and operating system code (Remedy 1); mandates generally uniform terms and conditions for OEMs and

provides them with substantial freedom in product configuration (Remedy 2); obliges Microsoft to continue licensing earlier versions of Windows (Remedy 3); requires Microsoft to make significant disclosures of APIs, communications protocols and technical information for the purpose of facilitating interoperability (Remedy 4); prevents Microsoft from purposely degrading the performance of competing software (Remedy 5); prevents Microsoft from demanding exclusivity from ISVs and others (Remedy 6); prohibits contractual tying (Remedy 7); bans a broad range of retaliatory behavior against those who develop, distribute or promote competing software (Remedy 8); protects participants in the litigation from retaliation (Remedy 9); requires greater respect for user and OEM choice of default middleware (Remedy 10); prohibits agreements not to compete (Remedy 11); mandates the open-source licensing of Internet Explorer (Remedy 12); requires Microsoft to distribute a compliant Java Virtual Machine with Windows (Remedy 13); requires Microsoft to license the right to port its Office suite of applications to operating systems other than Windows (Remedy 14); ensures the provision of the intellectual property rights necessary to make the remedial provisions work (Remedy 15); limits Microsoft's ability to engage in deceptive and manipulative conduct with respect to industry standards that it claims to support (Remedy 16); and provides for timely and meaningful enforcement (Remedies 17-20).

110. The implementation of the States' Remedy would create an environment in which, among other things:

(a) Microsoft can only continue to commingle middleware code and operating system code if it also makes available an "unbound" version of Windows from which its middleware may be removed and, if so desired, replaced by competing middleware (Remedy 1);

(b) OEMs and other licensees are assured of evenhanded treatment by requiring generally uniform license terms, without regard to the extent to which the OEMs or other licensees may support competing software, and are guaranteed the flexibility to configure the computers they sell to meet the demands of consumers (Remedy 2);

(c) Microsoft will be obliged to disclose the APIs, communications protocols, and other technical information necessary so that developers of competing software, including competing middleware, will have the opportunity to develop products that effectively interoperate with Microsoft's software (Remedy 4), and Microsoft will not be able to take other steps to purposely degrade the performance (Remedy 5) or unduly frustrate the interoperability of such competing software (Remedy 16);

(d) Microsoft will be barred from using contractual provisions (Remedy 2, Remedy 6 and Remedy 7) or threats and retaliation (Remedy 8 and Remedy 9) to prevent OEMs, ISVs and others from exercising the freedom these remedies provide and taking advantage of the opportunities they are otherwise provided; and

(e) Consumers will enjoy a range of choices far beyond what they have today, so that they can in fact choose what best meets their needs, and software and hardware suppliers will be obliged to respond to those needs (Remedy 1, Remedy 2, Remedy 3, and Remedy 10).

111. The States' Remedy will achieve the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by, *inter alia*:

(a) preventing the continued use of the particular exclusionary practices Microsoft aimed at Navigator and Java, *e.g.*, prohibiting commingling (Remedy 1), prohibiting restrictions on OEM flexibility to promote competing middleware (Remedy 2), prohibiting exclusive

arrangements to promote IE to the exclusion of Navigator (Remedy 6), banning retaliation for the use of competing browsers (Remedy 8), banning retaliation for participation in the litigation (Remedy 9) and prohibiting deception as to the cross-platform capabilities of its Java tools (Remedy 16);

(b) protecting other nascent technologies that are potential platform threats from the use of those same or similar exclusionary practices in the future by, for example, defining middleware to include various forms of middleware with platform threat potential, including the software for server operating systems, Web services, hand-held devices and set-top boxes, and ensuring that the States Remedies' substantive protections reach not only middleware as so defined, but also competing operating systems, such as Linux (Remedy 2, Remedy 4, *etc.*); and

(c) preventing the use of other practices that will predictably have the same adverse effects on potential platform threats that might otherwise lower the applications barrier to entry or bring competition directly into the market for Intel-compatible PC operating systems by, for example, mandating the disclosure of information about APIs and interfaces necessary to effective interoperability (Remedy 4), prohibiting the purposeful degradation of the performance of competing software (Remedy 5), banning contractual tying (Remedy 7), requiring respect for user choices of default software (Remedy 10), preventing agreements not to compete with nascent platform threats (Remedy 11), and limiting the use of claimed adherence to and proprietization of industry standards to frustrate cross-platform interoperability (Remedy 16).

112. The States' Remedy will also unfetter the market from anticompetitive practices and prevent a recurrence of monopolization in the future by reducing directly the applications barrier to entry in order to restore that barrier to the level it would have been absent any unlawful conduct by, for example, requiring the distribution of Java with Windows (Remedy 13),

providing for the porting of Office to other operating systems (Remedy 14), and enabling the development of alternative middleware and operating systems that can support some of the functionalities of the Windows platform (Remedy 4).

113. The States' Remedy will also unfetter the market from Microsoft's anticompetitive practices and insure that Microsoft does not benefit from the "fruits" of its statutory violation by, for example, requiring the distribution of Java with Windows (Remedy 13) and mandating that Internet Explorer be made available to others through an open-source license arrangement (Remedy 12).

114. The States' Remedy will also achieve the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by providing for effective enforcement mechanisms for the substantive remedy provisions, recognizing the importance of internal compliance, prompt dispute resolution, significant sanctions for non-compliance and timely notification of Microsoft's actions to those charged with enforcement (Remedies 17-21).

B. The Appropriate Remedy Here Must Reduce the Applications Barrier to Entry to the Level It Would Have Been Absent Microsoft's Anticompetitive Conduct

115. The applications barrier to entry is critical to the maintenance of Microsoft's PC operating system monopoly. Because Microsoft's anticompetitive conduct here maintained and enhanced the applications barrier to entry that protects its monopoly, Shapiro Dir. ¶¶ 7, 11-24, *see supra* Section II.E.2 ("Microsoft's Actions Maintained and Enhanced the Barrier to Entry"), a remedy that meets the Court of Appeals' objectives must reduce that barrier to the level it would have been absent Microsoft's unlawful behavior. The Court of Appeals has described one of the challenges in crafting a remedy as "*restoring* competition to a dramatically changed, and constantly changing, marketplace." *Microsoft*, 253 F.3d at 49. Therefore, an appropriate remedy

should be designed not only to stop Microsoft's past anticompetitive conduct and to prevent any recurrence in the future, but also to take additional, direct steps to reduce the applications barrier to entry to what it would have been absent Microsoft's unlawful conduct. *See* Shapiro Dir. ¶¶ 25-26, 45-47, 58.

116. Although there was some disagreement between experts, this Court recognizes, as the Court of Appeals has already explained, *Microsoft*, 253 F.3d at 79, that it is difficult to determine with any great confidence just how competition from the existing rivals or new entrants would have played out over the past five or six years, had Microsoft not illegally impeded the middleware threats posed by Navigator and Java. *Id*. at ¶¶ 38, 58. Specifically, it is impossible for the Court to determine with confidence precisely (a) what cross-platform applications would have developed over the past five or six years with a thriving Navigator or Java; (b) the degree of growth that would have been sustained by rival operating systems had such systems supported the dominant web browser (*i.e.* Navigator) for the past five or six years, while Microsoft attempted to compete with a browser that commanded a smaller share of the market; (c) the degree of growth that would have been sustained by competitive operating systems by also having access during the past five or six years to whatever new cross-platform applications would have been written to Navigator or Java in the interim period; or (d) the degree to which any or all of these effects might have enabled a competing operating system to benefit from a "positive feedback loop" or network effects. *See* Tr. 1099:11-1105:12; 1116:2-1118:1 (Tiemann).

117. Yet, as the Court of Appeals has explained, it is not this Court's burden to predict with confidence how competition would have developed over the past five or six years in the absence of Microsoft's illegal conduct. Nor are the Plaintiffs to suffer the consequences of the

inability of this Court to conclude precisely the effect of that conduct: "[T]he underlying proof problem is the same—neither plaintiffs nor the court can confidently reconstruct a product's hypothetical technological development in a world absent the defendant's exclusionary conduct. To some degree, 'the defendant is made to suffer the uncertain consequences of its illegal conduct.'" *Microsoft*, 253 F.3d at 79 (citations omitted).

118. Considering these factors, and events that have occurred in the marketplace, it is not possible for the remedy to restore the potential for competition that existed prior to Microsoft's monopoly maintenance merely by stopping the unlawful conduct and protecting nascent middleware threats today and in the future. The combined threat posed in the mid 1990's by the combination of Navigator and Java, at the time when the Internet was just becoming of critical importance, exceeds the potential threat posed by any middleware or even any combination of middleware evident today. Shapiro Dir. ¶ 33 ("Despite an extensive investigation, I have been unable to identify any middleware threat today that is nearly as powerful as the combined threat to Windows posed by Navigator and Java six years ago.") As Dr. Shapiro concludes, "For just this reason, I doubt that any remedy today directed only at middleware could restore competition, *i.e.* create conditions giving rise to a threat as powerful as Microsoft faced six years ago." *Id.*

119. The import of these circumstances is that "the remedy must affirmatively facilitate competition not only by cross-platform middleware but by other routes as well," Shapiro Dir. ¶ 34, including competing operating systems. The ability of such rival operating systems to present even the potential for competition and to overcome the applications barrier that was maintained and enhanced by Microsoft's anticompetitive conduct depends in large measure on the ability of those rival systems soon to offer end-users access to a critical mass of

applications. Making key applications available now to rival operating systems can therefore lower the applications barrier in a manner that, while not providing the rival systems with a particular market share or foothold, fosters the goal of restoring the potential for competition that existed prior to Microsoft's anticompetitive campaign to thwart Navigator and Java.

C. By Meeting the Court of Appeals' Remedial Objectives and Reducing the Applications Barrier to Entry, the States' Remedy Will Enhance Competition, Innovation and Consumer Choice

120. The States' Remedy will provide more freedom and flexibility for OEMs, more opportunity for software developers competing with Microsoft, and ultimately more innovation and more choices for consumers. For example, the States' Remedy would greatly enhance the likelihood that OEMs and others would be willing and able to customize their offerings to meet consumer demands and tastes. Ashkin Direct Testimony (PX 1596 (under seal), PX 1596A (redacted)) ("Ashkin Dir.") ¶¶ 82-87. These remedies would also provide new possibilities for lower-priced personal computers that might make use of the so-called "stripped down" version of Windows. Ashkin Dir. ¶ 92.

121. By stopping Microsoft's anticompetitive acts and preventing their recurrence in the future, the States' Remedy will benefit consumers by preventing the harm that these continued practices—in terms of reduced consumer choice, reduced innovation, and reduced competitiveness in the market—would otherwise cause. *See supra* Section II.E.3 ("Microsoft's Actions Hurt Competition and Consumers") setting forth Findings Nos. 409-12.

122. By lowering the applications barrier to entry, the States' Remedy will benefit consumers and competition even if there is, in the short term, no immediate new entry into the market for Intel-compatible PC operating systems. In so doing, the States' Remedy will not only

encourage innovation by others, but will also significantly increase the likelihood that Microsoft will feel increased competitive pressure to improve its own software. Shapiro Dir. ¶¶ 24, 52-57.

D. The States' Remedy Properly Takes Account of Changes in the Marketplace, Including the Nature of the Current Platform Threats to Microsoft's PC Operating System Monopoly

123. Meeting the Court of Appeals' remedy objectives requires consideration of the extent of technological change since the time of the liability proceedings and thus warrants a broader or different view of the appropriate remedial provisions. As the Court of Appeals observed, "[c]onduct remedies may be unavailing in such cases [involving technologically dynamic markets], because innovation to a large degree has already rendered the anticompetitive conduct obsolete (although by no means harmless)." *Microsoft*, 253 F.3d at 49.

124. In this case, for example, it is impossible to recreate the market conditions that existed in the period before Microsoft's monopoly maintenance occurred. *See* Shapiro Dir. ¶ 30-31 ("As a practical matter, six years later we cannot literally restore the Internet/Netscape/Java threat that Microsoft faced in 1996."). The so-called "browser war" between Internet Explorer and Navigator, for example, is effectively over and the market cannot be put back into a position in which Navigator has the leading share of browser usage and is uniquely well-situated to take advantage of positive feedback effects. It will, as the Court of Appeals warned, accomplish very little, therefore, in these circumstances to restrict the remedy to the two particular technologies, Navigator and Java, that were the primary object of Microsoft's anticompetitive practices.

125. There is no single middleware threat today that appears as potent as the combined threat of Navigator and Java in the middle 1990's. Shapiro Dir. ¶¶ 31-33. There are, however, a variety of technologies that have some significant capability of being meaningful platform threats to Microsoft's Windows.

1. Networks and Server-Based Applications

126. One form of technology that is likely to pose a greater threat in the future to the Windows desktop operating system monopoly than it did during the period covered by the liability trial is server-based computing. Shapiro Dir. ¶ 34; Ledbetter Direct Testimony (PX 1684) ("Ledbetter Dir.") ¶¶ 17-20. Traditionally, the majority of software applications were located on a client PC—a user's personal desktop. Ledbetter Dir. ¶ 17. Today, many popular software applications—particularly those used in enterprise environments by businesses, government or other organizations—have begun to migrate from the desktop and now reside on servers in a computer network. Ledbetter Dir. ¶¶ 17-20; Tiemann Dir. ¶ 127.

127. Increasingly, personal computers (PCs) are linked together electronically through networks. Ledbetter Dir. ¶ 16; Tiemann Dir. ¶ 127. Computers called "servers," and software that resides on those servers, manage these networks, and support many, if not all, of the applications available to those whose personal computers are connected to the network. Ledbetter Dir. ¶¶ 16-17, 21; Tiemann Dir. ¶ 127. In this environment, the PCs attached to the network are referred to as "clients," and the client PC is the means by which a user accesses the functions and applications the network makes available. Ledbetter Dir. ¶¶ 16, 21.

128. In this setting, server operating systems function as middleware. Ledbetter Dir. ¶¶ 47-50. As the "migration" of software applications from desktop PCs to servers occurs, software developers have increasingly begun to write applications that call on the APIs exposed by server operating systems. Ledbetter Dir. ¶ 47; Tiemann Dir. ¶ 131. In other words, server operating systems, similar to middleware such as Netscape and Java, provide a platform for applications development and a means for end-users to access applications without regard to which PC operating system they use. Ledbetter Dir. ¶¶ 48-50; Tiemann Dir. ¶ 131.

129. Server operating systems are typically cross-platform in terms of their ability to interoperate to at least some degree with a variety of client PC operating systems. Ledbetter Dir. ¶ 49; Tiemann Dir. ¶ 130. Therefore, applications that are written to call upon the APIs exposed by a server operating system, rather than the APIs of a desktop PC operating system, can be utilized by PCs running a number of competing operating systems. Ledbetter ¶ 50; *see also* Tiemann ¶ 131.

130. As found by the District Court, the "growth of server-based computing" might one day aid in breaking down the applications barrier to entry:

> The rise of the Internet in turn has fueled the growth of server-based computing, middleware, and open-source software development. Working together, these nascent paradigms could oust the PC operating system from its position as the primary platform for applications development and the main interface between users and their computers.

Microsoft, 84 F. Supp. 2d at 26, Finding No. 60.

2. Web Services

131. Similar to server operating systems, the development of the Web services platform marks a shift in software development whereby developers are writing applications that interact and communicate with web servers and web based operating systems rather than desktop client operating systems. Borthwick Direct Testimony (PX 1764) ("Borthwick Dir.") ¶ 72.

132. The concept referred to as Web services involves applications that traditionally resided on the PC, moving to web servers and being accessed by PCs and other devices across the internet. Borthwick Dir. ¶ 72; Gates Dir. ¶¶ 39-40. Examples of Web services include applications that have been historically installed on PCs (such as word processing, calendaring or e-mail programs) to other applications such as online banking, airline or theater reservations, downloaded music or movies on demand, or a virtual mailbox that handles all of a consumer's messages. Schwartz Dir. ¶ 31.

133. Web services are generally conceived to run on a common set of standards and provide, among other things, a way for two applications connected by the Internet to communicate with one another without requiring software developers to write extensive code to regulate the interactions. Borthwick Dir. ¶ 73; Gates Dir. ¶ 40; Allchin Direct Testimony (DX 1501) ("Allchin Dir.") ¶ 42. Because these applications reside on the Internet rather than on the PC, users can access them from a number of different devices. Borthwick Dir. ¶ 73; Gates Dir. ¶¶ 39, 45; *see also* Allchin Dir. ¶ 52. To access these devices, a user will simply need Internet access, be it through a desktop PC, cell phone, hand-held device or other piece of connected hardware. Borthwick Dir. ¶ 73; Schwartz Dir. ¶ 30; Gates Dir. ¶ 39.

134. Because Web services increasingly employ distributed components across the Web, these components must be able to locate and interact with each other without direct user intervention. Schwartz Dir. ¶ 34; Allchin Dir. ¶ 42. By facilitating and improving on the ability of applications running on different devices to communicate and interoperate with one another, the evolving Web services paradigm offers the potential for powerful, distributed computing to occur across an unlimited variety of devices and operating systems. Schwartz Dir. ¶ 34; Gates Dir. ¶¶ 39-40; Allchin Dir. ¶ 52.

135. The Web services platform is considered by many in the software industry to be the next important area of software development. Schwartz Dir. ¶¶ 28-35; *see also* Gates Dir. ¶ 12 (Web services are the "next generation computing platform"); Allchin Dir. ¶ 50. To take advantage of this phenomenon, Microsoft has created its new .NET initiative, which it describes as an emerging platform for Web services. Allchin Dir. ¶¶ 43, 62; Schwartz Dir. ¶ 73; PX 123; PX 133. To emphasize the importance of .NET, Microsoft is devoting such a large share of its resources to Web services development—through the development of its .NET Initiative—as to

consider it a "bet the company" initiative. Tr. 4562:9-16 (Gates); *see also* Gates Dir. ¶ 46 ("Realization of our .NET vision will take many years and many billions of dollars of R&D investment by Microsoft and partners who share our vision.").

136. The move to Web services is such an important change in the way computing will evolve that Microsoft has described it as analogous to the introduction of Windows. Bill Gates put it in these terms: "[I]n the same way that Windows was our product for graphics interface, .NET is our platform for this new era." Schwartz Dir. ¶ 73; PX 133. In an earlier speech, he emphasized that "[w]hat we're talking about today is far more ambitious than [making the Internet accessible]. *This is a new platform. This will affect every piece of application code that gets written*." PX 123 (emphasis added); Schwartz Dir. ¶ 73.

137. Web services are an important platform threat to the Windows PC operating system monopoly. Schwartz Dir. ¶ 36. If many popular applications are delivered as Web services, instead of desktop PC applications, the applications barrier protecting Microsoft's desktop monopoly could be substantially eroded. *Id*.

138. As such applications are delivered as Web services that reside and run on servers that can be accessed by a variety of client devices, provided that the developers of Web services adopt industry standard protocols, users will not be forced to use Microsoft's desktop operating system in order to run the applications they desire. Schwartz Dir. ¶ 37; Borthwick Dir. ¶ 74; *see also* Gates Dir. ¶¶ 40, 45; Allchin Dir. ¶ 44, 62.

139. As more and more applications begin to reside on networks rather than the PC, the applications barrier to entry erodes as the value of Web services grows in comparison to the value of the stand-alone PC applications. Schwartz Dir. ¶ 38. In this scenario, users will be less

dependent on a given operating system to deliver the most popular applications and therefore the obstacles to providing these applications will be reduced. Borthwick Dir. ¶ 74.

3. Set-Top Boxes

140. A set-top box is a computer attached to a television. Tr. 2204:12-2206:13 (Kertzman). Through the use of interactive television middleware, set-top boxes can provide both enhanced television—including "video-on-demand," an on-screen television guide, and the ability to interact with particular television programs—as well as traditional personal computer functionality such as e-mail, Internet access, instant messaging, and the provision of streaming audio and media. Kertzman Direct Testimony (PX 1703) ("Kertzman Dir.") ¶ 3; Tr. 2204:12-2206:13 (Kertzman).

141. Interactive television middleware can be deployed into the market and used by consumers in two forms and through two independent distribution channels. Kertzman Dir. ¶ 4, PX 1761 (demonstrating deployment on set-top box and server), PX 1762 (demonstrating deployment on PC). With either deployment and in either form, interactive television middleware represents a platform threat to Windows that is capable of reducing the applications barrier to entry. Kertzman Dir. ¶¶ 23-29; Tr. 2097:3-17, 2100:17-2101:17, 2104:7-17, 2108:18-2110:8, 2204:1-2216:13, 2206:13 (Kertzman).

142. Currently, interactive television middleware is used as middleware on an embedded operating system in a set-top box. In this form, it is distributed through network operators—cable or satellite television companies. Tr. 2204:1-2206:13 (Kertzman). Interactive television middleware vendors sell this middleware software to the network operators, which install it in turn on servers that they house and maintain. *Id.* Those network operators then actually distribute the middleware to set-top boxes found in consumer's homes; when consumers connect to a network operator's server to obtain enhanced television services, that server

downloads a small piece of interactive middleware software onto their set-top box. Kertzman Dir. ¶ 23. The middleware software on the set-top box subsequently interoperates with the middleware software on the network operator's server to actually provide enhanced television to the consumer. *Id.*

143. Interactive television middleware can also be deployed directly on a PC as PC middleware. Kertzman Dir. ¶ 36. As the set-top box develops more and more PC functionality, it and the PC have been "converging" into a unitary device. *Id.* Sony and Philips already sell a PC-based device to time shift television. A start-up called Moxi is developing a more powerful PC-based product to time shift television and act as a home audio and media hub. *Id.* Microsoft's Xbox game console is also a Windows-based PC device connected to both the Internet and televisions. Kertzman Dir. ¶ 39. Moreover, Microsoft has announced its plan—centered around the "eHome initiative," "Mira" device, and "Freestyle" software—to transition the Windows PC into a full media hub in the home that will synchronize and control PDAs, laptop computer, mobile devices, and televisions. As part of this plan, Microsoft will carry interactive television middleware as middleware on the desktop PC, which can then be used to control the television and eliminate the need for a set-top box. Kertzman Dir. ¶¶ 38, 40; Tr. 2210:20-2211:3 (Kertzman); PX 1727-1733, PX 1737. In fact, Microsoft has already bundled some television functionality into Windows XP and intends to fully implement television functionality later this year. Kertzman Dir. ¶ 41; PX 1735. When interactive television technology is transferred into the desktop PC, interactive television middleware vendors will be forced into this second mode of deployment, supplying middleware for the desktop PC operating system. Tr. 2211:3-2213:11(Kertzman); PX 1762.

144. Regardless of the form or means of distribution, interactive television middleware—such as that supplied by Liberate technologies—is "platform agnostic." In the set-top box, it runs on any of the 13 operating system platforms found on today's set-top boxes, including Windows CE and Linux; as middleware on the PC, it will run on comparable diverse PC operating systems. Tr. 2201:19-2203:5, 2213:24-2215:12 (Kertzman). Because that middleware is based on Java, applications written to it are also based on Java and can be used on any Java-enabled device, including non-Windows PC operating systems. Tr. 2206:14-2207:12 (Kertzman). Even if it only ran on set-top boxes on televisions, with 1.4 billion televisions in the world—a number dwarfing the number of existing PCs—the market for interactive television middleware is much larger than the current market for PC applications. Tr. 2109:11-2110:6 (Kertzman). Because it offers a larger market than currently exists for Windows-only applications, interactive television can potentially draw developers to create these cross-platform Java applications regardless of how many Windows applications exist. Tr. 2207:13-2208:21 (Kertzman). By fostering the growth of cross-platform Java applications, which will work on non-Windows PC operating systems, set-top boxes and interactive television middleware thus threaten Windows.

145. To sum up, whether deployed as middleware on a desktop PC or as middleware on an embedded operating system on a television, set-top boxes and the interactive television software that they host are platform threats to Windows. Kertzman Dir. ¶ 33. When interactive television software is deployed solely on set-top boxes and distributed by network operators, it threatens the applications barrier to entry protecting the Windows monopoly by attracting a significant number of new cross-platform applications. Tr. 2207:13-2208:21 (Kertzman). And when directly deployed on a PC, interactive television middleware is also a platform threat to

Windows—for the same reasons that all PC middleware is a platform threat to Windows. In fact, as middleware on the PC, interactive television software presents a threat to Windows that is the same or very similar to the platform threat presented by Netscape Navigator in the mid-1990s. Kertzman Dir. ¶ 34; Tr. 2109:9-2110:8 (Kertzman). Like the Navigator browser, in this form, interactive television middleware is middleware on the PC exposing APIs with the capability of attracting massive numbers of new applications.

4. Hand-Held Devices

146. Handheld devices are another increasingly important platform threat to the Windows desktop monopoly. Handhelds are a flexible category of devices including Palm OS powered handheld computers, Microsoft's Pocket PC, and handheld computers based on other operating systems such as Linux. Mace Direct Testimony (PX 1648) ("Mace Dir.") ¶¶ 19-20. They can perform a variety of functions, such as calendaring, email, spreadsheets, and word processing, and allow users to perform computing tasks when away from their PC. Mace Dir. ¶¶ 12-14. They also include high-functioning mobile phones called "smart phones" that are powered by various operating systems, including the Palm OS, Microsoft's "Smartphone" software, or the Symbian operating system backed by Nokia. Mace Dir. ¶¶ 21-22. All of these handheld devices run on an operating system platform, much like desktop PCs. Shapiro Dir. ¶ 188. Accordingly, they expose APIs that applications written to a handheld operating system can invoke. *Id.* Handhelds are rapidly increasing in popularity. Mace Dir. ¶ 12.

147. Handheld devices running non-Microsoft operating system software pose a platform threat to the Windows operating system for four independent reasons. First, handheld devices are today a substitute to the PC for many consumers. This direct competition for consumers is growing every day, as advances in handheld device memory, speed, and functionality, as well as advances in screen and wireless technologies allow more and more

computer users to accomplish computing tasks on a handheld device that once were performed solely on a PC. Mace Dir. ¶ 13; Shapiro Dir. ¶ 187.

148. Second, as handheld technology evolves, and the demand for handheld devices continues to increase, so do the breadth of APIs exposed by handheld operating systems to developers. This in turn attracts more developers to write applications for handheld devices, thus making handheld devices even more directly competitive with Windows PCs. Mace Dir. ¶¶ 15-17. As handheld operating systems continue to evolve into a substitute to the PC operating system, this increases the likelihood (by increasing the potential profitability and lowering the costs) that a handheld device operating system developer would port it to run on Intel-compatible PCs. Alternatively, a handheld operating system developer could design the operating system in conjunction with a layer of cross-platform middleware to run on top of Windows operating systems, thereby reducing the applications barrier to entry with respect to PC operating systems.

149. Third, handheld device operating systems present supply-side competition to Windows with respect to the most important source of the applications barrier to entry—software developers. As handheld operating systems have gained, and continue to gain, in popularity, they attract thousands of software developers. Palm estimates that there over 200,000 registered software developers for the Palm OS, making Palm one of the most popular (if not the most popular) software platforms next to Windows. Tr. 1903:6-8 (Mace). Indeed, today, over 13,000 third party software applications run on the more than 21 million handheld devices running the Palm OS. Mace Dir. ¶¶ 10, 12.

150. Software developers who write applications for a handheld device, as opposed to a PC, impact competition between handhelds and PCs, as well as competition among OS manufacturers by reducing the Windows applications barrier to entry. In particular, to the extent

that applications are written to the APIs exposed by a handheld operating system instead of Windows APIs, it reduces the number of applications written for Windows, thereby reducing the applications barrier to entry facing a developer of a non-Microsoft PC operating system.

151. Fourth, handheld devices today support, and in the future will be even more important channels of distribution for, cross-platform middleware that potentially could erode the applications barrier to entry in the PC operating system market. Green Dir. ¶ 123 (handheld devices support and carry Java); Richards Direct Testimony (PX 1598) ("Richards Dir.") ¶ 32 (RealNetworks' multimedia technology is supported on numerous handheld devices, including PDAs and cell phones); Mace Dir. ¶ 16 (handheld devices will play important role in the advent of Internet-based and Web services); Pearson Direct Testimony (PX 1763) ("Pearson Dir.") ¶ 8 (handheld devices will be a major access point for Web services). By providing greater distribution for cross-platform middleware, handheld devices create a larger market for and greater consumer demand for cross-platform middleware. This in turn creates greater financial incentives for ISVs to write applications to this middleware, instead of directly to the APIs exposed by Windows, thereby increasing the likelihood that cross-platform middleware will reach a point of distribution that can erode the applications barrier to entry.

152. Although handheld devices currently represent a platform threat to Windows, that threat may never reach its full competitive potential without the States' remedies. As Michael Mace testified, interoperability with a desktop PC is critically important to the marketability of a handheld operating system. Mace Dir. ¶¶ 24-33. Because Microsoft owns the dominant desktop operating system, Microsoft has the power to hinder or destroy a handheld platform's interoperability. *Id.* ¶ 32. While handhelds are an important platform threat to Windows, they are also currently in a precarious position due to the dominance of Microsoft.

5. Other Forms of Middleware

153. Although Navigator and Java, were, for a variety of reasons, unusually strong threats to Microsoft's desktop operating system monopoly, other potential middleware platform threats were mentioned during the liability proceedings, including Apple's and RealNetworks' media playback technologies. *Microsoft*, 84 F. Supp. 2d at 30, 36-38, Findings Nos. 78, 104, 111-14.

154. The District Court recognized that Microsoft viewed multimedia technologies as a potential platform threat, or at least part of such a threat. The District Court found that "Microsoft noted the dangers of Apple's and RealNetworks' multimedia playback technologies, which ran on several platforms (including the Mac OS and Windows) and similarly exposed APIs to content developers. Microsoft feared all of these technologies because they facilitated the development of user-oriented software that would be indifferent to the identity of the underlying operating system." *Microsoft*, 84 F. Supp. 2d at 30, Finding No. 78.

155. With respect to Apple's multimedia technologies, the Court found that "[b]ecause QuickTime is cross-platform middleware, Microsoft perceives it as a potential threat to the applications barrier to entry." *Microsoft*, 84 F. Supp. 2d at 36, Finding No. 104. And focusing specifically on RealNetworks, the District Court found that Microsoft's senior executives "viewed RealNetworks' streaming software with the same apprehension with which they viewed Apple's playback software—as competitive technology that could develop into part of a middleware layer that could, in turn, become broad and widespread enough to weaken the applications barrier to entry." *Id.* at 37-38, Finding No. 111.

156. Media playback and delivery software has, in fact, become an increasingly significant form of middleware in the years since the liability proceeding. *See, e.g.*, Richards Dir. ¶ 63.

157. With the growth of computer networks and the Internet, middleware that resides on a personal computer and provides services to end users through applications entirely resident on that same computer has become less important in the period of time since the liability proceedings. Increasingly the types of middleware that are most relevant are those that (a) are not even resident on a personal computer, or (b) reside on the personal computer, but are intended to enable or facilitate interaction with programs or data resident on another computer or even another type of device.

E. The Remedy Must Cover Conduct That Is "Same or Similar" to Proven Anticompetitive Acts or That Represents Another Means to Attain the Same Unlawful End of Suppressing Nascent Platform Threats

158. The essence of Microsoft's unlawful monopoly maintenance was to thwart the growth of competing software that showed the potential to ripen into a rival platform for software development. Even during, and subsequent to, the determination of its illegal behavior, Microsoft has engaged in substantial conduct that is the same as or similar to the particular exclusionary acts that were specifically enumerated as anticompetitive by the Court of Appeals, and has employed and can employ other means to attain the same ends. *See, e.g., Zenith Radio Corp. v. Hazeltine Research, Inc.*, 395 U.S. 100 (1969); *International Salt Co. v. United States*, 332 U.S. 392 (1947). An effective remedy must address such conduct in order to meet the Court of Appeals' remedial objectives.

1. Limits on OEM Flexibility

159. One of the primary categories of Microsoft's anticompetitive conduct was a series of contractual restrictions designed to limit the flexibility of OEMs with respect to competing software. *Microsoft*, 253 F.3d at 59-64. Microsoft has continued to take a variety of steps to deny OEMs the flexibility to provide the choices consumers demand, thereby preventing the customization of a range of software beyond Internet browsers.

160. For example, Gateway's "Go-Back" software, which allowed customers to easily restore their computers if they encountered crashes or errors, was encumbered by Microsoft's restrictions limiting OEM flexibility during the initial start-up sequence and desktop icon prominence. Ashkin Dir. ¶¶ 54-57; Tr. 897:1-898:18 (Ashkin); *see also infra* Section VII.F ("Purpose of States' Remedy 2.c"). Restrictions on modifying the initial boot-up sequence also prevented Gateway from being able to provide an Internet service to its customers, despite customers having already signed up for the service. Ashkin Dir. ¶¶ 58-59; Tr. 891:23-896:25 (Ashkin); *see also infra* Section VII.F ("Purpose of States' Remedy 2.c"). In addition, Microsoft has significantly limited OEMs' ability to change the default settings in Windows, which allows Microsoft to favor its products. Ashkin Dir. ¶ 146.

161. Another way Microsoft has constrained OEM flexibility in order to protect its middleware from outside platform threats is by placing conditions on its grant of Windows licenses. For example, Microsoft currently prohibits OEMs from licensing Windows without Windows Media Player or from removing or disabling end-user access to it. Richards Dir. ¶ 200; *see also infra* XIII.A ("Purpose of States' Remedy 7").

162. A key reason for Microsoft's licensing restrictions was to prevent rival middleware from effectively using the OEM channel of distribution. *Microsoft*, 253 F.3d at 61. Microsoft has used a variety of measures to limit its rivals' access to OEM distribution, such as communicating to OEMs Microsoft's view that they should not devote too much time or too many resources to promoting or distributing Linux, an operating system that is a direct competitor of Windows. *See, e.g.*, PX 223 (Gates meeting with Compaq); *see also* Tiemann Dir. ¶¶ 47-74 (other portions of paragraphs 60-64, 67, 72-73 stricken) Tr. 957:15-963:8 (Tiemann) (describing Red Hat's difficulty in marketing Linux because of what it perceived as fear on the

part of OEMs); Section XIV.A.1 ("Actions Taken Against OEMs"). In addition, despite OEMs' recognition of the benefits they could gain by offering customized PCs, recent efforts have not reflected a significant degree of customization, such as Compaq's attempt to offer a "Harry Potter" PC. Borthwick Dir. ¶ 19; PX 661 at 5 (offered for context). Furthermore, AOL's discussions with OEMs to offer customized "Out-Of-Box-Experience" PCs failed. Borthwick Dir. ¶¶ 25-28.

163. Microsoft used threats and inducements to OEMs as a part of its strategy to keep rivals off the OEM channel of distribution, in part by making sure that OEMs would believe that they would be treated differently depending upon the extent of their dealings with Microsoft's competitors. *Microsoft*, 84 F. Supp. 2d at 66-68, Findings Nos. 230-38. In the aftermath of the liability trial, for example, Microsoft has taken steps to insure that OEMs continue to expect such uneven treatment based upon their degree of cooperation with competitors. For example, Gateway's request for "most favored customer" status to ensure that it was not receiving less favorable treatment than other, more favored OEMs was refused by Microsoft. Fama Direct Testimony (PX 1678 (under seal), PX 1678A (redacted)) ("Fama Dir.") ¶ 20; PX 1240 (under seal) (PX 1240A, redacted) at 4-5 (pages Bates-numbered 021728-021729); *see also infra* VII.A ("Purpose of States' Remedies 2.a and 2.b").

164. Microsoft has also considered how it can structure financial incentives and marketing opportunities to advantage those OEMs that promote Microsoft middleware, rather than competing offerings. PX 1012. One of the primary financial methods Microsoft employs to exert control over OEMs is through Marketing Development Programs (MDP) or Agreements (MDA). Ashkin Dir. ¶¶ 109, 114, 119; Fama Dir. ¶ 118; *see also infra* Section VII.B.3 ("States' Remedies 2.a and 2.b Prohibit MDAs, MDPs and Other Special Discounts"). In exchange for

significant royalty discounts that OEMs need to compete effectively, Microsoft's MDAs set numerous restrictions on OEMs' ability to control their product configuration in order to limit the ability of OEMs to choose competing middleware. Ashkin Dir. ¶¶ 109-27; Fama Dir. ¶¶ 121-23, 130-31.

165. Most recently, Microsoft has demonstrated its continued willingness and ability to exert control over OEMs by using the terms of its proposed settlement agreement with the Department of Justice to impose onerous terms on OEMs. *See infra* Section VII.C.2 ("Microsoft Has Used the 'Uniform Terms' Provision of the Consent Decree to Impose More Onerous Terms on OEMs"). Although the settlement agreement ostensibly placed restrictions on Microsoft to protect OEMs, Microsoft has used the settlement to require new OEM licenses with many provisions altered to favor itself. *See e.g.*, Fama Dir. ¶¶ 45-57, PX 54 (under seal) at Section II(a), DX 392 (under seal) (instituting "two-strike" termination provision based on Microsoft's Remedy III.A); Fama Dir. ¶¶ 58-66, PX 54 (under seal) at Section 8(d), PX 1207 (under seal), PX 1188, Tr. 1249:14-24, 1252:3-1255:13 (Fama) (altering the non-assertion of patent (NAP) provision to restrict the ability of OEMs to assert patent infringement against Microsoft).

2. Binding Middleware

166. Despite the effect of its anticompetitive licensing restrictions on OEMs, Microsoft believed that it would require greater technological binding of Internet Explorer to Windows in order to gain the market share that Netscape Navigator had acquired. *Microsoft*, 253 F.3d at 64; *Microsoft*, 84 F. Supp. 2d at 49-53, Findings Nos. 159-74. Actions taken by Microsoft in accordance with this binding strategy, namely the "exclusion of IE from the Add/Remove Programs utility and its commingling of browser and operating system code," were affirmed as unlawful "exclusionary conduct, in violation of § 2." *Microsoft*, 253 F.3d at 67.

167. Microsoft has continued and expanded its commingling of middleware and operating system software code, such that today (a) more middleware is evidently "bound" to the operating system, in the sense that it cannot be readily removed from Windows without impairing other operating system functions, than was the case at the time of the liability trial, and (b) some of the middleware that had been bound is even more deeply tied to the operating system today than it was at the time of the liability trial. Tr. 4867:25-4869:24 (Gates).

168. Microsoft has also omitted middleware, namely Windows Media Player, from the Add/Remove function in Windows XP, Richards Dir. ¶ 102, much as it did with Internet Explorer during the period of the liability proceedings. *Microsoft*, 253 F.3d at 64-67; *Microsoft*, 84 F. Supp. 2d at 52-53, Findings Nos. 170, 175-76.

3. Limiting Interoperability

169. Because technology has evolved since the liability proceedings, a variety of other technologies have become more significant platform threats, including server operating systems, Web services, handheld devices and television set-top boxes. *See supra* Section III.D ("The States' Remedy Properly Takes Account of Changes in the Marketplace, Including the Nature of the Current Platform Threats to Microsoft's PC Operating System Monopoly"). These are technologies that today, like Navigator and Java in 1995-96, can serve as potentially significant platforms for software development and could ultimately bring competition to the market for Intel-compatible PC operating systems.

170. Because all of these technologies must be cross-platform in order to be platform threats—in other words, they must run on both the Windows platform and other platforms—Microsoft recognizes that limiting the interoperability of competing software with its desktop monopoly operating system is one of the critical means of thwarting potential platform threats. Microsoft has long recognized the difference between, on the one hand, (a) providing

information sufficient for ISVs to write applications that call upon the services of its Windows operating system, which is and has been in Microsoft's business interest to do, and on the other hand, (b) disclosing information to those ISVs who are writing competing software that can develop into an alternative platform for applications development, which is not and has not been in Microsoft's interest to do.

171. During the liability proceedings, for example, Microsoft denied technical information to those who insisted upon developing competing software products, such as Netscape and IBM. *See, e.g.*, *Microsoft*, 84 F. Supp. 2d at 32-34, Findings Nos. 87-92 (flow of technical information to Netscape depended upon agreeing to a "special relationship"); *id*. at 41-42, Findings Nos. 127, 129 (IBM denied source code access because of competition for office productivity software).

172. Microsoft has continued to use the selective and delayed disclosure of APIs and other technical information as a means to disadvantage competing middleware. *See infra* Section X.A.1.d ("Microsoft continues to use selective disclosure of APIs and technical information to disadvantage platform competitors"). For example, for almost two years, Microsoft has made available and advertised Secure Audio Path as an operating system functionality available to ISVs to prevent unauthorized access to media files as they travel from digital media middleware through the operating system to the sound card and the audio hardware device. Richards Dir. ¶ 75. RealNetworks has been denied disclosure of and useful access to this feature, however, except under licensing restrictions that effectively limit its use to files in Windows Media formats. *Id*. ¶¶ 76-78.

173. Microsoft has also failed to disclose the APIs that would have given RealNetworks access to a variety of other features in Windows XP, including "Copy to Audio

CD," "Play All," various search functions, and the Internet Explorer 6.0 Media Bar. Richards Dir. ¶¶ 65, 67-74, 79-84. In addition, Microsoft has declined to disclose the APIs and other necessary technical information exposed by Internet Explorer for interfacing with various Java runtime environments. Green Dir. ¶¶ 148-49, 155. *See also infra* Section X.C.4 ("Microsoft's Remedy Does Not Require the Disclosure of APIs Exposed by Middleware").

174. Microsoft has also used the failure to disclose information sufficient for seamless interoperability in order to disadvantage a variety of network (Ledbetter Dir. ¶¶ 68-74) and server products of competing companies (Tiemann Dir. ¶¶ 186-88), thereby weakening the potential of those technologies as threats to the Windows platform. *See infra* Section X.A.1.d ("Microsoft continues to use selective disclosure of APIs and technical information to disadvantage platform competitors"). Microsoft has created these interoperability problems by failing to disclose numerous important communication protocols and related technical information. *See, e.g.,* Tiemann Dir. ¶¶ 135-42, Bennett Direct Testimony (DX 1526A) ("Bennett Dir.") ¶¶ 191-92 (Microsoft's SMB protocol); Tiemann Dir. ¶¶ 143-44, Bennett Dir. ¶ 194, Tr. 1148:11-1149:13 (Tiemann) (Microsoft's TDS protocol); Tiemann Dir. ¶¶ 150-52, Bennett Dir. ¶¶ 198-200 (Microsoft's ADSI extension to the LDAP protocol).

175. Microsoft has further impeded developers attempting to achieve cross-platform interoperability by demanding onerous licensing restrictions that limit how disclosures can be used. For example, the license for Microsoft's Windows Media Platform Software Development Kit prohibits the use of the disclosed information in connection with various non-Microsoft technologies. Richard ¶ 103; *see also infra* Section XXI.A ("Purpose of States' Remedy 15").

176. In addition, Microsoft has created interoperability problems for competitors through the design of certain aspects of the Windows operating system. For example, a part of

Windows that facilitates communications between network clients and multiple network servers (known as the Multiple UNC (Universal Naming Convention) Provider or MUP) induced long delays for non-Microsoft servers attempting to provide services to clients. Ledbetter Dir. ¶¶ 122-41; *see also infra* Section XI.A.1 ("Microsoft's Proprietary Code in Windows NT 4.0 Interfered with the Performance of Non-Microsoft Server Operating Systems"). RealNetworks also experienced interoperability problems with its RealJukebox "Create CD" function because of the design of Windows. Richards Dir. ¶¶ 180-87. Microsoft's removal of its Java runtime environment from Windows XP has created interoperability problems for ISVs, including one of Microsoft's own witnesses, which market software that requires the presence of Java on PCs to execute. Tr. 4178:3-22 (Borduin); *see also infra* Section XIX.A.4 ("Java Remains a Potentially Viable Middleware Platform Threat to the Microsoft Monopoly If Its Distribution Is Restored").

177. Microsoft has further blocked the emergence of effective middleware and other competition by adopting the use of proprietary protocols, instead of industry standard protocols, thereby rendering other companies' products and services unable to interoperate with the Windows platform as effectively as Microsoft products and services can. Microsoft's implementation of undisclosed proprietary extensions to the Kerberos security protocol represents a prime example of this behavior. *See infra* Section XXII.A.3 ("Microsoft's Continuing Practice of Embracing Cross-Platform Industry Standards While Engaging in Proprietary Implementations and Extensions").

178. Microsoft has created interoperability problems through the proprietary extension of multiple other industry standards as well. *See, e.g.,* Tiemann Dir. ¶¶ 150-53 (extension to LDAP industry standard by adding proprietary Microsoft interface preventing interoperability necessary for non-Microsoft servers to provide directory services to Microsoft clients); Schwartz

Dir. ¶¶ 91-92, figs. 5 & 6 (proprietary extensions to HTML industry standard, resulting in Netscape Navigator not being able to correctly display Web pages that use Microsoft's HTML extensions).

IV. Microsoft's Remedy, Unlike the States' Remedy, Does Not Satisfy the Court of Appeals' Objectives for Monopolization Remedies

179. No senior Microsoft executive testified regarding the justification for, or goals sought to be achieved by, Microsoft's Remedy. Microsoft Chairman Bill Gates, for example, submitted 155 pages of written direct testimony, yet conspicuously failed to support *any* provision of Microsoft's Remedy, and carefully avoided testifying about its purpose. Microsoft CEO Steve Ballmer, who presumably would have supervisory responsibility for ensuring Microsoft's compliance with this Court's order, appeared on Microsoft's witness list, but was never called to testify. Jim Allchin testified only on the supposed need for the broadly drafted security carve-out in Microsoft's Remedy III.J.1. Allchin Dir. ¶¶ 15-38.

180. To be sure, some second- and third-tier Microsoft employees offered testimony on steps Microsoft supposedly has taken, or will take, to implement particular provisions of Microsoft's Remedy. Robert Short, for example, offered some testimony on Microsoft's compliance with III.E, Short Direct Testimony (DX 1452) ("Short Dir.") ¶¶ 55-59, and Linda Averett briefly testified to the status of Microsoft's disclosures, under III.D, of interfaces relied on by Windows Media Player, Averett Direct Testimony (DX 1502) ("Averett Dir.") ¶¶ 21-23. Chris Jones and Will Poole likewise testified regarding Microsoft's supposed obligations under certain sections of Microsoft's Remedy. Jones Direct Testimony (DX 1508) ("Jones Dir.") ¶¶ 43-46 (III.C), ¶¶ 105-109 (III.D), ¶¶ 119-121 (III.H); Poole Direct Testimony (DX 1510) ("Poole Dir.") ¶¶ 74-77 (III.D), ¶ 78 (III.H), ¶ 87 (III.D), ¶¶ 88-91 (III.J.1). But none of these employees testified regarding the purpose sought to be served by Microsoft's Remedy. And Microsoft witness David Cole did not testify about Microsoft's Remedy at all.

181. Microsoft's pleadings in these remedy proceedings suggest that Microsoft's position is that a remedy in this case need go no further than enjoining the twelve specific acts

enumerated by the Court of Appeals as anticompetitive. *See* Defendant Microsoft Corporation's Motion *in Limine* to Exclude Testimony on Products Unrelated to the Limited Ground of Liability Upheld by the Court of Appeals, 98-1233, at 7-11.

182. The only evidence Microsoft adduced in these proceedings as to the overall purpose of its Proposed Remedy came from its expert economists. Dr. Kenneth Elzinga at times seemed to embrace the proposition that the sole purpose of the remedy here should be to stop the specific deeds enumerated as anticompetitive by the Court of Appeals. *See, e.g.*, Elzinga Direct Testimony (DX 1527A) ("Elzinga Dir.") ¶¶ 12, 24-36, 126 & tbl.5 (suggesting that Microsoft's Remedy should do no more than prevent Microsoft from undertaking in the future the specific acts the Court of Appeals held to be anticompetitive). During his hearing testimony, however, he described provisions of Microsoft's Remedy as "try[ing] to restore or enhance the middleware threat to Microsoft." Tr. 6706:4-18 (Elzinga); *see also* 6872:16-6873:16 (Elzinga). Dr. Kevin Murphy, on the other hand, was unambiguous in his assertion that "remedies do not need to 'restore' competition in PC operating systems, because the prospects for consumer welfare have not been injured by the anticompetitive acts." Murphy Dir. ¶¶ 159-60. In other words, his causation analysis (*see supra* Section II.E.4 ("Dr. Murphy's Causation Challenge Fails")) leads him to the conclusion that there was no harm that needs to be remedied.

183. But as discussed in detail above, *see supra* Section III ("Overall Purpose & Effect of the States' Remedy"), the remedial objectives mandated by the Court of Appeals cannot be met merely by ordering Microsoft to cease the specific acts directed against Navigator and Java that were held to be anticompetitive by the Court of Appeals. Hence, Microsoft's Remedy would fail to meet the objectives dictated by the Court of Appeals even if it succeeded in achieving the limited purpose embraced by Microsoft of stopping the specific deeds enumerated

as anticompetitive by the Court of Appeals. But, as discussed below, it fails even to achieve that *de minimis* goal.

A. Microsoft's Remedy Would Not Even Prohibit All of the Proven Anticompetitive Conduct Enumerated by the Court of Appeals

184. Microsoft's Remedy has no provision that on its face prohibits the continuation of at least two of Microsoft's established anticompetitive acts: (1) commingling of software code and (2) deception of Java developers. Moreover, a number of provisions that ostensibly address acts found anticompetitive by the Court of Appeals are plagued with exceptions or ambiguities, or rely upon overly restrictive definitions, so that they would not in fact completely stop or prevent the other ten specific acts that Microsoft agrees were found to be anticompetitive and must be addressed.

1. Microsoft's Remedy Has No Provisions that Address Its Commingling of Code or its Deception of Java Developers

185. As discussed *infra* in Section VI.C ("Microsoft's Remedy Merely Mandates the Possible Elimination of End-User Access to Microsoft Middleware"), even though the Court of Appeals held that Microsoft's "commingling [of] code related to browsing and other code in the same files, so that any attempt to delete the files containing IE would, at the same time, cripple the operating system" was anticompetitive, *Microsoft*, 253 F.3d at 64-65, Microsoft has not changed its practice of commingling Internet Explorer code with other code for the Windows operating system and, if anything, has only increased the extent of commingling since the liability trial ended. Tr. 4801:9-23 (Gates), 4804:24-4805:16 (Gates). Microsoft has likewise increased the code interdependencies between Windows and other middleware. Tr. 6184:25-6185:24 (Poole) (discussing Windows Media Player).

186. Although Mr. Gates testified that enabling OEMs and end users to remove or disable end-user access to Microsoft middleware should resolve the "competitive concern"

created by commingling, Tr. 4801:9-23 (Gates), none of Microsoft's witnesses could explain how removing or disabling end-user access effectively deals with two aspects of the commingling issue as defined by the Court of Appeals: (a) the adverse effect of commingling in reducing the willingness of OEMs to carry competing middleware, and (b) the effect of commingling on the presence of the Windows APIs, and on the incentives of software developers to write applications primarily or exclusively for those Windows APIs, and thereby to maintain or augment the applications barrier to entry. Indeed, even when end-user access is removed, middleware can still be invoked through Windows, as one of Microsoft's own technical experts admitted, Tr. 5984:21-25 (Madnick); and Mr. Gates and Mr. Jones both admitted that removing end-user access to middleware does nothing to change the fact that the APIs exposed by the middleware are still available to software developers. Tr. 4880:3-17 (Gates); Tr. 5182:13-5184:17 (Jones); *see also* Tr. 5984:10-20 (Madnick); Richards Dir. ¶¶ 162-63, 168.

187. With the exception of Dr. Elzinga, no Microsoft witness testified that the API disclosure provisions of Microsoft's Remedy III.D, or any other particular provision of Microsoft's Remedy, would stop or prevent the deception of Java developers with respect to whether the programs they were developing for Microsoft's Java Virtual Machine ("JVM") were in fact cross-platform, as they had been led to expect, or rather compatible only with Windows and the Microsoft JVM. *See, e.g.*, Tr. 4019:12-18 (Murphy was aware of no provision that prevents such developer deception). Dr. Elzinga's testimony on this point is entitled to little weight given: (a) his admitted lack of the computer science and technical expertise necessary to evaluate this issue, (b) his primary reliance on an injunction in another lawsuit, and not on Microsoft's Remedy, to "stop" this particular anticompetitive practice, and (c) his suggestion that

he was relying on the views of the Department of Justice that III.D would preclude Java deception, notwithstanding the doubts expressed by the DOJ's economics expert about whether III.D actually addresses the issue of deception. Tr. 6652:6-6658:13 (Elzinga); 6667:19-6668:20 (Elzinga).

188. Thus, Microsoft's Remedy contains no provision that would stop or prevent the deception of software developers that the Court of Appeals found to be anticompetitive, *see, e.g.*, Shapiro Dir. ¶ 186, and no provision that would stop or prevent the anticompetitive commingling of IE code with operating system code.

2. The Provisions in Microsoft's Remedy that Ostensibly Address Numerous Other Anticompetitive Acts Would Not in Fact Prevent Microsoft from Committing Those Acts in the Future

a. Prohibition on the removal of desktop icons, folders, and start menu entries

189. Although Professor Elzinga testified, Elzinga Dir. ¶ 126 & tbl. 5, that Microsoft's Remedy III.H.1 would address the Court of Appeals' liability finding regarding "the prohibition upon the removal of desktop icons, folders, and Start menu entries," *Microsoft*, 253 F.3d at 61, that provision applies only to "Microsoft Middleware Products," defined in Microsoft's Remedy VI.K. As a result, Microsoft's Remedy would not prevent Microsoft from repeating its anticompetitive behavior to foreclose numerous types of middleware from the OEM channel of distribution. Indeed, under III.H.1, Microsoft could still prohibit OEMs from removing desktop, icons, folders, and Start menu entries for: (a) any existing Microsoft product other than Internet Explorer, the Microsoft Java Virtual Machine, Windows Media Player, Windows Messenger, and Outlook Express; (b) any future Microsoft product—other than Internet browsers, e-mail client software, networked audio/video client software, or instant messaging software—that (i) Microsoft chooses not to distribute along with Windows, or (ii) has no competitor product that

has yet achieved distribution of one million copies per year, or (iii) Microsoft chooses not to trademark. *See* Microsoft's Remedies III.H, VI.K.

b. Prohibition on modification of the boot sequence

190. Although Dr. Elzinga testified, Elzinga Dir. ¶ 126 & tbl. 5, that Microsoft's Remedy III.C.5 would address the Court of Appeals' liability finding regarding "the prohibition on modifying the boot sequence" of Windows, *Microsoft*, 253 F.3d at 62, that provision contains an exception permitting Microsoft to prohibit modifications of the boot sequence that do not "compl[y] with reasonable technical specifications established by Microsoft." Thus, even though the Court of Appeals did not qualify its finding that Microsoft's prohibition of boot-sequence modifications was anticompetitive, Microsoft's Remedy does so by excluding boot-sequence modifications that do not comply with technical specifications provided by Microsoft, and thus Microsoft's Remedy fails to address the anticompetitive behavior actually described by the Court of Appeals.

c. Prohibition on addition of icons or folders different in size or shape from those supplied by Microsoft

191. Professor Elzinga testified, Elzinga Dir. ¶ 126 & tbl. 5, that Microsoft's Remedy III.C.1-2 and III.H.3 would address the Court of Appeals' liability finding regarding Microsoft's prohibitions on OEMs' addition of "icons or folders different in size or shape from those supplied by Microsoft." *Microsoft*, 253 F.3d at 62.

192. Microsoft's Remedy III.C.2, however, contains an exception permitting Microsoft to prohibit an OEM from displaying shortcuts on the desktop that, in Microsoft's determination, "impair the functionality of the user interface." Thus, even though the Court of Appeals did not qualify its holding that Microsoft's prohibition of the addition of icons or folders in different sizes or shapes from those supplied by Microsoft was anticompetitive, Microsoft

does so by excluding icons that do not comply with technical specifications provided by Microsoft, and thus Microsoft's Remedy fails to address the anticompetitive behavior actually described by the Court of Appeals.

193. Microsoft Vice President Chris Jones candidly admitted that under III.H.1 (which, while not listed by Dr. Elzinga, also might seem at first blush to require Microsoft to permit OEMs to place icons for rival middleware on the desktop or in the start menu), Microsoft would still be able to prevent OEMs from adding an icon for new non-Microsoft middleware that has not yet obtained distribution of one million copies per year. Tr. 5236:13-5237:11 (Jones).

d. Prohibition on using the Active Desktop feature of Windows to promote third-party brands

194. Although Professor Elzinga testified, Elzinga Dir. ¶ 126 & tbl. 5, that Microsoft's Remedy III.C.1-2 would address the Court of Appeals' liability finding regarding Microsoft's prohibition on OEMs using the Active Desktop feature of Windows to promote third-party brands, *Microsoft*, 253 F.3d at 62, III.C.1-2 contain qualifications and exceptions that result in the provisions failing to address the conduct at issue.

195. Under III.C.1, Microsoft retains the power to prohibit OEMs from promoting middleware in "any list of . . . icons, shortcuts, or menu entries specified in the Windows documentation as being limited to products that provide particular types of functionality." Thus, even though the Court of Appeals did not qualify its finding that Microsoft's prohibition on the use of Active Desktop to promote third-party brands was anticompetitive, Microsoft does so by excluding restrictions on the promotion of brands that limit locations chosen by Microsoft to the promotion of particular types of functionality. Thus, Microsoft's Remedy fails to address the anticompetitive behavior actually described by the Court of Appeals.

196. III.C.2 contains an exception permitting Microsoft to prohibit an OEM from displaying shortcuts on the desktop that, in Microsoft's determination, "impair the functionality of the user interface." Again, even though the Court of Appeals did not qualify its holding that Microsoft's conduct regarding the Active Desktop was anticompetitive, Microsoft does so by excluding from the offending conduct shortcuts that do not comply with technical specifications provided by Microsoft. Thus, Microsoft's Remedy fails to address the anticompetitive behavior actually described by the Court of Appeals.

e. Exclusion of Internet Explorer from the "Add/Remove Program" utility

197. Although Dr. Elzinga testified, Elzinga Dir. ¶ 126 & tbl. 5, that Microsoft's Remedy III.H.1 would address the Court of Appeals' holding that Microsoft's exclusion of Internet Explorer from the "Add/Remove Program" utility in Windows was anticompetitive, *Microsoft*, 253 F.3d at 65, that provision applies only to "Microsoft Middleware Products," defined in Microsoft's Remedy VI.K. As a result, Microsoft's Remedy would not prevent Microsoft from repeating this anticompetitive behavior to reduce the market share of numerous types of competing middleware by blocking the OEM channel of distribution. Indeed, under III.H.1, Microsoft could still make it impossible to remove end-user access to: (a) any existing Microsoft product other than Internet Explorer, the Microsoft Java Virtual Machine, Windows Media Player, Windows Messenger, and Outlook Express; (b) any future Microsoft product—other than Internet browsers, e-mail client software, networked audio/video client software, or instant messaging software—that (i) Microsoft chooses not to distribute along with Windows, or (ii) has no competitor product that has yet achieved distribution of one million copies per year, or (iii) Microsoft chooses not to trademark.

f. Exclusive agreements with IAPs

198. Although Professor Elzinga testified, Elzinga Dir. ¶ 126 & tbl. 5, that Microsoft's Remedy III.G.1-2 would address the Court of Appeals' holding regarding Microsoft's agreements "to provide easy access to [certain] IAPs' services from the Windows desktop in return for the IAPs' agreement to promote IE exclusively and to keep shipments of internet access software using Navigator under a specific percentage, typically 25%," *Microsoft*, 253 F.3d at 68, the exception in III.G would permit Microsoft to enter into such exclusive deals as part of a "bona fide joint venture," "joint development" arrangement, or "joint services arrangement"—terms that are never defined in Microsoft's Remedy and are capable of being applied to Microsoft's arrangements to jointly promote Internet Explorer and various IAPs' Internet-access services. Barksdale Dir. ¶ 116; Richards Dir. ¶ 197.

199. Moreover, III.G.1 contains a broad exception permitting "agreements in which [a third-party] entity agrees to distribute, promote, use or support Microsoft Platform Software in a fixed percentage whenever Microsoft in good faith obtains a representation that it is commercially practicable for the entity to provide equal or greater distribution, promotion, use or support for software that competes with Microsoft Platform Software." This exception contains no requirement that the third party actually provide such distribution, promotion, use or support—merely that it represent that it could. Barksdale Dir. ¶ 117; Richards Dir. ¶ 196.

200. Finally, III.G flatly does not apply to "any agreements in which Microsoft licenses intellectual property in from a third party." This exception has the potential to swallow the rule, for licensing of intellectual property is a routine part of many software deals. Richards Dir. ¶ 198. This exception is subject to manipulation, because there is no requirement that the license be a significant factor in the deal, or even that it be for commercial purposes. *Id.*

201. These deficiencies in the ability of III.G to stop Microsoft from entering into exclusive agreements such as those it was found to have illegally reached with the IAPs are further discussed below, *see infra* Section XII.C ("Microsoft's Remedy Does Not Adequately Prohibit Microsoft from Entering Exclusive Deals").

g. Exclusive "First-Wave" agreements with ISVs

202. Dr. Elzinga testified, Elzinga Dir. ¶ 126 & tbl. 5, that Microsoft's Remedy III.F.2 and III.G.1 would address the Court of Appeals' holding regarding Microsoft's entry into "dozens of 'First Wave' agreements" whereby it "promised to give preferential support, in the form of early Windows 98 and Windows NT betas, other technical information, and the right to use certain Microsoft seals of approval, to important ISVs that agree to certain conditions," including "that the ISVs use Internet Explorer as the default browsing software for any software they develop with a hypertext-based user interface," and "that the ISVs use Microsoft's 'HTML Help,' which is accessible only with Internet Explorer, to implement their applications' help systems." *Microsoft*, 253 F.3d at 71-72 (quoting *Microsoft*, 84 F. Supp. 2d at 93, Finding No. 339). However, four exceptions in Microsoft's Remedy would prevent those provisions from applying to the conduct at issue. *See also infra* Section XII.C ("Microsoft's Remedy Does Not Adequately Prohibit Microsoft from Entering Exclusive Deals"); Section XVII.C ("Microsoft's Remedy Will Not Effectively Prohibit Agreements Not to Compete").

203. First, an exception in III.F.2 expressly gives Microsoft the right to enter into agreements that "place limitations on an ISV's development, use, distribution, or promotion of any such software [that competes with Microsoft Platform Software or any software that runs on any software that competes with Microsoft Platform Software] if those limitations are reasonably necessary to and of reasonable scope and duration in relation to a bona fide contractual obligation of the ISV to use, distribute or promote any Microsoft software or to develop software

for, or in conjunction with, Microsoft." This exception would permit Microsoft to enter into the precise exclusive agreements the Court of Appeals found to be anticompetitive—Microsoft could, under this exception, predicate an ISV's early access to technical information upon its contractual agreement to use Internet Explorer while limiting or eliminating its use of Netscape's Navigator. Barksdale Dir. ¶ 113-14.

204. Second, the joint-venture exception in III.G would permit Microsoft to enter into such "First-Wave" agreements as part of a "bona fide joint venture," "joint development" arrangement, or "joint services arrangement"—terms that are never defined in Microsoft's Remedy and are capable of being applied to Microsoft's arrangements to enhance ISVs' access to technical information necessary for interoperability while increasing their use of Internet Explorer. Barksdale Dir. ¶ 116; Richards Dir. ¶ 197.

205. Third, III.G.1 contains a broad exception permitting "agreements in which [a third-party] entity agrees to distribute, promote, use or support Microsoft Platform Software in a fixed percentage whenever Microsoft in good faith obtains a representation that it is commercially practicable for the entity to provide equal or greater distribution, promotion, use or support for software that competes with Microsoft Platform Software." This exception contains no requirement that the third party actually provide such distribution, promotion, use or support—merely that it represent that it could. Barksdale Dir. ¶ 117; Richards Dir. ¶ 196.

206. Finally, Section III.G flatly does not apply to "any agreements in which Microsoft licenses intellectual property in from a third party." This exception has the potential to swallow the rule, for licensing of intellectual property is a routine part of many software deals. Richards Dir. ¶ 198. This exception is subject to manipulation, because there is no requirement that the license be a significant factor in the deal, or even that it be for commercial purposes. *Id.*

h. Threatening withholding Mac Office to obtain exclusive agreement from Apple

207. Dr. Elzinga testified, Elzinga Dir. ¶ 126 & tbl. 5, that Microsoft's Remedy III.F.1-2 would address the Court of Appeals' holding that Microsoft's use of threats to cancel Mac Office to secure Apple's agreement to support, use, promote, and distribute Internet Explorer to the exclusion of Navigator, was anticompetitive. *Microsoft*, 253 F.3d at 73-74. An examination of those provisions makes it clear, however, that Microsoft's threats against Apple may or may not be prohibited by Microsoft's Remedy, and Microsoft's exclusive deal with Apple is expressly permitted by it. III.F.1.a applies to "retaliation" against ISVs, but that term is nowhere defined in Microsoft's Remedy, and it is far from clear that it would cover threats as opposed to adverse actions. *See* McGeady Direct Testimony (PX 1646) ("McGeady Dir.") ¶¶ 87-88; *see also* Ashkin Dir. ¶ 142; Barksdale Dir. ¶ 101; Tiemann Dir. ¶ 80 (each discussing, in the context of III.A, the fact that "retaliation" is not defined to include threats in Microsoft's Remedy); *see also infra* Section XIV.C ("Microsoft's Remedy Fails to Address Microsoft's Ability to Retaliate Against Third Parties that Use, Promote or Distribute Competing Software"). Thus, Bill Gates's call to Apple CEO Gil Amelio asking him, "how we should announce the cancellation of Mac Office," *Microsoft*, 253 F.3d at 73 (quoting *Microsoft*, 84 F. Supp. 2d at 95, Finding No. 349), would not likely be covered by III.F.1.

208. As noted previously, III.F.2 has an exception that expressly gives Microsoft the right to enter into agreements that "place limitations on an ISV's development, use, distribution, or promotion of any such software [that competes with Microsoft Platform Software or any software that runs on any software that competes with Microsoft Platform Software] if those limitations are reasonably necessary to and of reasonable scope and duration in relation to a bona fide contractual obligation of the ISV to use, distribute or promote any Microsoft software or to

develop software for, or in conjunction with, Microsoft." *See infra* Section XVII.C ("Microsoft's Remedy Will Not Effectively Prohibit Agreements Not To Compete"); Barksdale Dir. ¶¶ 113-14. This exception covers precisely Microsoft's agreement with Apple to limit its use, distribution, and promotion of Navigator in exchange for Apple's use, distribution, and promotion of Internet Explorer.

i. Exclusive "First-Wave" agreements with Java developers

209. Dr. Elzinga testified, Elzinga Dir. ¶ 126 & tbl. 5, that Microsoft's Remedy III.F.2 and III.G would address the Court of Appeals' holding regarding Microsoft's First-Wave agreements with Java developers whereby "in exchange for costly technical support and other blandishments, Microsoft induced dozens of important ISVs to make their Java applications reliant on Windows-specific technologies and to refrain from distributing to Windows users JVMs that complied with Sun's standards." *Microsoft*, 253 F.3d at 75 (quoting *Microsoft*, 84 F. Supp. 2d at 108-09, Finding No. 401). However, four exceptions in Microsoft's Remedy would prevent those provisions from applying to the conduct at issue. *See infra* Section XII.C ("Microsoft's Remedy Does Not Adequately Prohibit Microsoft from Entering Exclusive Deals"); Section XVII.C ("Microsoft's Remedy Will Not Effectively Prohibit Agreements Not To Compete").

210. First, an exception in III.F.2 expressly gives Microsoft the right to enter into agreements that "place limitations on an ISV's development, use, distribution, or promotion of any such software [that competes with Microsoft Platform Software or any software that runs on any software that competes with Microsoft Platform Software] if those limitations are reasonably necessary to and of reasonable scope and duration in relation to a bona fide contractual obligation of the ISV to use, distribute or promote any Microsoft software or to develop software for, or in conjunction with, Microsoft." Barksdale Dir. ¶¶ 113-14. This exception would permit

Microsoft to enter into precisely the exclusive agreements the Court of Appeals found to be anticompetitive—Microsoft could, under this exception, predicate an ISV's access to technical support upon its contractual agreement to use Microsoft's JVM while limiting or eliminating its use of a JVM that complies with cross-platform compatibility standards formerly set by Sun and now set by the Java Community Process.

211. Second, the joint-venture exception in III.G would permit Microsoft to enter into such "First-Wave" agreements as part of a "bona fide joint venture," "joint development" arrangement, or "joint services arrangement"—terms that are never defined in Microsoft's Remedy and are capable of being applied to Microsoft's arrangements to enhance ISVs' access to technical support while ensuring their use of Microsoft's JVM to the exclusion of any other. Barksdale Dir. ¶ 116; Richards Dir. ¶ 197.

212. Third, III.G.1 contains a broad exception permitting "agreements in which [a third-party] entity agrees to distribute, promote, use or support Microsoft Platform Software in a fixed percentage whenever Microsoft in good faith obtains a representation that it is commercially practicable for the entity to provide equal or greater distribution, promotion, use or support for software that competes with Microsoft Platform Software." This exception contains no requirement that the third party actually provide such distribution, promotion, use or support—merely that it represent that it could. Barksdale Dir. ¶ 117; Richards Dir. ¶ 196.

213. Finally, Section III.G flatly does not apply to "any agreements in which Microsoft licenses intellectual property in from a third party." This exception has the potential to swallow the rule, for licensing of intellectual property is a routine part of many software deals. Richards Dir. ¶ 198. This exception is subject to manipulation, because there is no requirement that the license be a significant factor in the deal, or even that it be for commercial purposes. *Id.*

j. Threats against Intel for its work with Sun to develop enhanced Java Virtual Machine

214. Although Dr. Elzinga testified, Elzinga Dir. ¶ 126 & tbl. 5, that Microsoft's Remedy III.F.1-2 would address the Court of Appeals' liability finding that "Microsoft threatened Intel that if it did not stop aiding Sun [in its development of an enhanced JVM] on the multimedia front, then Microsoft would refuse to distribute Intel technologies bundled with Windows," *Microsoft*, 253 F.3d at 77, III.F.1.a applies to "retaliation" against ISVs, a term that is nowhere defined in Microsoft's Remedy. *See* McGeady Dir. ¶¶ 87-88; *see also* Ashkin Dir. ¶ 142; Barksdale Dir. ¶ 101; Tiemann Dir. ¶ 80 (each discussing, in the context of III.A, the fact that "retaliation" is not defined to include threats in Microsoft's Remedy); *see also infra* Section XIV.C ("Microsoft's Remedy Fails to Address Microsoft's Ability to Retaliate Against Third Parties that Use, Promote, or Distribute Competing Software"). It is far from clear that "retaliation" would cover threats as opposed to adverse actions, even though it was the mere threat of adverse action that caused Intel to cease its work with Sun. *Microsoft*, 253 F.3d at 77-78 (describing the offensive conduct as "the threat of retaliation").

k. Summary: The key provisions of Microsoft's Remedy have numerous exceptions and shortcomings that prevent Microsoft's Remedy from even prohibiting the proven anticompetitive conduct

215. Microsoft's Remedy III.C: Based on the discussion above, it is clear that the exception in Remedy III.C.2 that permits Microsoft to prohibit an OEM from displaying shortcuts on the desktop that, in Microsoft's determination, "impair the functionality of the user interface" means that Remedy III.C.2 does not address Microsoft's anticompetitive conduct, as it was described by the Court of Appeals, in prohibiting the addition of icons or folders different in size or shape from those supplied by Microsoft and in prohibiting the use of Active Desktop to promote third-party brands. In addition, the flexibility expressly retained by Microsoft under

III.C.1 regarding permissible restrictions on the placement of icons, shortcuts and menu entries further undermines the ability of this remedy to address such anticompetitive conduct.

216. Remedy III.C.5 contains an exception permitting Microsoft to prohibit modifications of the boot sequence that do not "compl[y] with reasonable technical specifications established by Microsoft." Thus, this remedy fails to address Microsoft's prohibition on modifying the boot sequence.

217. Microsoft's Remedy III.F: As described in detail above, the lack of a definition of "retaliation" in Remedy III.F.1, and the fact that it is far from clear that such remedy would cover threats as opposed to adverse actions, renders it unlikely to address the liability findings regarding Microsoft's threats against Apple and Intel. Further, the "contractual obligation" exception in III.F.2 would expressly permit the exclusive deal with Apple. The same exception in III.F.2 means that the anticompetitive "First Wave" agreements with ISVs and Java developers would also be permitted.

218. Microsoft's Remedy III.G: As set forth above, the exception in Remedy III.G would permit Microsoft to enter into exclusive deals as part of a "bona fide joint venture," "joint development" arrangement, or "joint services arrangement"—terms that are never defined in Microsoft's Remedy. Thus, this remedy would not address the anticompetitive agreements with IAPs, or the anticompetitive, exclusive "First Wave" agreements with ISVs and Java developers.

219. III.G.1's inability to address this anticompetitive conduct is further confirmed by the broad exception permitting "agreements in which [a third-party] entity agrees to distribute, promote, use or support Microsoft Platform Software in a fixed percentage whenever Microsoft in good faith obtains a representation that it is commercially practicable for the entity to provide equal or greater distribution, promotion, use or support for software that competes with

Microsoft Platform Software" and the exclusion of "agreements in which Microsoft licenses intellectual property in from a third party." These exceptions have the potential to swallow the rule, and in any event are subject to manipulation.

220. Microsoft's Remedy III.H: Remedy III.H.1 applies only to "Microsoft Middleware Products," and thus, as described above, excludes a broad swathe of current and future Microsoft products. As a result, this remedy would not prevent Microsoft from repeating its anticompetitive conduct aimed at blocking the OEM channel of distribution, including the prohibition on the removal of desktop icons, folders, and Start menu entries, and the exclusion of Internet Explorer from the add/remove program utility.

B. Microsoft's Remedy Does Not Protect Other Nascent Technologies that Are Potential Platform Threats from the Use of the Same or Similar Exclusionary Practices that Were Found Illegal by the Court of Appeals

221. Microsoft's Remedy fails to reach a variety of technologies that clearly pose significant threats to the continued dominance of the Windows platform by, among other things, (a) its very narrow definition of middleware, (b) its exclusion of competing operating systems, most notably Linux, from many of its protections, and (c) its exclusion of Web services, which Microsoft itself has described as the most important platform for software development in the immediate future.

222. Microsoft's Remedy does not reach certain technologies in part because Microsoft has taken the view that if a certain form of anticompetitive conduct was directed at a particular person or group of people, then the remedial provision should likewise be limited to protecting that same person or group of people from a recurrence of that behavior. Tr. 6660:12-6661:11 (Elzinga) (discussing limiting remedy for deception to Java).

223. Microsoft's witnesses seemed to disagree about whether Microsoft's Remedy was intended to restore competition. In his expert report, for example, Dr. Kevin Murphy had

declared that "specific remedies designed to restore competition are not required." *See* Shapiro Dir. ¶ 16 & n.9. On the other hand, Microsoft's other economist, Dr. Elzinga, testified that Microsoft's Remedy was intended to "restore or enhance the middleware threat to Microsoft." Tr. 6706:4-18 (Elzinga).

224. As discussed below, *see infra* Section X.C.5 ("The Protocol Disclosure Obligation in Microsoft's Remedy Is Too Narrow"), Microsoft's Remedy also does not address the disclosure of necessary protocols, interfaces, and technical information to allow interoperability between Windows and other non-PC computers, such as PDAs, telephones, and television set-top boxes, that threaten to diminish the importance of Microsoft's desktop PC operating system monopoly.

C. Microsoft's Remedy Does Not Deny the Violator the Fruits of Its Statutory Violation Nor Does It Effectively Restore the Potential Competition Eliminated by Microsoft's Conduct

225. As discussed above, *see supra* Section III.A ("The Remedy Here Must Be Designed To Satisfy the Court of Appeals' Remedy Objectives"), an effective remedy must ensure that Microsoft cannot benefit from any market position or other advantages it gained through its exclusionary acts. Microsoft's Remedy does not do so, because it leaves wholly intact: (1) Microsoft's proprietary dominant Internet browser, and (2) the absence of any meaningful platform threat from desktop Java. Moreover, Microsoft's Remedy would not meaningfully help reduce the artificially maintained applications barrier to entry into the market for desktop PC operating systems; as discussed above, *see supra* Section III.B ("The Appropriate Remedy Here Must Reduce the Applications Barrier to Entry to the Level it Would Have Been Absent Microsoft's Anticompetitive Conduct"), an effective remedy must do so directly by restoring that barrier to the level it would have been but for Microsoft's unlawful monopoly maintenance.

226. Microsoft's Remedy does nothing to prevent Microsoft from continuing to benefit from its control over Internet Explorer, the dominant Internet browser, whose dominance resulted from Microsoft's illegal conduct; S*ee infra* Section XVIII.A.1 ("Destroying Navigator and Establishing Internet Explorer as the Dominant Browser Was the Central Focus of Microsoft's Illegal Monopoly-Maintenance Strategy"); Shapiro Dir. ¶ 118; Schwartz Dir. ¶ 186; Tiemann Dir. ¶ 114. Because of this control, ISVs develop third-party applications using Internet Explorer's APIs rather than those of any other browser, Tr. 1103:10-1104:9 (Tiemann), Web-content developers write to Internet Explorer's specifications rather than those of any other browser, Mace Dir. ¶¶ 87-88, 99, and the ability of numerous other nascent technologies to threaten the Windows monopoly is severely hampered, so that Internet Explorer's dominance greatly assists Microsoft's ability to maintain its operating-system monopoly in today's world of networked computing. *See infra* Section XVIII.A.2 ("The Fact That Microsoft Now Controls the Dominant Browser Has Tremendous Significance for Competition in the PC Operating-System Market Today"); Tiemann Dir. ¶ 114; Schwartz Dir. ¶¶ 80-101.

227. Microsoft's Remedy does not address Microsoft's illegal destruction of desktop Java. As discussed below, *see infra* Section XIX.C ("Microsoft's Remedy Fails To Address Microsoft's Anticompetitive Conduct With Respect to Java"), Java was and remains a viable cross-platform development environment that could help erode the applications barrier to entry, but Microsoft used its monopoly power to destroy Netscape, the primary means of distribution of Java, and engaged in various other anticompetitive means to neutralize the cross-platform threat that Java presented. Cross-platform Java's absence from PC desktops is a fruit of Microsoft's illegal conduct that is nowhere addressed by Microsoft's Remedy. Green Dir. ¶ 129; Kertzman Dir. ¶ 77; Schwartz Dir. ¶ 189.

228. Microsoft's Remedy does not even seek to deny Microsoft the benefit of the artificially maintained applications barrier to entry that resulted from its illegal acts. *See* Shapiro Dir. ¶ 33. For example, even though it is widely acknowledged that rival desktop operating systems cannot effectively compete with Windows unless especially popular applications can be made available on those operating systems, *Microsoft*, 84 F. Supp. 2d at 20, Findings Nos. 39-40, Tiemann Dir. ¶ 85; *see also infra* Section XX.A.2 ("The Need to Lower Directly the Unlawfully Enhanced and Maintained Applications Barrier to Entry in Order to Restore the Potential for Competition in the PC Operating System Market"), Microsoft's Remedy does nothing to give competing platform developers the information and ability to support some of the software programs that currently run only on Windows. *See infra* Sections X.C.9 ("The Disclosures Provided by Microsoft's Remedy Apply Only to a Far Too Limited Purpose"); XX.B ("How States' Remedy 14.b and 14.c—Availability of Office on Non-Windows Intel-compatible PCs—Achieves Their Intended Purpose").

D. Microsoft's Remedy Would Not Prevent Microsoft from Using Other Practices that Will Have the Same Adverse Effects on Potential Platform Threats as Those Found Illegal by the Court of Appeals

1. Microsoft's Remedies III.A and III.B Would Not Prevent Microsoft from Using Threats, Inducements, and Retaliation Against OEMs To Foreclose the OEM Channel of Distribution from Competing Platform Software

229. Microsoft's Remedy fails to prevent Microsoft from using "incentives and threats" against OEMs on the basis of their support of products that compete with Microsoft platform software. *See Microsoft*, 84 F. Supp. 2d at 66-68, Findings Nos. 230-38. The District Court found these behaviors to be anticompetitive. *Microsoft*, 87 F. Supp. 2d at 39. By using threats, inducements, and retaliation against OEMs, Microsoft could again foreclose the OEM channel of distribution to competing middleware platforms, which the Court of Appeals held to

constitute anticompetitive behavior. *Microsoft*, 253 F.3d at 60-64. Although Microsoft's Remedy III.A appears as though it is designed to prevent Microsoft from retaliating against OEMs for supporting competing platform software, Microsoft's Remedy would in fact permit Microsoft to punish OEMs based on whether they promote or carry Microsoft's platform software, or that of a competitor. *See infra* Section XIV.C ("Microsoft's Remedy Fails to Address Microsoft's Ability to Retaliate Against Third Parties that Use, Promote or Distribute Competing Software").

230. Under the provision permitting Microsoft to "provid[e] Consideration to any OEM with respect to any Microsoft product or service where that Consideration is commensurate with the absolute level or amount of that OEM's development, distribution, promotion, or licensing of that Microsoft product or service," Microsoft's Remedy III.A, Microsoft can punish OEMs that opt not to promote Microsoft products by raising rates across the board and then granting "discounts" only to those who promote Microsoft products, effectively punishing those OEMs who carry a competitor's platform software rather than Microsoft's. Barksdale Dir. ¶¶ 95-96, 98-99; *see infra* Section XIV.C ("Microsoft's Remedy Proposal Fails to Address Microsoft's Ability to Retaliate Against Third Parties that Use, Promote or Distribute Competing Software").

231. Similarly, although Microsoft's Remedy III.B purports to require "uniform license agreements" with OEMs, it does no such thing. Rather, that provision expressly permits Microsoft to offer market development allowances. Additionally, Microsoft's Remedy III.A states broadly that "Nothing in this provision shall prohibit Microsoft from providing Consideration to any OEM with respect to any Microsoft product or service where that Consideration is commensurate with the absolute level or amount of that OEM's development,

distribution, promotion, or licensing of that Microsoft product or service." This provision allows Microsoft to unequally distribute "consideration" to favored OEMs to retaliate against disfavored OEMs, despite the uniform licensing. Tr. 1264:13-1266:3; 1327:6-1328:22 (Fama); Barksdale Dir. ¶¶ 95-96, 98-99. Opening up more potential for abuse, Microsoft's Remedy fails to define either "commensurate" or "consideration." *See also infra* Section VII.C.1 ("MDPs Allow Microsoft to Favor Certain OEMs"); Section VII.H ("Microsoft's Remedy Fails to Offer OEMs True Desktop Flexibility").

232. Microsoft's Remedy III.A would permit Microsoft to withdraw any OEM's Windows license, without notice, so long as Microsoft has alleged two prior violations of the license terms. That provision imposes no requirement that the prior violations have any basis in fact. *See* Ashkin Dir. ¶¶ 142-44; Fama Dir. ¶¶ 49-57. As Anthony Fama of Gateway, Inc. testified, Gateway at one time received four simultaneous notices purporting to inform it that it was in breach of its Windows license. Fama Dir. ¶ 53; *see infra* Section VII.C.2 ("Microsoft Has Used the 'Uniform Terms' Provision of the Consent Decree to Impose More Onerous Terms on OEMs").

233. Microsoft's Remedy III.A bars only certain types of Microsoft retaliation—"altering Microsoft's commercial relations with [an] OEM or . . . withholding newly introduced forms of non-monetary Consideration." Like III.F.1, III.A does not cover threats, and would not cover conduct against OEMs similar to Microsoft's threats against Apple and Intel for supporting Navigator and Java, respectively. *See* Ashkin Dir. ¶ 142; Barksdale Dir. ¶ 101; Tiemann Dir. ¶ 80. Moreover, among other forms of retaliation, Microsoft's Remedy imposes no ban whatsoever on the withholding of money or already-existing forms of non-monetary consideration. These deficiencies in Microsoft's Remedy are discussed more fully below, *see*

infra Section XIV.C ("Microsoft's Remedy Fails To Address Microsoft's Ability to Retaliate Against Third Parties that Use, Promote or Distribute Competing Software").

234. Microsoft's Remedy III.A also applies only to "Microsoft Platform Software," Remedy VI.L, which is constrained by the narrow definition of "Microsoft Middleware Product," Remedy VI.K. As a result, Microsoft's Remedy would not prevent Microsoft from retaliating, by any means, against any OEM on the basis of its development, distribution, promotion, use, sale, or licensing of numerous types of middleware, including: (a) any existing Microsoft product other than Internet Explorer, the Microsoft Java Virtual Machine, Windows Media Player, Windows Messenger, and Outlook Express; and (b) any future Microsoft product—other than Internet browsers, e-mail client software, networked audio/video client software, or instant messaging software—that (i) Microsoft chooses not to distribute along with Windows, or (ii) has no competitor product that has yet achieved distribution of one million copies per year, or (iii) Microsoft chooses not to trademark. *See* Fama Dir. ¶ 93; *see also infra* Section XIV.C ("Microsoft's Remedy Fails to Address Microsoft's Ability to Retaliate Against Third Parties that Use, Promote or Distribute Competing Software").

2. Microsoft's Remedies III.C and III.H Would Not Prevent Microsoft from Denying OEMs the Ability To Configure PCs To Effectively Promote Competing Platform Software

235. As discussed below, *see infra* Section VII.F ("Purpose of States' Remedy 2.c"), unless developers of competing platform software have the opportunity to promote their software on the PC, they will not likely be able to compete with Microsoft's platform software because Microsoft controls the primary distribution channel and the means to configure the Windows desktop. Although certain provisions of Microsoft's Remedy seem as though they might provide OEMs with flexibility to configure PCs to enable the promotion of competing platform software,

in fact, Microsoft retains the power to deny the flexibility necessary to protect nascent platform threats.

236. Microsoft's Remedy III.C.1 and III.H.1 only give OEMs the right to promote non-Microsoft products using icons, shortcuts and menu entries anywhere Microsoft promotes its own products with similar functionality. OEMs therefore would not have the right to feature middleware offered by competitors if Microsoft does not promote its own product in a similar manner or if Microsoft does not offer a product with similar functionality. Schwartz Dir. ¶¶ 179-80.

237. Microsoft also retains the power under III.C.1 to prohibit OEMs from placing icons, shortcuts, and menu entries in "any list of such icons, shortcuts, or menu entries specified in the Windows documentation as being limited to products that provide particular types of functionality." Additionally, Microsoft retains the right to restrict OEMs from displaying icons, shortcuts, or menu entries to the desktop or Start menu or "anywhere else in a Windows Operating System Product where a list of icons, shortcuts, or menu entries for applications are generally displayed." These restrictions allow Microsoft to maintain substantial control over the way in which OEMs use the flexibility supposedly provided to them. Ashkin Dir. ¶¶ 67-69; *see infra* Section VII.H ("Microsoft's Remedy Fails to Offer OEMs True Desktop Flexibility").

238. At first blush, Microsoft's Remedy III.C.3 seems to require Microsoft to allow OEMs to configure PCs to automatically launch competing middleware at the conclusion of the initial boot sequence or upon connections to, or disconnections from, the Internet. But in fact, that provision only applies "if a Microsoft Middleware Product that provides similar functionality" to the competing product otherwise would launch automatically. Hence, if Microsoft has no competing middleware product (which, for example, was the case when

Netscape's Navigator came out), Microsoft could prevent any non-Microsoft product from launching automatically. Borthwick Dir. ¶ 38; Schwartz Dir. ¶ 179.

239. Microsoft Vice President Chris Jones admitted that under III.C.3, if a third-party developed some type of new or innovative middleware for which there was no equivalent Microsoft middleware product, III.C.3 would not allow the OEM to automatically launch that new and innovative middleware. Tr. 5130:13-5131:23 (Jones). Indeed, because rival middleware developers only have the right to have their product launch automatically if Microsoft launches its product automatically—a limitation that has no technical justification, Tr. 5131:24-5133:3 (Jones)—Microsoft has discretion to prevent any rival middleware product from being launched automatically. *See infra* Section VII.H ("Microsoft's Remedy Fails to Offer OEMs True Desktop Flexibility").

240. Additionally, III.C.3 allows Microsoft to restrict OEMs from launching a middleware product if Microsoft's competing product would not otherwise launch "at that time." Accordingly, Microsoft can determine whether OEMs can launch a competitor's product by altering its own product engineering decisions. Ashkin Dir. ¶¶ 69-71; *see also infra* Section VII.H ("Microsoft's Remedy Fails to Offer OEMs True Desktop Flexibility").

241. Moreover, because III.C.3 invokes the definition of "Microsoft Middleware Product," VI.K, it does not provide any protections to non-Microsoft middleware that competes with: (a) any existing Microsoft product other than Internet Explorer, the Microsoft Java Virtual Machine, Windows Media Player, Windows Messenger, and Outlook Express; or (b) any future Microsoft product—other than Internet browsers, e-mail client software, networked audio/video client software, or instant messaging software—that (i) Microsoft chooses not to distribute along

with Windows, or (ii) has no competitor product that has yet achieved distribution of one million copies per year, or (iii) Microsoft chooses not to trademark.

242. Microsoft's Remedy III.H.2 appears to require Microsoft to allow OEMs to set non-Microsoft middleware as the default in instances where middleware would normally be launched. But this provision is only invoked if the non-Microsoft middleware sought to be used as a default competes with a "Microsoft Middleware Product" that: (a) launches in a separate top-level window, and (b) displays either "all of the user interface elements" or the Microsoft trademark. Ashkin Dir. ¶ 148. Hence, under Microsoft's Remedy, Microsoft would not need to permit OEMs to set non-Microsoft middleware as the default if it merely embeds Microsoft middleware within other middleware, or opts not to trademark it. Ashkin Dir. ¶ 149; Richards Dir. ¶¶ 141-43; *see also infra* Section XVI.C ("Microsoft's Remedy Does Not Prohibit Microsoft's Manipulation of Default Settings").

243. Under III.H.2, truly innovative middleware threats will never be protected because the remedy does not apply if Microsoft has not yet produced middleware that performs the same functionality. Richards Dir. ¶ 141. Thus, III.H.2 protects Microsoft from competitors' innovations. *Id.*

244. Moreover, the exception in III.H.2.b allowing Microsoft to override a user's choice of a non-Microsoft Middleware Product—that is, to replace it with a Microsoft Middleware Product—when the non-Microsoft Middleware Product "fails to implement a reasonable technical requirement (*e.g.*, a requirement to be able to host a particular ActiveX control)," is not technically justified, and provides Microsoft with an excuse to overrule an end-user's decision to use non-Microsoft middleware. Appel Direct Testimony (PX 1833) ("Appel Dir.") ¶¶ 139-42. Under III.H.2.b, Microsoft could simply incorporate its own proprietary

technology into a middleware product and require support for that technology, thereby triggering this exception; to avoid losing its default status, a competing middleware provider would then have to pay Microsoft to incorporate Microsoft's technology into its product, thereby supporting the distribution and use of Microsoft's APIs and technologies. Richards Dir. ¶¶ 144-45. Even in the case of ActiveX, the example provided in Microsoft's Remedy, Microsoft would be permitted to put ActiveX controls in its own middleware without disclosing to rival middleware developers how to host those controls; in that case, a competing developer would be unable to meet the requirements of III.H.2.b, and Microsoft would be under no obligation to respect a user's middleware selection. Barksdale Dir. ¶ 81; Tr. 544:22-546:16 (Barksdale).

245. Because the flexibility provisions in III.H invoke the definition of "Non-Microsoft Middleware Product," VI.N, none of them would provide any protection to any non-Microsoft middleware that has not distributed at least one million copies in the previous year. Thus, new products would not be protected until they have achieved a significant level of success, even though the achievement of such success would likely depend upon the kinds of protections Microsoft's Remedy purports to provide. Richards Dir. ¶¶ 138-39.

246. Moreover, under III.H.3 of Microsoft's Remedy, Microsoft has retained the power to "sweep" a computer's desktop of all icons only 14 days after the end user first boots up a new computer. Therefore, Microsoft can effectively remove all of the icons that an OEM has placed on the computer's desktop after a mere 14 days. No OEM will spend the resources involved in customizing a computer by placing icons on the desktop knowing that those icons will likely only be present for 14 days. Schwartz Dir. ¶¶ 184-85; Richards Dir. ¶¶ 160-61; Barksdale Dir. ¶¶ 82-84; Ashkin Dir. ¶¶ 151-53. Further, Microsoft may continually prompt users to alter

default settings to use only Microsoft's software. Barksdale Dir. ¶ 85; Borthwick Dir. ¶ 39; *see also infra* Section VII.H ("Microsoft's Remedy Fails to Offer OEMs True Desktop Flexibility").

247. Finally, because identity/authentication/authorization systems are not covered by the OEM flexibility provisions in Microsoft's Remedy, OEMs would not, under that remedy, have the option of installing a rival to Microsoft's .NET Passport. Schwartz Dir. ¶¶ 177-78.

3. Microsoft's Remedies III.D, III.E and III.I Would Not Prevent Microsoft from Denying Competing Platform Software Developers the Ability To Interoperate Effectively with Windows

248. As discussed below, *see infra* Section X.A ("Purpose of States' Remedy 4"), if Microsoft is permitted, through nondisclosure or selective disclosure of key interfaces, protocols, and technical information, to enable its own platform software and non-PC devices to interoperate more effectively with Windows than those offered by competitors, then rival developers of middleware, server operating systems, and other non-PC platform software will have no real opportunity to compete with Microsoft. Moreover, without an adequate disclosure remedy, Microsoft would continue to have the ability to use selective disclosure to disadvantage its platform competitors.

249. Although Microsoft's Remedies III.D and III.E, in recognition of the importance of interoperability disclosure, require some disclosure of APIs and communications protocols, those provisions are quite narrow and contain numerous exceptions that greatly limit Microsoft's disclosure obligations. *See infra* Section X.C ("The Disclosure Provisions of Microsoft's Remedy Are Inadequate"). The limitations of III.D and III.E and related provisions of Microsoft's Remedy mean that the disclosures Microsoft's Remedy mandates would be neither broad enough nor timely enough to overcome the enormous advantage Microsoft's middleware and non-PC platform developers enjoy as a result of its illegally maintained monopoly over the desktop operating system:

- Both remedies require disclosure in order to allow third-party software and Microsoft software to "interoperate." The term interoperate can have a broad range of meanings, according to Microsoft's experts, yet Microsoft's Remedy fails to define this important term. *See infra* Section X.C.1 ("The Meaning of "Interoperate" is Undefined in Microsoft's Remedy").

- Microsoft's Remedy III.D purports to require disclosure of APIs between Windows and its own middleware, but it exempts important categories of its middleware—and thus the Windows APIs that they use—from the disclosure requirements. *See infra* Section X.C.2 ("Microsoft's Remedy Does Not Require the Disclosure of All of the Windows APIs Used by Microsoft's Own Middleware").

- Microsoft's Remedy leaves it to Microsoft's discretion whether to disclose new Windows APIs used by future middleware products. *See infra* Section X.C.3 ("Microsoft's Remedy Allows Future APIs to Remain Undisclosed").

- Microsoft's Remedy does not require the disclosure of APIs exposed by Microsoft middleware—even middleware such as the most recent Windows Media Player that is *only* distributed bundled into the Windows Operating System Product. *See infra* Section X.C.4 ("Microsoft's Remedy Does Not Require the Disclosure of APIs Exposed by Middleware").

- Microsoft's Remedy III.E purports to require disclosure of protocols used by different computer systems to communicate with one another, but it excludes important categories of protocols—such as those used to enable server-to-server interoperation. *See infra* Section X.C.5 ("The Protocol Disclosure Obligation in Microsoft's Remedy Is Too Narrow").

- Microsoft's Remedy does not require disclosure of the technical data needed by developers to make effective use of the disclosed APIs and protocols. *See infra* Section X.C.6 ("Microsoft's Remedy Fails to Require Disclosure of Technical Information Needed To Make Use of Interfaces").

- Microsoft's Remedy does not allow developers to review the Microsoft source code—a step that Microsoft's own witnesses say is sometimes necessary to create interoperable software products. *See infra* Section X.C.7 ("Microsoft's Remedy Does Not Authorize Review of Source Code, Which Can Be Necessary to Enable Interoperation").

- The disclosures of APIs and protocols under Microsoft's Remedy come far too late in the development cycle and permit Microsoft's own developers to work with new software code long before it is made available to third party developers. *See infra* Section X.C.8 ("The Timing of Disclosures Under Microsoft's Remedy Is Unacceptably Late and Gives Microsoft Developers An Unfair Advantage").

- The disclosures under Microsoft's Remedy can be used only for a single, limited purpose—namely, to create software that interoperates with Windows—and therefore

does not allow for the creation of competing platform software. *See infra* Section X.C.9 ("The Disclosures Provided By Microsoft's Remedy Apply Only to a Far Too Limited Purpose").

- Microsoft's Remedy contains an overly broad and technically unjustified "security" exception that threatens to undermine entirely Microsoft's obligation to disclose APIs and protocols. *See infra* Section X.C.10 ("Microsoft's Remedy Provides An Overly Broad And Technically Unjustified Security Exemption That Could Significantly Restrict Technical Disclosure By Microsoft").

250. Microsoft's Remedy III.I.1 permits Microsoft to charge a royalty for the use of APIs and protocols disclosed pursuant to III.D and III.E, even though Microsoft generally does not charge for these licenses, Tr. 4567:11-24 (Gates), and could foreclose entry into the market of new products developed by start-up companies that may not be able to afford licensing fees to make use of interoperability disclosures. *See* Gates Dir. ¶¶ 106-10; Richards Dir. ¶ 110; Schwartz Dir. ¶¶ 140-41; Pearson Dir. ¶ 73. Because there is no definition of what constitutes a reasonable royalty, or how the fee would be determined, Microsoft could set the royalties high enough that parties could not afford to license the software that had been disclosed. Pearson Dir. ¶ 73. Remedy III.I.3 allows Microsoft to prohibit sub-licensing, even though third-party software developers must be able to sub-license APIs and protocols if they are to sell software to end-users that make use of them. Schwartz Dir. ¶ 140; Richards Dir. ¶ 111.

251. Remedy III.I is also deficient because it does not prohibit Microsoft from exacting terms in its intellectual property license that would benefit Microsoft's platform technologies. For example, under III.I it would be permissible for Microsoft to limit the use of the disclosures it makes to interoperate with Microsoft software. Richards Dir. ¶ 106. Such restrictions could limit the extent to which the disclosures would actually foster cross-platform competition.

4. Microsoft's Remedies III.F and III.G Would Not Prevent Microsoft from Entering into Exclusive Agreements Designed To Foreclose the

Development, Use, Distribution, Promotion, or Support of Competing Middleware

252. As discussed below, *see infra* Section XII ("States Remedy 6—Ban on Exclusive Dealing"), if Microsoft is permitted to enter into exclusive agreements with respect to its middleware or other platforms, it will have the ability to foreclose the development, use, distribution, promotion, or support of competing middleware and platforms. Numerous exceptions in Microsoft's Remedy make it clear that the provisions that ostensibly prevent such exclusive deals would not even stop Microsoft from entering into many of the very agreements that the Court of Appeals explicitly held to be illegal. Beyond those faults, III.F and III.G would fail to prevent Microsoft from using exclusive agreements to shut down important platform threats, for the reasons discussed below. *See infra* Section XII.C ("Microsoft's Remedy Does Not Adequately Prohibit Microsoft from Entering Exclusive Deals"); Section XVII.C ("Microsoft's Remedy Will Not Effectively Prohibit Agreements Not To Compete").

253. As Microsoft concedes, the restriction on agreements limiting competition in Microsoft's Remedy III.F.2 only applies to agreements relating to Windows Operating System Products, so that an exclusive dealing arrangement that relates to other Microsoft platform software, such as Internet Explorer, or whereby Microsoft simply offers consideration in exchange for an ISV's agreement not to develop, use, distribute, or promote non-Microsoft platform software, would not be prohibited. Tr. 5254:5-5255:11 (Jones); Barksdale Dir. ¶ 115.

254. Finally, III.G, which appears as though it restricts exclusive and fixed-percentage agreements, applies only to "Microsoft Platform Software," VI.L, which is constrained by the narrow definition of "Microsoft Middleware Product," VI.K, which excludes: (a) any existing Microsoft product other than Internet Explorer, the Microsoft Java Virtual Machine, Windows Media Player, Windows Messenger, and Outlook Express; (b) any future

Microsoft product—other than Internet browsers, e-mail client software, networked audio/video client software, or instant messaging software—that (i) Microsoft chooses not to distribute along with Windows, or (ii) has no competitor product that has yet achieved distribution of one million copies per year, or (iii) Microsoft chooses not to trademark.

E. The States' Remedy Fully Addresses, and Prevents the Recurrence of, Each Act Explicitly Held by the Court of Appeals To Be Anticompetitive

255. In contrast to Microsoft's Remedy, the States' Remedy has provisions that address and prohibit each and every act held to be anticompetitive by the Court of Appeals, with none of the exceptions, carve-outs, ambiguities, and omissions that render Microsoft's Remedy ineffective at prohibiting a recurrence of the anticompetitive behavior.

1. Prohibition on the Removal of Desktop Icons, Folders, and Start Menu Entries

256. The States' Remedy would stop Microsoft from prohibiting "the removal of desktop icons, folders, and Start menu entries" from Windows, which prohibition the Court of Appeals held to be anticompetitive. *Microsoft*, 253 F.3d at 61. State's Remedy 2.c.ii prevents Microsoft from restricting "an OEM or Third-Party Licensee from modifying the . . . startup folder, smart folder, . . . desktop, . . . or other similar aspect of a Windows Operating System Product" to "remove or modify the icons, folders, links, start menu entries, smart folder application or service menu entries, favorites, or other means of presenting Microsoft products, services, features or technologies."

2. Prohibition on Modification of the Boot Sequence

257. States' Remedy 2.c also would stop Microsoft from effecting a "prohibition on modifying the boot sequence" of Windows, an act held by the Court of Appeals to be anticompetitive. *Microsoft*, 253 F.3d at 61. That provision provides that "Microsoft shall not

restrict . . . an OEM or Third-Party Licensee from modifying the . . . boot sequence . . . ." States' Remedy 2.c.

3. Prohibition on Addition of Icons or Folders Different in Size or Shape from Those Supplied by Microsoft

258. States' Remedy 2.c also would stop Microsoft from prohibiting OEMs from adding "icons or folders different in size or shape from those supplied by Microsoft." *Microsoft*, 253 F.3d at 62. That prohibition, which was held to be anticompetitive by the Court of Appeals, *id.*, would be barred because 2.c prevents Microsoft from restricting an OEM or Third-Party Licensee from modifying the desktop to "display and arrange icons or menu entries of, or short-cuts to, or otherwise present, other products, services, features or technologies, regardless of the size or shape of such icons or features." States' Remedy 2.c.ii.

4. Prohibition on Using the Active Desktop Feature of Windows to Promote Third-Party Brands

259. States' Remedy 2.c.ii's requirement that Microsoft not restrict "an OEM or Third-Party Licensee from modifying the . . . desktop . . . to . . . display and arrange icons or menu entries of, or short-cuts to, or otherwise present, other products, services, features or technologies" would stop Microsoft from prohibiting OEMs from "using the 'Active Desktop' feature to promote third-party brands," a prohibition held to be anticompetitive by the Court of Appeals. *Microsoft*, 253 F.3d at 62.

5. Exclusion of Internet Explorer from the "Add/Remove Program" Utility

260. States Remedy 2.c also would directly address Microsoft's exclusion of Internet Explorer from the "Add/Remove Programs" utility, an exclusion held to be anticompetitive by the Court of Appeals. *Microsoft*, 253 F.3d at 65. Remedy 2.c.iv prevents Microsoft from restricting an OEM or Third-Party Licensee—"by contract or otherwise"—from modifying the

desktop to "remove the means of End-User Access for Microsoft Middleware Products," and therefore clearly prohibits the anticompetitive behavior.

6. Commingling Code Related to Browsing and Other Operating System Code in the Same File

261. States' Remedy 1 would put an end to one of the anticompetitive acts wholly unaddressed by Microsoft's Remedy: the binding of "IE to Windows 98 by placing code specific to Web browsing in the same files as code that provided operating system functions." *Microsoft,* 253 F.3d at 65. States' Remedy 1 prohibits Microsoft from selling the commingled version of Windows unless it creates, offers for sale, and licenses an "unbound" version of this operating system—that is, a version from which any Microsoft Middleware Product that has been "bound" to the operating system may be readily removed without causing any degradation or impairment to any of the other functions of the operating system. "Bind" is defined, in States' Remedy 22.d, to capture the concept of "commingled" as described by the Court of Appeals: that is, middleware is "bound" if it cannot be removed without impairing operating system functionalities other than the middleware function being removed.

7. Exclusive Agreements with IAPs

262. States' Remedy 6 would stop Microsoft from entering into agreements "to provide easy access to [certain] IAPs' services from the Windows desktop in return for the IAPs' agreement to promote IE exclusively and to keep shipments of internet access software using Navigator under a specific percentage, typically 25%," which agreements the Court of Appeals held to be anticompetitive. *Microsoft,* 253 F.3d at 68. States' Remedy 6 would prevent Microsoft from "enter[ing] into or enforc[ing] any Agreement in which another party agrees, or is offered or granted consideration to . . . restrict its development, production, distribution, promotion, or use of (including its freedom to set as a default), or payment for, any non-

Microsoft product, service, feature or technology;" "distribute, promote or use any Microsoft product, service, feature or technology exclusively or in a minimum percentage;" or "in the case of an agreement with an IAP or ICP, distribute, promote or use a Microsoft product, service, feature or technology in exchange for placement with respect to any aspect of a Microsoft Platform Product." This would unequivocally prevent Microsoft from soliciting an IAP's agreement to promote Internet Explorer exclusively and to keep shipments of Navigator under a specified percentage.

8. Exclusive "First-Wave" Agreements with ISVs

263. State's Remedies 4 and 6 would fully address the Court of Appeals' holding regarding Microsoft's entry into "dozens of 'First Wave' agreements" whereby it "promised to give preferential support, in the form of early Windows 98 and Windows NT betas, other technical information, and the right to use certain Microsoft seals of approval, to important ISVs that agree to certain conditions," including "that the ISVs use Internet Explorer as the default browsing software for any software they develop with a hypertext-based user interface," and "that the ISVs use Microsoft's 'HTML Help,' which is accessible only with Internet Explorer, to implement their applications' help systems." *Microsoft*, 253 F.3d at 71-72 (quoting *Microsoft*, 84 F. Supp. 2d at 93, Finding No. 339). States' Remedy 4 would require Microsoft to make available to ISVs technical information needed for interoperability with Windows and would therefore prevent Microsoft from providing such technical information on a preferred basis only to those ISVs that favor Microsoft's platform software to the exclusion of competitors' States' Remedy 6 would prevent Microsoft from "enter[ing] into or enforc[ing] any Agreement in which another party agrees, or is offered or granted consideration to . . . restrict its development, production, distribution, promotion, or use of (including its freedom to set as a default), or payment for, any non-Microsoft product, service, feature or technology;" or "distribute, promote

or use any Microsoft product, service, feature or technology exclusively or in a minimum percentage." Thus, States' Remedy 6 targets precisely the type of agreement the Court of Appeals held to be anticompetitive.

9. Threatening Withholding Mac Office To Obtain Exclusive Agreement from Apple

264. States' Remedies 6 and 8 would fully address the Court of Appeals' holding regarding Microsoft's use of threats to cancel Mac Office to secure Apple's abandonment of Navigator and its agreement to support, use, promote, and distribute Internet Explorer to the exclusion of Navigator. *Microsoft*, 253 F.3d at 73. As discussed above, States' Remedy 6 would prevent Microsoft from "enter[ing] into or enforc[ing] any Agreement in which another party agrees, or is offered or granted consideration to . . . restrict its development, production, distribution, promotion, or use of (including its freedom to set as a default), or payment for, any non-Microsoft product, service, feature or technology;" or "distribute, promote or use any Microsoft product, service, feature or technology exclusively or in a minimum percentage." Thus, States' Remedy 6 targets precisely the type of agreement the Court of Appeals held to be anticompetitive. Moreover, States' Remedy 8 would stop Microsoft from "tak[ing] or threaten[ing] any action that directly or indirectly adversely affects any IAP, ICP, IHV, ISV, OEM, or Third-Party Licensee . . . based directly or indirectly, in whole or in part, on any actual or contemplated action by that [entity] to . . . use, distribute, promote, support, license, develop, set as a default, produce or sell any non-Microsoft product, service, feature or technology." Since Apple is both an ISV and an OEM, States' Remedy 8 would stop Microsoft from threatening to withhold key products vital to Apple's success on the basis of Apple's support, use, and distribution of competing products such as Navigator.

10. Exclusive "First-Wave" Agreements with Java Developers

265. States' Remedies 4 and 6 would fully address the Court of Appeals' holding regarding Microsoft's entry into First-Wave agreements with Java developers whereby "in exchange for costly technical support and other blandishments, Microsoft induced dozens of important ISVs to make their Java applications reliant on Windows-specific technologies and to refrain from distributing to Windows users JVMs that complied with Sun's standards." *Microsoft*, 253 F.3d at 75 (quoting *Microsoft*, 84 F. Supp. 2d at 108-09, Finding No. 401). States' Remedy 4 would require Microsoft to make available to ISVs technical information needed for interoperability with Windows and would therefore prevent Microsoft from providing such technical information on a preferred basis only to those ISVs that favor Microsoft's platform software to the exclusion of competitors. States' Remedy 6 would prevent Microsoft from "enter[ing] into or enforc[ing] any Agreement in which another party agrees, or is offered or granted consideration to . . . restrict its development, production, distribution, promotion, or use of (including its freedom to set as a default), or payment for, any non-Microsoft product, service, feature or technology;" or "distribute, promote or use any Microsoft product, service, feature or technology exclusively or in a minimum percentage." Thus, States' Remedy 6 would prevent Microsoft from entering into exclusive agreements with ISVs to use and distribute its JVM to the exclusion of a competitor's.

11. Deception of Java Developers

266. States' Remedy 16 would fully address the Court of Appeals' holding that "Microsoft deceived Java developers regarding the Windows-specific nature of [its Java development] tools." *Microsoft*, 253 F.3d at 76. Under States' Remedy 16, "[i]f Microsoft publicly claims that any of its products are compliant with any technical standard ("Standard") that has been approved by, or has been submitted to and is under consideration by, a Standard-

Setting Body, it shall comply with that Standard." Moreover, under that provision, "[i]f Microsoft chooses to extend or modify the implementation of that Standard, Microsoft shall continue fully to implement the Standard (as that Standard may be modified from time to time by the Standard-Setting Body)." Thus, States' Remedy 16 would prevent Microsoft from claiming that its software-development tools would result in the creation of applications that run on a standard, compliant JVM if in fact the resulting applications run only on Microsoft's noncompliant version.

12. Threats Against Intel for Its Work with Sun To Develop an Enhanced Java Virtual Machine

267. State's Remedy 8 would fully address the Court of Appeals' holding that "Microsoft threatened Intel that if it did not stop aiding Sun [in its development of an enhanced JVM] on the multimedia front, then Microsoft would refuse to distribute Intel technologies bundled with Windows." *Microsoft*, 253 F.3d at 77. That provision would stop Microsoft from "tak[ing] or threaten[ing] any action that directly or indirectly adversely affects any IAP, ICP, IHV, ISV, OEM, or Third-Party Licensee . . . based directly or indirectly, in whole or in part, on any actual or contemplated action by that [entity] to . . . use, distribute, promote, support, license, develop, set as a default, produce or sell any non-Microsoft product, service, feature or technology." Since Intel is an IHV (or in instances where Intel was developing software—an ISV), States' Remedy 8 would stop Microsoft from threatening to withhold its support for Intel's technologies on the basis of Intel's support and development of competing products such as the Sun-compliant JVM.

V. Misguided Criticisms of the States' Proposals

A. Microsoft's Exaggerations and Misreadings of the States' Remedies

268. A number of the problems Microsoft claims to have identified with the States' Remedies involve strained and/or exaggerated readings of those remedies. For example, Mr. Gates testified that the "Timely Manner" requirement under States' Remedy 4 dealing with disclosures could result in an applications developer at Microsoft being held in criminal contempt as soon as he has a good idea that he believes will solve an operating system problem unless he immediately discloses that good idea to all of the outsiders for whom the Remedy 4 disclosures are intended. Tr. 4597:15-4603:13 (Gates).

269. This criticism is based on an obvious misreading of the States' Remedy. Under the States' definition of "Timely Manner," the disclosure obligation is only triggered when the Windows developer discloses a new API *to* the Microsoft application developer. States' Remedy 22.pp. Further, the disclosure obligation only extends to APIs, technical information and communications interfaces that Microsoft "employs." *See* States' Remedy 4. Thus, no obligation arises prior to Microsoft *employing* the new interface or protocol; a mere idea is simply too early in the process.

270. Mr. Gates also suggested that under States' Remedy 3, the obligation to continue licensing predecessor versions of Windows, Microsoft would somehow be barred from providing accurate information to consumers about the capabilities of various versions of Windows. Tr. 4671:22-4674:3 (Gates).

271. Mr. Gates' concern is based on his misreading of the "marketing freedom" portion of Remedy 3(c). He interprets that provision to prohibit Microsoft from requiring OEMs to notify consumers that predecessor versions are older versions of Windows without the newest features. Tr. 4672:18-4674:13 (Gates). He incorrectly posits that such a requirement would

violate an OEM's right to market that prior version "in the same manner" as the current version of Windows. Tr. 4672:23-4673:7 (Gates).

272. This criticism is based on a strained reading of Remedy 3 that is not supported by its text. First, nothing in Remedy 3 could possibly be read to prevent Microsoft from truthfully advertising the capabilities of predecessor as well as the latest versions of Windows. Second, OEMs, just like Microsoft, have significant financial interests in minimizing consumer confusion, so there is every reason to believe that they take steps to communicate to consumers that, for example, Windows 2000 is a later version of Windows than Windows 98 SE. In the end, Mr. Gates' concerns about consumer confusion are for the most part simply a reiteration of his view that consumers cannot be trusted with choice. Mr. Gates simply does not trust consumers to purchase the version of Windows that best meets their specific needs.

273. Mr. Gates further claimed that States' Remedy 8, the ban on adverse action for supporting competing products, would require Microsoft to allow the use of its trademarks and logos even by companies that were not selling Microsoft products. Tr. 4692:17-4693:19 (Gates).

274. This criticism reflects an untenable reading of States' Remedy 8. If Microsoft denies the use of its trademarks and logos to entities that distribute competing products, and *not* Microsoft products, then Microsoft's decision obviously is based on the fact that the third party has no relationship with Microsoft, and not on the fact that the third party is promoting competing products. No violation of Remedy 8 could possibly arise under these circumstances.

275. Mr. Gates testified that under States' Remedy 4, Microsoft might not be able to bar access to its source code to individuals from countries that are banned by U.S. export law from having access to Windows source code. Tr. 4782:3-4783:17 (Gates). But under the plain terms of Remedy 4.c, Microsoft is only required to provide "reasonable access," which means of

course that Microsoft would be free to impose appropriate conditions. *See* DX 1530, at 112:7-23, 134:18-135:16 (Greene deposition).

276. Mr. Gates, in describing what he termed an "extreme example," suggested that States' Remedy 6.a would prohibit any payment by Microsoft to any third party for the promotion of Microsoft products. Tr. 4940:22-4944:25 (Gates); Gates Dir. ¶ 339. But the fact that Microsoft provides a company with money to promote a Microsoft product in no way restricts that company's right or ability to promote non-Microsoft products using money other than that provided it by Microsoft, and thus Remedy 6.a is not implicated.

277. Notwithstanding the language in States' Remedy 13 stating that Microsoft's obligation is to distribute a "Windows-compatible" version of Java, Mr. Gates argues that Microsoft would somehow be obligated to carry a Java runtime environment that was not compatible with Windows. Tr. 5022:14-5024:12 (Gates). This criticism is nonsense on its face.

278. Mr. Gates further contends that "Section 2.b could effectively shut down engineering collaboration between Microsoft and large OEMs." Gates Dir. ¶ 255. But the provision for bona fide joint ventures in Remedy 2.b "allows Microsoft to protect specific technical and business information as part of a joint development effort between Microsoft and a Covered OEM." Shapiro Dir. ¶ 158. Engineering collaboration between Microsoft and large OEMs is thus clearly permitted through bona fide joint ventures.

279. With regard to compliance with Remedy 16, Mr. Gates argues that the definition of "Standard-Setting Body" is vague, and could apply to any two entities that get together to approve a standard. Gates Dir. ¶¶ 449, 458. This is a misguided complaint, because the remedy only applies if Microsoft chooses to claim that its products are compliant with a particular

standard. Schwartz Dir. ¶ 156. Microsoft thus itself chooses the standards bodies that it considers to be "bona fide."

B. States' Remedies Will Not Create Undue Fragmentation

280. A number of Microsoft company witnesses expressed concern that the unbundling provisions of States' Remedy 1 will cause what they called the "fragmentation" of the Windows platform. *See, e.g.,* Gates Dir. ¶¶ 224-30; Jones Dir. ¶¶ 71-92. States' Remedy 1 would enable OEMs and others to sell versions of Windows from which some software code for Microsoft middleware would have been removed and/or replaced with software code for middleware developed by competitors of Microsoft. By "fragmentation," the Microsoft witnesses refer to the creation of an environment in which some number of the almost 95% of Intel-compatible PCs running Windows would have an operating system that varies somewhat from the fully bundled version of Windows that Microsoft sells and licenses (today, Windows XP Home and Windows XP Professional) in that (a) some Microsoft middleware might have been removed and/or replaced with software code for middleware developed by a competing company, and (b) as a result of this code removal, some of the APIs exposed by the bundled version of Windows would no longer be present.

281. There is already what amounts to "fragmentation" in the marketplace for PC operating systems today, because many consumers are using PCs running versions of Windows that date back to Windows 95 or even Windows 3.1, and other consumers are using PCs running Windows 98, Windows 98SE, Windows ME and Windows 2000. Tr. 4549:3-4550:5 (Gates) ("It's a type of fragmentation."). Each of these versions of Windows exposes different APIs for use by software developers. On the average, in fact, each new version of Windows generally includes 500-1,000 APIs not available in earlier versions of Windows. Tr. 4872:12–4873:4 (Gates). Furthermore, the provision of optional updates to Windows compounds the already

existing fragmentation. Tr. 4873:5-4874:21 (Gates); *see also* Tr. 2970:11-2971:5, 2986:12-2987:10 (Appel) (Microsoft already sells various configurations of components in Windows; when combined with the various device drivers available for Windows, there are already millions or billions of possible configurations, without regard to the obligations of States' Remedy 1); Tr. 4171:25-4172:1 (Borduin) (Microsoft's witness Scott Borduin agreed that Windows is "already fragmented"); Tr. 5013:7-5014:6 (Gates) (nine or ten different versions of Internet Explorer in use today).

282. Software developers who write to the APIs included in the latest versions of Windows are frequently able to make sure their programs run on earlier versions of Windows by providing with their applications the code for the new interfaces that the earlier versions do not have. Tr. 3150:14-21 (Appel); Tr. 4195:19-21 (Borduin); *see also* Tr. 4555:18-23 (Gates) (to counter the current fragmentation in the market, Microsoft takes steps to help developers make sure that their applications will run on the various versions of Windows); PX 2060.

283. OEMs and others who exercise the freedom under the States' Remedy to remove software code will necessarily be cautious about removing the APIs that will disable too many applications that are significant to end-users, since by doing so they risk creating an operating system that has little or no consumer appeal. *See* DX 1530, at 42:11-21 (Greene deposition); *see also* Borthwick Dir. ¶ 66 (in "the uncommingled" world, consumers will choose what they desire); Tr. 2436:20-2437:1 (Borthwick).

284. The number of APIs that are realistically likely to be removed by OEMs and others who exercise their opportunity under States' Remedy 1 to remove Microsoft middleware will likely be only a fraction of the number of APIs added with each new version of Windows. Thus, applications developers should be able to employ the same means they do today to insure

that consumers with different versions of Windows will be able to make use of their applications. Moreover, Microsoft can further its efforts to assist developers in providing the code needed for distribution with their applications, if they find it would be helpful to do so. *See, e.g.* PX 2060; Tr. 4555:18-23 (Gates) (limited steps Microsoft takes today).

285. Microsoft called six third-party witnesses to express their concern that the States' Remedies will cause "fragmentation": Jerry Sanders of AMD (Sanders Direct Testimony (DX 1520) ("Sanders Dir.")); Scott Borduin of Autodesk, Inc. (Borduin Direct Testimony (DX 1514) ("Borduin Dir.")); Brent Frei of Onyx Software Corporation (Frei Direct Testimony (DX 1516) ("Frei Dir.")); Chris Hofstader of Freedom Scientific, Inc. (Hofstader Direct Testimony (DX 1518) ("Hofstader Dir.")); Heather Davisson of Opus-i (Davisson Direct Testimony (DX 1515) ("Davisson Dir.")); Richard Ulmer of Unysis Corporation (Ulmer Direct Testimony (DX 1524) ("Ulmer Dir.")). Their testimony adds little to the debate about the merits of States' Remedy 1.

286. These witnesses had little or no familiarity with the States' Proposed Remedies. For example, Brent Frei of Onyx Software agreed to testify, and then did testify, without having read either the States' Remedies or Microsoft's Remedies. Tr. 4278:1-19 (Frei). His testimony, including his expressed concern about "balkanization," was based upon statements made to him by Microsoft's Counsel, Mr. Neukom, including an explanation of the term "balkanization," which appears in Mr. Frei's written direct testimony. Frei Dir. ¶ 34; Tr. 4277:7-16, 4278:20-24, 4279:1-7 (Frei). Similarly, most of Microsoft's third-party witnesses testified with apparently little knowledge about the States' Remedies and without citation to any particular remedial provisions.

287. These witnesses represent companies with business models closely aligned with Microsoft, who benefit from Microsoft's monopoly position, and therefore have an interest in Microsoft maintaining that position. For example, Unisys benefits from being a Microsoft partner and, as Mr. Ulmer testified, the ubiquity of Windows on client PCs "helps sell Unisys software, I would stipulate to that." Tr. 5286:9-16, 5288:6-11 (Ulmer). Unisys does not want to lose that advantage. Tr. 5286:9-16 (Ulmer). Mr. Bourdin in fact expressed some displeasure that Microsoft had itself created "fragmentation" by no longer including a Java Virtual Machine with Windows. Tr. 4177:24-4178:22 (Bourdin). Mr. Borduin summed up the view of these third parties when he testified that in his perfect world, there would be only one desktop operating system. Tr. 4171:8-24 (Borduin).

288. To the extent that "fragmentation" occurs because OEMs and others who exercise their opportunity under the States' Remedy to remove Microsoft middleware are able to offer different versions of Windows that consumers want, then "fragmentation" means an increase in consumer choice. Mr. Gates acknowledged on cross examination that the opportunities offered and the incentives created by the States' Remedy would bring to the market new choices that consumers would not otherwise have. Tr. 4819:9-20 (Gates). Microsoft's opposition to "fragmentation" in this sense is, in substance, simply an endorsement of its view that monopoly is "better" and that more choices for consumers are, from Microsoft's perspective, a negative result. Understood in this manner, "fragmentation" is a benefit of the States' Remedy, rather than a cost to be avoided.

C. States' Remedies Will Not Enable Cloning of Windows

289. A number of Microsoft witnesses testified that they believe the States' Remedy will enable the "cloning" of Windows. Tr. 4604:19-4605:8 (Gates) (discussing States' Remedies 4 and 15). Cloning was not precisely defined by all those who used the term, but the term

generally seemed to mean mimicking all the functionality without necessarily copying all of the code that enables the performance of that functionality and without obtaining a license. Tr. 4605:17-20 (Gates); Tr. 5759:2-13 (Madnick). "Cloning" an operating system such as Windows suggests (a) being able to support the same APIs that Windows currently supports, and (b) doing so in a manner that does not necessarily imitate or copy the manner in which those APIs are implemented or supported. Tr. 5759:2-5 (Madnick); Tr. 5193:10-5194:25 (Jones).

290. "Cloning" is generally lawful with respect to software, and it is clear that cloning is a strategy that has been followed by any number of firms in the software industry, including Microsoft. *See, e.g.*, Tr. 4741:6-4742:25 (Gates) (discussing PX 2018 about Microsoft possibly cloning certain features of Navigator); Tr. 5191:8-5194:25 (Jones); Tr. 5759:2-5760:3 (Madnick).

291. Cloning has proven to be a very difficult strategy to implement in the past. As the District Court previously found, "[t]heoretically, the developer of a non-Microsoft, Intel-compatible PC operating system could circumvent the applications barrier to entry by cloning the APIs exposed by the 32-bit versions of Windows (Windows 9x and Windows NT). Applications written for Windows would then also run on the rival system, and consumers could use the rival system confident in that knowledge. Translating this theory into practice is virtually impossible, however. First of all, cloning the thousands of APIs already exposed by Windows would be an enormously expensive undertaking. More daunting is the fact that Microsoft continually adds APIs to Windows through updates and new versions. By the time a rival finished cloning the APIs currently in existence, Windows would have exposed a multitude of new ones. Since the rival would never catch up, it would never be able to assure consumers that its operating system would run all of the applications written for Windows. IBM discovered this to its dismay in the

mid-1990s when it failed, despite a massive investment, to clone a sufficiently large part of the 32-bit Windows APIs. In short, attempting to clone the 32-bit Windows APIs is such an expensive, uncertain undertaking that it fails to present a practical option for a would-be competitor to Windows." *Microsoft*, 84 F. Supp. 2d at 24, Finding No. 52.

292. The States' Remedies do not enable third parties to easily "clone" Windows. Appel Dir. ¶¶ 99-107. As Dr. Appel explained, the disclosure provisions of the States' Remedy would result in disclosure of only an extremely small fraction of the Windows source code that consists of APIs. *Id.* ¶¶ 105-06. Specifically, Dr. Appel reviewed the Microsoft Windows Source code and found that it consisted of 38-46 million lines of code. *Id.* ¶ 106. Of these tens of millions of lines of code, only approximately 440,000 (or 1.2%) constitute APIs—which are already disclosed by Microsoft. *Id.* Microsoft's Remedies III.D and III.E and States' Remedy 4 both would require Microsoft to increase the number of API disclosures, and thus this percentage of disclosed source code will increase under either of the remedy proposals. Even doubling the number of API disclosures, however, would only result in the disclosure of approximately 2.4% of the Windows code, and therefore would not allow a third party simply to create a replica of Windows. *See* Appel Dir. ¶¶ 105-06.

293. Moreover, much of the additional information that would be required to be disclosed under the States' Remedy is *not* additional APIs (and the associated source code), but rather technical information needed by third parties to make effective use of the APIs. Appel Dir. ¶ 107. Such disclosures, while extremely important for purposes of achieving interoperation with Microsoft software, would not result in the disclosure of additional source code. *Id.* Rather, they would only mean that disclosed APIs are explained more fully so that developers

properly understand how the APIs work and can write software products that interoperate effectively with Microsoft platform software. *Id.*

294. In any event, the disclosure of APIs and related technical information does not easily permit the "cloning" of Microsoft products such as Windows. *See* Appel Dir. ¶¶ 99-107. Indeed, Dr. Appel testified that using the API disclosures to develop an operating system that "cloned" the functionality of Windows would be a "monumental" task. Appel Dir. ¶ 105. This is because even if the APIs are disclosed, a third party that wants to create an operating system that provides the same functionality as these APIs must develop and test all of the underlying lines of code that support, or "implement," those APIs. Appel Dir. ¶ 105; Tr. 3228:20-3232:2 (Appel). Thus, a third party wishing to make a functional equivalent of Windows would have to create independently the approximately *39 million* lines of underlying code that would *not* be disclosed under the States' Remedy. Tr. 3230:12-3232:2 (Appel).

295. Dr. Stuart Madnick, Microsoft's computer science expert, Madnick offered testimony that was consistent with Dr. Appel's analysis. Tr. 5870:20-5871:24, 5969:9-5970:7 (Madnick). Dr. Madnick testified that third parties who wish to create software with "comparable functionality" to Microsoft products must do so "by looking at what is the functional interface—in this case the APIs, if you will—and then coming up with their own implementation of those functionalities." Tr. 5969:21-5970:3 (Madnick). Even if the APIs are fully disclosed, third parties would need to invest substantial time, energy, and work to create a functional equivalent. Tr. 5870:20-5871:24 (Madnick). Indeed, Microsoft has invested hundreds of millions of dollars on this engineering effort. Tr. 5871:6-24 (Madnick).

296. Although some Microsoft witnesses testified that they believed the States' Remedy would enable cloning, much of that testimony appeared to be based upon a

misconstruction of the degree of disclosure mandated by these remedies. Moreover, a number of these witnesses also testified that the development of "reference implementations" for Windows APIs—which they described as source code or an alternative—would be an enormous job, even for Microsoft. Tr. 4636:15-4637:9 (Gates). If the development of reference implementations for the Windows APIs would be an infeasible undertaking for Microsoft, even with all of its knowledge and past experience with Windows, then it seems clear that developing source code from those APIs would be an even more insurmountable task for anyone else.

D. States' Remedies Will Not "Confiscate" Microsoft's Intellectual Property

297. Several Microsoft witnesses claimed that various of the States' Remedies will "confiscate" substantial amounts of Microsoft's intellectual property. This claim misses the mark for a variety of reasons. *See, e.g.,* Tr. 4530:6-9 (Gates) (States' Remedies will "wipe out virtually all of Microsoft's intellectual property"); Bennett Dir. ¶ 138 ("apparent wholesale seizure and sale of Microsoft's intellectual property").

298. To the extent the confiscation argument relates to the alleged cloning of Windows, that claimed effect of the States' Remedies has been discussed above, *see supra* Section V.C ("States' Remedies Will Not Enable Cloning of Windows").

299. The confiscation claim with respect to States' Remedy 14, the mandatory porting of Office, is incorrect for at least three reasons. First, Microsoft retains the sole right to license or sell Office for use on Windows, which is the use that today generates billions of dollars in annual revenues for Microsoft. Second, States' Remedy 14 contemplates that Microsoft will be compensated through an auction for licensing the right to port Office to operating systems other than Windows and Macintosh, so there is no "confiscation" as that term is sensibly applied. Third, and related, Microsoft currently receives no revenues from the sale or licensing of Office for use on other operating systems, so States' Remedy No. 14 provides compensation for taking

advantage of a business opportunity that Microsoft has, up to this point, chosen not to utilize, which also seems to fit no known concept of "confiscation."

300. The other claimed "confiscation" relates to Internet Explorer and States' Remedy 12. Requiring Microsoft to make IE available on an open-source basis could be considered a form of mandatory licensing, but Microsoft would remain able to make use of IE and even to offer a version of Windows in which IE is "commingled" or bundled. Moreover, the rationale of open-sourcing IE is in substantial part that Microsoft gained its dominance over browsers through conduct that violated the antitrust laws. To the extent there is any "taking," in short, it is of an asset that was unlawfully gained in the first place.

E. States' Remedies Will Not Eliminate Microsoft's Ability and Incentive to Innovate and Compete

301. Microsoft has claimed that the States' Remedies will completely eliminate its incentive and ability to innovate and compete. Mr. Gates testified, for example, that his demonstrative showing Microsoft "disappearing" and its employees leaving was meant to be taken quite literally in terms of his prediction of the effects of the States' Remedies. Tr. 4531:5-10, 5055:2-5056:4 (Gates) (predicting "ten-year period of hibernation" for Microsoft R&D). In fact, since the States' Remedies will increase the competitive pressure on Microsoft, there is every reason to believe that Microsoft's incentive to innovate will increase, not decrease. *See, e.g.*, Shapiro Dir. ¶ 55 ("Looking ahead, there is every reason to believe that greater threats to Microsoft's monopoly will spur Microsoft to innovate more rapidly."). In fact, putting such competitive pressure on Microsoft to innovate is a significant virtue of the States' Remedies. Shapiro Dir. ¶¶ 56-57 ("An effective remedy will impose on Microsoft competitive 'pressure to innovate.'").

F. States' Remedies Were Not Drafted by Microsoft's Competitors

302. Microsoft has contended that many of the States' Remedies were drafted by Microsoft's competitors. In fact, one of Microsoft's economic experts, Dr. Elzinga, included in his written testimony a table he captioned "Provisions Developed by Microsoft's Competitors." Elzinga Dir. Table 3, p. 31. Dr. Elzinga acknowledged during cross-examination, however, that he had never given any thought to, among other things, the relationship between the wording of many of the States' Remedies and the text of the remedial order entered by Judge Jackson earlier in these proceedings. Tr. 6818:9-16 (Elzinga). By the conclusion of his examination on Table 3, Dr. Elzinga labeled the word "developed" in the heading of his table an "awkward" one, and proposed that a better heading for the table would be "Provisions Supported by Microsoft's Competitors." Tr. 6817:20-6818:8 (Elzinga).

303. In the context of a claim of unlawful monopolization, it is entirely possible that conduct that violates Section 2 of the Sherman Act will harm both competitors of the monopolist and consumers. Tr. 6784:6-25 (Elzinga). Even Microsoft's experts agree that there is no reason why companies that have been adversely affected by anticompetitive conduct should not approach government officials and encourage them to proceed with litigation to halt such anticompetitive practices. Tr. 6785:1-7 (Elzinga). It is commonplace—indeed essential—for antitrust enforcers at various levels of government to meet with the representatives of affected businesses in the course of investigating a variety of issues. Tr. 3700:16–3701:16 (Shapiro). As explained by Dr. Shapiro based upon his experience at the Antitrust Division, "you can't do your job without that sort of input, and to do it right, you have to be careful in evaluating that input." Tr. 3701:14–16 (Shapiro). It would make little sense for the States to have put forward proposed remedies without assessing whether those in the industry (a) agree with their identification of the

problems and (b) see the remedies as creating opportunities that could increase entry into and competition in the monopolized market.

304. Although there is evidence that a number of companies that compete with Microsoft offered suggestions to the Plaintiff States, the record does not support the claim that these competitors authored much or all of the States' Remedies.

305. Given the "PC ecosystem" described by Mr. Gates, and the numerous levels of the marketplace at which Microsoft operates, it is not surprising that so many companies view themselves as competitors of Microsoft. Indeed, virtually all of the third-party witnesses that testified at the hearing were either (a) competitors of Microsoft in one manner or another, or (b) companies that deal with and fundamentally depend upon Microsoft for their economic well-being.

306. The potential importance of Microsoft's economic relationship with third-party witnesses was perhaps most apparent in the events leading to the testimony of Mr. Sanders of AMD. Having had no prior involvement with or substantive knowledge about this case prior to February 8, 2002, the day the final witness lists were due to be filed by the parties in these remedy proceedings, Mr. Sanders agreed on that date to testify after a phone call from Mr. Gates informing Mr. Sanders that testifying was a "really important" "personal favor" to Mr. Gates. Tr. 3750:4-23; 3751:2-3752:24 (Sanders). Mr. Sanders testified at the remedies hearing without having ever read or learned the provisions of either of the competing remedial proposals, having no idea as to the extent to which either proposal or both proposals would lead to the fragmentation of the Windows platform, or how any such fragmentation compared to what exists today as a result of the various versions of the Windows operating system in the market. Tr. 3778:24-3779:6, 3781:9-12, 3781:22-3783:8 (Sanders).

307. In the same phone conversation in which he agreed to testify for Microsoft, Mr. Sanders asked Mr. Gates whether Microsoft would support and publicly announce support of Hammer, AMD's next-generation Windows compatible microprocessor, expected to be introduced by the end of 2002. Tr. 3760:7-19, 3742:23-3743:1 (Sanders). As Mr. Sanders explained, Hammer is extremely important to the future of AMD and is expected to produce the great majority of AMD's revenues. Tr. 3743:2-3745:5 (Sanders). Moreover, Microsoft's support of Hammer is vital to its success. Tr. 3745:7-3746:18, 3772:17-3773:20 (Sanders); PX 1444, page 16. Mr. Sanders told Mr. Gates on that call that it was important to Mr. Sanders that Microsoft go public with support for Hammer, that Microsoft should support Hammer, and should not support Yamhill, the rival next-generation product made by Intel, AMD's competitor; and that, although AMD had a 20% share of the microprocessor market (with Intel having the other 80%), Mr. Sanders hoped to get AMD to a 50% share. Tr. 3760:16-19; 3764:3-7; 3764: 19-22; 3742:14-21 (Sanders).

308. Mr. Gates informed Mr. Sanders on this February 8, 2002, call that Microsoft did not want to support both AMD's new Hammer and Intel's new Yamhill, but preferred to support one or the other, refusing at the time still to commit. Tr. 3814:10-3816:2 (Sanders). Mr. Gates instructed Mr. Sanders to have AMD's people talk to Microsoft's people and "see where we go from that point." Tr. 3761:4-14 (Sanders). Microsoft in fact first signed the documentation that AMD needed to confirm that Microsoft would support Hammer on Friday, April 12, 2002, the very day that Mr. Sanders' testimony was filed in this Court. Tr. 3812:10-20, 3815:14-3816:9 (Sanders).

VI. States' Remedy 1—Restriction on Commingling

A. Purpose of States' Remedy 1

309. One of Microsoft's key anticompetitive strategies was commingling the software code for Internet Explorer with the code for other operating system functions. This commingling made it impossible for OEMs to remove the software code for the browsing functionality from Windows without impairing a variety of other operating system functions. *Microsoft*, 253 F.3d at 65-66.

310. Commingling was a necessary element of Microsoft's strategy for preventing Netscape's Navigator from becoming a viable alternative platform for applications development, because it was clear to executives at Microsoft that Microsoft's own browser, Internet Explorer, could not prevail against Navigator without technologically binding IE to the Windows operating system. *Microsoft*, 253 F. 3d at 64 (quoting *Microsoft*, 84 F. Supp. 2d at 50, Finding No. 160).

311. Among the earliest proposed steps in implementing that strategy was the suggestion that IE be "integrated" with Windows such that anyone using the Windows Help function would have to use IE. Tr. 4734:25-4735:8 (Gates); DX 1487 at 5 (Gates' "Internet Tidal Wave" memorandum).

312. As the District Court previously found, "[i]n late 1996, senior executives within Microsoft, led by James Allchin, began to argue that Microsoft was not binding Internet Explorer tightly enough to Windows and as such was missing an opportunity to maximize the usage of Internet Explorer at Navigator's expense. Allchin first made his case to Paul Maritz in late December 1996. He wrote:

> I don't understand how IE is going to win. The current path is simply to copy everything that Netscape does packaging and product wise. Let's [suppose] IE is as good as Navigator/Communicator. Who wins? The one with 80% market share. Maybe being free helps us, but once people are used to a

> product it is hard to change them. Consider Office. We are more expensive today and we're still winning. My conclusion is that we must leverage Windows more. Treating IE as just an add-on to Windows which is cross-platform [means] losing our biggest advantage—Windows marketshare. We should dedicate a cross group team to come up with ways to leverage Windows technically more. . . . We should think about an integrated solution—that is our strength.

Allchin followed up with another message to Maritz on January 2, 1997:

> You see browser share as job 1. . . . I do not feel we are going to win on our current path. We are not leveraging Windows from a marketing perspective and we are trying to copy Netscape and make IE into a platform. We do not use our strength—which is that we have an installed base of Windows and we have a strong OEM shipment channel for Windows. Pitting browser against browser is hard since Netscape has 80% marketshare and we have <20%. . . . I am convinced we have to use Windows—this is the one thing they don't have. . . . We have to be competitive with features, but we need something more—Windows integration.
>
> If you agree that Windows is a huge asset, then it follows quickly that we are not investing sufficiently in finding ways to tie IE and Windows together. This must come from you. . . . Memphis [Microsoft's code-name for Windows 98] must be a simple upgrade, but most importantly it must be killer on OEM shipments so that Netscape never gets a chance on these systems.

Microsoft, 84 F. Supp. 2d at 51, Finding No. 166 (alterations in original).

313. "Maritz responded to Allchin's second message by agreeing 'that we have to make Windows integration our basic strategy' and that this justified delaying the release of Windows 98 until Internet Explorer 4.0 was ready to be included with that product. Maritz recognized that the delay would disappoint OEMs for two reasons. First, while OEMs were eager to sell new hardware technologies to Windows users, they could not do this until Microsoft released Windows 98, which included software support for the new technologies. Second, OEMs wanted Windows 98 to be released in time to drive sales of PC systems during the back-to-school and holiday selling seasons. Nevertheless, Maritz agreed with Allchin's point that synchronizing the release of Windows 98 with Internet Explorer was 'the only thing that makes sense even if OEMs suffer.'" *Microsoft*, 84 F. Supp. 2d at 51, Finding No. 167.

314. "Once Maritz had decided that Allchin was right, he needed to instruct the relevant Microsoft employees to delay the release of Windows 98 long enough so that it could be shipped with Internet Explorer 4.0 tightly bound to it. When one executive asked on January 7, 1997 for confirmation that 'memphis is going to hold for IE4, even if it puts memphis out of the xmas oem window,' Maritz responded affirmatively and explained,

> The major reason for this is . . . to combat Nscp, we have to [] position the browser as 'going away' and do deeper integration on Windows. The stronger way to communicate this is to have a 'new release' of Windows and make a big deal out of it. . . . IE integration will be [the] most compelling feature of Memphis.

Thus, Microsoft delayed the debut of numerous features, including support for new hardware devices, that Microsoft believed consumers would find beneficial, simply in order to protect the applications barrier to entry." *Microsoft*, 84 F. Supp. 2d at 51-52, Finding No. 168 (alterations in original).

315. "Allchin and Maritz gained support for their initiative within Microsoft in the early spring of 1997, when a series of market studies confirmed that binding Internet Explorer tightly to Windows was the way to get consumers to use Internet Explorer instead of Navigator. Reporting on one study in late February, Microsoft's Christian Wildfeuer wrote:

> The stunning insight is this: To make [users] switch away from Netscape, we need to make them upgrade to Memphis. . . . It seems clear to me that it will be very hard to increase browser market share on the merits of IE 4 alone. It will be more important to leverage the OS asset to make people use IE instead of Navigator.

Microsoft's survey expert, Kumar Mehta, agreed. In March he shared with a colleague his 'feeling, based on all the IE research we have done, [that] it is a mistake to release memphis without bundling IE with it.'" *Microsoft*, 84 F. Supp. 2d at 52, Finding No. 169 (alterations in original).

316. As the Court of Appeals explained, the competitive problem posed by commingling is that "preventing an OEM from removing IE deters it from installing a second

browser because doing so increases the OEM's product testing and support costs; by contrast, had OEMs been able to remove IE, they might have chosen to pre-install Navigator alone." *Microsoft*, 253 F.3d at 66.

317. The Court of Appeals further explained that "commingling deters OEMs from pre-installing rival browsers, thereby reducing the rivals' usage share and, hence, developer's interest in rivals' APIs as an alternative to the API set exposed by Microsoft's operating system." *Microsoft*, 253 F.3d at 66. The problem, in short, is not simply with the choice of middleware that the end user sees, but also with the incentives for OEMs to carry competing middleware and the incentives for software developers to write to the APIs of third-party middleware. Richards Dir. ¶¶ 162-163, 168.

318. Microsoft has not stopped commingling—that is, it has not made it possible to remove its middleware without impairing other operating system functions—in the period since the liability trial or the decision by the Court of Appeals. Tr. 4800:9-4801:23 (Gates); Tr. 4804:24-4805:8 (Gates); Tr. 5173:6-25 (Jones); Tr. 6672:14-6673:5 (Elzinga).

319. If anything, it appears as if the company has continued to use commingling as part of its strategy to limit the growth of competing middleware. Tr. 4868:18-4869:24 (Gates) (the code interdependencies between Windows and Internet Explorer have increased over time; this is probably also true with respect to Windows and Windows Media Player); Tr. 6184:25-6185:24 (Poole) (conceding that Microsoft has, since the District Court's rulings, increased the number of code interdependencies between Windows and the Windows Media Player).

B. How States' Remedy 1 Achieves Its Intended Purpose

320. States' Remedy 1 permits Microsoft to continue selling the commingled version of Windows on the condition that it create and offer for sale and license an "uncommingled" version of this operating system—that is, a version from which any Microsoft Middleware

Product that has been "bound" to the operating system may be readily removed without causing any degradation or impairment to any of the other functions of the operating system.

321. "Bind" is defined in the States' Remedy to capture the concept of "commingled" as described by the Court of Appeals: that is, middleware is "bound" if it cannot be removed without impairing operating system functionalities other than the middleware function being removed. States' Remedy 22.d; DX 1530 at 33:14-34:7 (Greene deposition).

322. As specified in the second paragraph of States' Remedy 1, the Microsoft middleware that must be "unbound" in the initial unbound version of Windows is limited to those items enumerated in the first section of the definition of Microsoft Middleware Product, Definition 22.x.i of the States' Remedy. DX 1530 at 27:4-29:21 (Greene deposition). To the extent the identified software in Definition 22.x.i is not currently "bound" to the operating system, *e.g.*, Microsoft Office, then no "unbinding" is required. Any additional middleware that must be unbound in later versions of Windows is to be determined by the second section of the definition of Microsoft Middleware Product. States' Remedy 22.x.ii; DX 1530 at 29:3-21 (Greene deposition); Tr. 2992:15-2993:4 (Appel).

323. To the extent that OEMs and others ship versions of Windows from which certain middleware has been removed, the licensing fee that they owe to Microsoft is reduced by a formula based on relative development costs of the removed middleware and the latest version of Windows, as specified in the next-to-last paragraph of States' Remedy 1. The maximum discount, regardless of the calculation under this formula, is 25%. To the extent that removed middleware is actually sold separately in the marketplace, then the discount is based on the relative market price of that middleware and the operating system, rather than on the relative development cost formula. States' Remedy 1.

324. At present, the fact that OEMs must carry Microsoft middleware creates a significant disincentive for OEMs to choose to install rival middleware, because maintaining code for two types of middleware to perform the same functions potentially increases consumer confusion and support costs, most of which are borne by OEMs. Ashkin Dir. ¶¶ 76-80; Pearson Dir. ¶¶ 94-95; Richards Dir. ¶ 168. OEMs have been unable to persuade Microsoft to make middleware removable. Gateway, for example, made a number of requests that Microsoft remove the code for Internet Explorer from Windows, but Microsoft would never comply. Ashkin Dir. ¶ 91. States' Remedy 1 will enable OEMs and others to choose the middleware that best suits the needs of their customers, unconstrained by any concern that they will be left with a disabled operating system if they attempt to remove Microsoft middleware. Ashkin Dir. ¶ 88; Tr. 3138:9-3139:1 (Appel) (third party developers may create middleware that supports Microsoft middleware functionality in a better way than Microsoft's solution, or that also supports other useful functionality not present in Microsoft middleware).

325. At present, because applications developers know that all of the Windows APIs, including those exposed by Microsoft's bound middleware, will be found on virtually every PC, those developers have a strong incentive to continue writing applications primarily or even only to run on Windows, thus maintaining the applications barrier to entry. Richards Dir. ¶¶ 162-63, 169; Schwartz Dir. ¶ 158; Barksdale Dir. ¶¶ 51-52. The possibility of replacing Microsoft middleware code with competing middleware code will thereby increase the likelihood that APIs exposed by competing middleware will be present on more computers, reduce the ability of Microsoft to force OEMs to make all of the Windows APIs available, and increase the likelihood that applications developers will write to competing APIs.

326. The key benefits of States' Remedy 1 are (a) facilitating competition between Microsoft middleware and competitive middleware by enabling OEMs and others to choose which middleware they prefer to use, Richards Dir. ¶ 170; (b) eliminating the disincentive OEMs now have to use competing middleware because today they must keep Microsoft middleware on their computers, without regard to whether they prefer to have it or believe their customers prefer to have it, Richards Dir. ¶ 168; and (c) ensuring that Microsoft cannot artificially augment the applications barrier to entry by requiring every OEM to include all of the APIs exposed by Microsoft's middleware on virtually every PC operating system they sell, even if the OEM might prefer to replace the software code containing those APIs with middleware developed by a company other than Microsoft, or to eliminate that code and its functionality in its entirety, Richards Dir. ¶¶ 162, 169.

327. To the extent there are benefits from Microsoft integrating its middleware into the operating system, States' Remedy 1 allows consumers and others to enjoy those benefits because they will still be able, if they so desire, to purchase or license the fully commingled product as Microsoft sells it today. States' Remedy 1; Tr. 4806:15-4807:6 (Gates); Appel Dir. ¶ 138.

C. Microsoft's Remedy Merely Mandates the Possible Elimination of End-User Access to Microsoft Middleware

328. Microsoft's Remedy has no provision that requires Microsoft to stop commingling code, in the sense that commingling was used by the Court of Appeals to describe the placing of code for different functionalities in the same files so that software code for Microsoft middleware cannot be removed without impairing a variety of significant operating system functions beyond those performed by the removed middleware. Rather, Microsoft has claimed that by enabling OEMs to disable end-user access to certain Microsoft middleware, it

has addressed the "competitive concern" associated with commingling. *See e.g.*, Tr. 4800:9-4801:23 (Gates); Tr. 6672:14-6673:5 (Elzinga).

329. Removing or disabling end-user access to middleware may increase the likelihood that some end users will, at least in the short term, use middleware developed by competing firms. It does not, however, result in the removal from Windows of the middleware code, or the APIs that the middleware exposes. Tr. 5183:8-5184:17 (Jones). Thus, OEMs will continue to have a disincentive to distribute competing middleware on their PCs, because they know that the code for all of the Microsoft middleware is still present in Windows (and cannot be removed). And ISVs will continue to write applications to Microsoft middleware, because they know even if end-user access is removed, the Microsoft middleware APIs will still be present on every PC that runs Windows. *See* Tr. 4880:3-17 (Gates) (removal of end-user access does not affect the APIs of the middleware in question and thus developers can still write to that middleware); Richards Dir. ¶¶ 162-163, 168; Schwartz Dir. ¶ 158; Tr. 5182:13-5184:17 (Jones); Tr. 5984:10-20 (Madnick). Thus, for example, even if end-user access to Internet Explorer is removed, Microsoft can still tell software developers that Internet Explorer's APIs are present in Windows and available for use. Tr. 5184:2-17 (Jones).

D. States' Remedy 1 Meets the Court of Appeals' Objectives for Relief

330. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

331. States' Remedy 1 will achieve the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by restricting commingling, one of the particular

exclusionary practices Microsoft aimed at Navigator and Java, by requiring that Microsoft make available an uncommingled version of its operating system. As discussed in detail above, as of the date of the remedy hearing, Microsoft had not stopped its practice of commingling.

E. Microsoft's Criticisms of States' Remedy 1

1. Microsoft's Mistaken Claim that Uncommingling is Not Feasible

332. A number of Microsoft witnesses, including Bill Gates, claimed that Microsoft would be forced to withdraw Windows from the market if States' Remedy 1 were adopted because it is simply infeasible for Microsoft to comply. Gates Dir. ¶ 183; Tr. 4794:8-4795:5 (Gates). Mr. Gates testified, however, that Microsoft has begun no engineering project to find a means of complying with the obligation imposed by States' Remedy 1 to create an uncommingled version of Windows. Tr. 4796:16-20 (Gates); *see also* Tr. 4875:9-4876:4 (Gates) (notwithstanding his view that Remedy 1 is infeasible, Mr. Gates had not analyzed which functions were likely to fail if Windows Messenger or Outlook Express were removed from Windows, and did not know how many functions were likely to fail if Windows Media Player were removed); Tr. 6970:11-13 (Bennett) (Microsoft expert Dr. Bennett made no effort to determine which of the items listed in the States' definition of Microsoft Middleware Product are bound to Windows); Tr. 6972:4-17 (Bennett) (Dr. Bennett did not conduct any tests to determine whether the functionality of Windows XP is degraded or impaired if Internet Explorer is removed).

333. To illustrate its infeasibility argument, Microsoft argued that if the binary code for a particular Microsoft Middleware Product were removed, every part of the operating system that relies upon that component will be degraded, and thus it is impossible to comply with Remedy 1's requirement that the unbound Windows perform "effectively and without degradation." Gates Dir. ¶¶ 193, 195-196. But this criticism is based on the false premise that the requirement

be fulfilled without efforts being expended by Microsoft. As Mr. Gates eventually conceded, however, Microsoft has a two-stage obligation under Remedy 1: first, to remove the bound middleware in question; and second, to take steps to address the obligation to maintain the effectiveness of Windows. Tr. 4833:2-11 (Gates).

334. This may mean that the "unbound" operating system may contain some code that performs functionality also found in or relied upon by the removed middleware, to the extent necessary for Microsoft to make available a non-degraded operating system. Tr. 2993:20-2995:5, 3208:21-3210:1 (Appel). While Microsoft may require some time to perform this task, there is nothing inherently impossible about ensuring the presence of functionality that Microsoft has already developed.

335. Microsoft provided the example of the reliance placed by the Windows Help and File systems on Internet Explorer. *See* Gates Dir. ¶ 195. The argument made was that if Internet Explorer were "unbound," then these Windows functions would fail. *See* Gates Dir. ¶ 193. But it is simply not the case that Internet Explorer *per se* is required to provide that functionality. *See* Tr. 5195:1-5196:13 (Jones) (conceivable that another browser could support Windows Help—may be the case that Microsoft has not disclosed the relevant APIs). Rather, it is HTML rendering functionality that is necessary. *See* Gates Dir. ¶ 172. Thus, Microsoft could leave an HTML renderer in Windows to ensure the Help and File systems were not degraded while ensuring that the rest of Internet Explorer was removed. Tr. 2993:20-2995:5 (Appel). Alternatively, Microsoft could expose APIs to permit other browsers to provide HTML rendering functionality. Tr. 5195:1-5196:13 (Jones); *see* Richards Dir. ¶ 174 (RealOne Player designed to permit competing browsers to plug in and provide HTML rendering functionality; this was achieved without any significant loss of functionality).

336. In any event, Dr. Appel, the States' computer science expert, clearly identified at least four different methods by which Microsoft could comply with States' Remedy 1. Tr. 3208:21-3210:10 (Appel). Dr. Ledbetter likewise supported the feasibility of the uncommingling remedy. Ledbetter Dir. ¶¶ 56-58, 61; Tr. 1804:23-1810:25, 1814:1-1815:10 (Ledbetter); *see also* Richards Dir. ¶¶ 175-176. Microsoft's claim that none of Dr. Appel's methods is workable or feasible rests upon the view that the witnesses for the States, including Dr. Appel, do not in fact understand the terms of States' Remedy 1. Tr. 4826:24-4828:24 (Mr. Gates testified that one or two of Dr. Appel's methods fail due to interpretation, not feasibility); Tr. 5991:13-5992:9 (Madnick) (suggesting that Dr. Appel's duplication of functionality method for compliance with Remedy 1 is technically feasible but in fact non-compliant). Accepting Dr. Appel's reading of States' Remedy 1 as correct, Microsoft's witnesses, including Mr. Gates, have conceded that there are some feasible means of complying with States' Remedy 1. Tr. 4827:21-4828:15 (Gates) (discussing Dr. Appel's method C); *see also* Tr. 4879:6-15 (Gates) (Windows would not necessarily crash if middleware were removed—Mr. Gates testified that if middleware such as Windows Media Player were removed, Microsoft could insert a message to the user each time Windows tried to call upon the middleware); Tr. 4168:12-19 (Borduin) (States' Remedy 1 is not an impossible engineering task).

337. Further evidence of the feasibility of complying with States' Remedy 1 is a product first introduced by Microsoft last fall, Windows XP Embedded. Windows XP Embedded is described as a "componentized" operating system that gives the user the flexibility to choose from among thousands of components and features of Windows XP those particular features that the user wants his operating system to have. Tr. 3212:15-3213:7 (Appel); *see also* PX 1724 (XP Embedded screen shot stating that Windows XP Embedded is based on the same

binary code as the desktop version of Windows XP and therefore supports the same features); Tr 4904:12-4905:8 (Gates) (verifying the accuracy of PX 1724).

338. The features that may be chosen include software that is Microsoft middleware, including Internet Explorer and Windows Media Player. PX 1725 (XP Embedded screen shot); Tr. 4905:13-22 (Gates). Using a set of tools that is provided, the developer can build an operating system—or more technically, create a "runtime environment"—that includes all of the capabilities of Windows XP and supports all of the same APIs. *See* Tr. 3214:10-14 (Appel). It is also possible for the user to configure an operating system with far less functionality. The tool that OEMs and others can use to create such customized runtimes is known as the Target Designer. Tr. 3217:22-3218:18 (Appel).

339. Windows XP Embedded is marketed by Microsoft as an operating system for a variety of embedded devices, but one can use it to create an operating system for a personal computer. Tr. 4900:10-15 (Gates); *see also* Tr. 4909:20-4912:11, 4913:13-24 (Gates) (Windows XP Embedded can be used to build an operating system that will run on a PC and support applications like Microsoft Office, if such programs come with installer software or if installer software was added to the build); Tr. 5974:15-5975:17 (Madnick) (XP Embedded can be used to build an entire Windows Operating System that supports all of the Windows APIs). Microsoft's current licensing restrictions, however, do not permit the distribution of runtimes created from Windows XP Embedded for use on general purpose computers. PX 2041; Tr. 4914:2-4915:10 (Gates); Tr. 3213:24-3214:4 (Appel).

340. It is clearly possible to use the XP Embedded Target Designer to create an operating system or runtime environment that has the features of Windows XP without, for example, Windows Media Player. Tr. 3214:15-22 (Appel). It thus appears, as Mr. Gates seemed

to concede, that Microsoft has already developed a means for starting with the code for Windows XP and then creating an operating system for a personal computer from which the code for certain Microsoft middleware has been omitted. Tr. 4915:11-4916:13 (Gates); *see* Tr. 3100:1-3101:2, 3214:23-3215:8 (Appel).

341. Windows XP Embedded has been built to recognize at least some code interdependencies between Windows as a whole and particular middleware such as Internet Explorer and Windows Media Player. PX 1724; PX 1725; PX 2080; Tr. 4904:12-4907:25 (Gates); Tr. 3010:2-3012:3 (Appel); *see also* Tr. 5161:12-5162:5 (Jones) (discussing tools Microsoft has developed to identify dependencies among components of Windows XP). Further, Windows XP Embedded illustrates the fact that one version of Windows may be constructed from which numerous configurations may result—this is consistent with the language of Remedy 1 which indicates that Microsoft's task is limited to creating one "unbound" Windows Operating System product, rather than multiple versions. Appel Dir. ¶ 138 (Remedy 1 requires Microsoft to create "an 'unbound' version" of Windows); Ledbetter Dir. ¶ 60 (Remedy 1 "requires only the creation of a single, uncommingled operating system"); Ashkin Dir. ¶ 88 (Remedy 1 requires Microsoft "to provide the OEMs with a version of Windows" from which middleware can be removed); Borthwick Dir. ¶¶ 2, 12 (requirement under Remedy 1 is to license "an unbound version").

342. Relatively little additional engineering work appears necessary to modify the Windows XP Embedded tools to create an operating system that is fully compliant with States' Remedy 1. Tr. 3215:9-3218:9 (Appel).

343. None of the Microsoft witnesses persuasively explained why Windows XP Embedded could not be used and/or modified in this fashion. Dr. Bennett, for example, one of

Microsoft's computer science experts, testified that he believed that XP Embedded did not demonstrate the feasibility of compliance with States' Remedy 1. Bennett Dir. ¶¶ 59-73. Dr. Bennett did so little to investigate the potential uses of XP Embedded—he built several runtimes, but he did no testing of the runtimes he built, created no documentation, and explored no issues as to their capabilities, Tr. 6957:7-6963:2 (Bennett)—that his conclusion on this issue is entitled to little or no weight.

344. Microsoft also suggested that it could not comply with States' Remedy 1 because Microsoft does not know how to define the boundaries of the various types of middleware that would have to be made removable. Gates Dir. ¶ 194; Tr. 4584:20-4585:20 (Gates). Microsoft could not explain, however, why this claim was not undercut by the fact that the company is currently involved in the exercise of identifying the interfaces between several forms of middleware, including Internet Explorer, Windows Media Player, Windows Messenger, and Outlook Express, and the rest of the Windows operating system, for purposes of complying with Microsoft's proposed settlement with the Department of Justice. Tr. 4585:21-4591:4 (Gates). Microsoft's argument is also inconsistent with the fact that, in designing Windows XP Embedded, Microsoft has identified the code that constitutes middleware such as Internet Explorer and Windows Media Player. PX 2080; PX 2081; Tr. 4904:12-4906:20 (Gates); Tr. 4908:6-4909:12 (Gates).

2. Microsoft's Mistaken Claim that Remedy 1 Would Create Impracticable Testing and Support Burdens

345. Microsoft witnesses have also claimed that States' Remedy 1 would impose an infeasible testing burden on Microsoft. Bennett Dir. ¶¶ 39-48; Gates Dir. ¶ 204. The record as a whole, however, does not support this claim. Dr. Bennett, for example, had no information about how much testing time on each new operating system is spent ensuring that each

component or module of the system works on its own. Tr. 7059:22-7060:3 (Bennett). Similarly, Dr. Bennett could not explain the difference between his view that removing middleware might potentially double the testing time and the estimate he appeared to rely on from a Microsoft employee of a much smaller increase in testing for each operating system version that might be created under States' Remedy 1. Tr. 7064:12-7066:22 (Bennett); *see also* Tr. 5200:24-5202:13 (Jones) (Microsoft does not test every permutation of Windows); Tr. 3130:1-3131:14, 3133:12-3134:22 (Appel) (Microsoft tests its current operating system using representative samples of various configurations; it would be impossible to test every combination of device drivers or third-party applications today); Ledbetter Dir. ¶¶ 59-60 (Microsoft's testing concern is unwarranted—the States' Remedy requires only the creation of a single, uncommingled operating system and, in any event, no major software developer tests every possible code combination).

346. Dr. Bennett also suggested that States' Remedy 1 would impose an "intractable" customer support burden on Microsoft. Bennett Dir. ¶¶ 51-58; *see also* Gates Dir. ¶ 206. Dr. Bennett estimated, however, that OEMs handle about 90% of the support calls from Windows customers. Bennett Dir. ¶ 53. In fact, "OEMs bear essentially all of the consumer support costs for the Windows PC systems they sell." *Microsoft*, 84 F. Supp. 2d. at 49-50, Finding No. 159. Given the impact of support calls on reducing OEM profits, Ashkin Dir. ¶ 79; *Microsoft*, 84 F. Supp. 2d. at 60-61, Finding No. 210, there is little reason to believe that OEMs would lightly take steps that dramatically increase their own support costs. These facts, considered along with Dr. Bennett's limited knowledge of customer support issues, Tr. 7067:7-23 (Bennett) (Dr. Bennett called Microsoft three days before submitting testimony) and very limited inquiry into these issues, Tr. 7069:14-7072:12 (Bennett) (Dr. Bennett did not learn, among other things,

what factors influence number of calls and what assumptions Microsoft employee made in estimating increase) provide no basis for crediting Dr. Bennett's conclusion that States' Remedy 1 would create an excessive or unmanageable support burden for Microsoft.

3. States' Remedy 1 and the Fear of Fragmentation

347. A number of Microsoft witnesses claimed that States' Remedy 1 would result in the "fragmentation" of the Windows operating system. *See, e.g.*, Gates Dir. ¶¶ 225-226. As explained more fully *supra* in Section V.B ("States' Remedies Will Not Create Undue Fragmentation"), however, to the extent that States' Remedy 1 results in the appearance in the market of more configurations of Windows than presently exist, that would simply reflect response by OEMs and others to previously unmet consumer demand. *See* Richards Dir. ¶ 170 (States' Remedy 1 is market driven). That type of "fragmentation," in other words, would represent a clear consumer benefit from States' Remedy 1, and not an adverse effect.

4. Misguided Criticism of the Pricing Provision

348. Microsoft's economics expert Dr. Elzinga testified that the pricing mechanism in States' Remedy 1 transcends economic principles, because from a consumer perspective unbound versions of Windows will likely cost a consumer the same as the bound version. Elzinga Dir. ¶ 99. He argued that, moreover, Microsoft does not save money when it sells a version of Windows with less bound middleware because of software's zero marginal cost. *Id.* ¶ 100.

349. However, the point of Remedy 1's pricing provision is not to save more money for consumers who desire unbound versions of Windows. The purpose of the provision is to provide an incentive for OEMs and consumers to distribute and purchase versions of Windows incorporating non-Microsoft middleware. To accomplish this goal, OEMs and consumers must save money on the removed Microsoft middleware that they can allocate to the cost of adding

non-Microsoft middleware. Thus, Dr. Elzinga's criticism is misguided because it misses the purpose of the pricing mechanism.

5. Criticism of the Interaction of Remedy 1 and Other Provisions in the States' Remedy

350. Microsoft witnesses questioned the apparent interaction of Remedy 1's discount provided to those who sell a version of Windows with certain middleware removed, and States' Remedy 12, the provision to render Internet Explorer open-source. *See* Tr. 4895:11-4896:25 (Gates). The concern is that the interaction of these two provisions would create a strong incentive for virtually every OEM and Third Party Licensee to offer Windows without Microsoft's Internet Explorer, since by doing so (a) they would, under the formula in the third paragraph of States' Remedy 1, be entitled to some discount off the price they would otherwise pay for Windows, and (b) they could readily obtain a copy of Internet Explorer elsewhere, for no fee or for a nominal charge, given that Internet Explorer would have been open-sourced.

351. Dr. Shapiro testified that the normal pricing mechanism should enable Microsoft to adjust the non-discounted price of Windows in a manner that would effectively deal with this situation. Tr. 3500:7-3502:20, 3510:6-20 (Shapiro). Microsoft today earns its return on Internet Explorer through the price of Windows, since Internet Explorer is not priced and sold separately. There is no reason to believe that any perceived interaction between Remedy 1 and Remedy 12 would change that situation. Tr. 3501:11-17 (Shapiro). As a general matter, the discount for using non-Microsoft middleware is likely to be a factor in OEM's decisionmaking as to using non-Microsoft middleware. Richards Dir. ¶ 171. It is not necessarily the case, as the Red Hat example shows, that open-source software will be available commercially "for free." Given the strong attachments built to Microsoft's Internet Explorer as the dominant browser, there is no

reason to expect that, even with a modest discount, all OEMs would choose Windows without Internet Explorer, just because another company's Internet Explorer was available.

VII. States' Remedy 2—OEM Licenses

352. States' Remedy 2 contains several different provisions that are designed to free OEMs from the various contractual and non-contractual methods that Microsoft historically has employed to dominate and control how OEMs design, configure, and promote PCs and the software pre-installed on PCs. Because OEMs are dependent upon having a Windows license, and need to be afforded terms as favorable as those offered to competing OEMs, Microsoft has enormous leverage over how OEMs configure PCs and what software is pre-installed on a PC.

353. States' Remedies 2.a and 2.b ensure that Microsoft will not use the availability or unavailability of Windows licensing terms, conditions or support (both financial and non-financial) to induce or coerce OEMs to limit in any fashion the distribution of rival software. Having provided OEMs greater freedom to contract with and pre-install rival software through Remedies 2.a and 2.b, Remedy 2.c then provides OEMs with the freedom to configure PCs as they see fit and to promote non-Microsoft software in the manner that they wish, free from restrictions imposed by Microsoft.

354. As prior proceedings in the case have made clear, Microsoft imposed a variety of restrictions on OEMs that purposefully limited the threat that competing middleware might pose to Microsoft's monopoly in the Intel-compatible PC operating systems market. Many of Microsoft's acts of unlawful monopoly maintenance were designed to prevent emerging technologies, in particular Netscape Navigator and Java, from access to cost-effective distribution through OEMs.

355. OEMs are a critical distribution channel for promoting software applications in general, and middleware products in particular, to consumers. *Microsoft*, 253 F.3d at 61; *Microsoft*, 84 F. Supp. 2d at 46-47, Findings Nos. 144-45. Because Windows PCs represent the overwhelming majority of PCs sold to consumers in the United States, an effective remedy must

prohibit Microsoft from interfering, whether by reward or retaliation, with OEMs' ability to choose and distribute middleware products and offer non-Microsoft software innovations.

356. Widespread distribution and consumer use of non-Microsoft software applications, including middleware applications, that have the potential for eroding the applications barrier to entry will almost certainly never occur if Microsoft is permitted to continue to incent financially or prevent OEMs from effectively distributing and promoting such rival software. For there to be meaningful competition that could impact the applications barrier to entry, OEMs must be free to choose, install, distribute and promote software based upon consumer needs and choice, not Microsoft's dictates.

A. Purpose of States' Remedies 2.a and 2.b

357. States' Remedies 2.a and 2.b are directed to Microsoft's use of licensing agreements, and the selective provision or withholding of other consideration, to coerce OEMs' compliance with Microsoft's anticompetitive aims, and in particular, its goal of limiting OEMs' distribution of rival middleware.

358. The District Court found that Microsoft financially favored OEMs that it deemed to be "compliant" with Microsoft's efforts to restrict distribution of competing software. Thus, Hewlett-Packard, Compaq and Dell received more favorable licensing royalty rates for Windows operating systems than did less compliant OEMs such as Gateway and IBM. *Microsoft*, 84 F. Supp. 2d at 27, 42-43, 67-68, Findings Nos. 64, 130, 234-36. This discriminatory treatment of OEMs, among other things, frustrated Netscape Navigator's ability to use the OEM channel of distribution to gain desktop share and usage of Navigator. Barksdale Dir. ¶ 94.

1. Microsoft's Treatment of Gateway

359. Anthony Fama, Group Counsel, Partner Management at Gateway, testified that publication of the Findings of Fact (Findings Nos. 64, 130, 236) confirmed Gateway's perception

that it "paid significantly higher rates for the Windows operating system than 'more compliant' OEMs like Compaq, Dell and Hewlett-Packard." Fama Dir. ¶ 16.

360. Mr. Fama testified that Gateway also learned as a result of the Findings of Fact that Microsoft used MDP compliance determinations as another way to reward certain OEMs when he learned that "Microsoft gave Compaq the full MDA discount without regard to whether it achieved all MDA milestones, even though it held Gateway and other OEMs firmly to those milestones." Fama Dir. ¶ 16. The Findings of Fact also showed that, as a result of Compaq's compliance with Microsoft's efforts to limit distribution of Internet Explorer, Microsoft gave Compaq "[g]uaranteed better pricing." Fama Dir. ¶ 16 (*citing Microsoft*, 84 F. Supp. 2d at 67-68, Finding No. 234).

361. The Findings of Fact also confirmed Gateway's belief that Microsoft used Windows royalty fees to favor certain OEMs that supported Microsoft's applications and middleware products, *Microsoft*, 84 F. Supp. 2d at 26-27, Findings Nos. 62-64, and that Microsoft used economic incentives to coerce the use of Microsoft middleware to the exclusion of non-Microsoft middleware. *Microsoft*, 84 F. Supp. 2d at 68, Finding No. 236; Fama Dir. ¶ 17.

362. After the Findings of Fact became public, Gateway continued to believe that it received less favorable treatment from Microsoft than OEMs who complied with Microsoft's wishes. Mr. Fama testified that during negotiations in late 1999 for the 2000 Windows licensing agreement, "Gateway asked for 'most favored customer' treatment to be certain that the terms we received were as favorable as those received by other OEMs. Microsoft refused. Richard Fade, Microsoft's Senior Vice President for OEM Sales, said Microsoft was disputing many findings in what he characterized as the 'alleged Findings of Fact,' nor would he comment on

Microsoft's terms with the various OEMs." Fama Dir. ¶ 20; *see also* PX 1240 (under seal) (PX 1240A, Redacted) at 5.

2. Microsoft's Treatment of IBM

363. The District Court found that Microsoft punished IBM for IBM's promotion of its own competing software products by restricting IBM's access to the Windows operating system, Microsoft's technical, marketing and sales support, and the ability to self-certify IBM's compliance with Microsoft's hardware certification requirements. *Microsoft*, 84 F. Supp. 2d at 38-43, Findings Nos. 115-32.

364. "IBM is both a hardware and a software company. On the hardware side, IBM manufactures and licenses, among other things, Intel-compatible PCs. On the software side, IBM develops and sells, among other things, Intel-compatible PC operating systems and office productivity applications." *Microsoft*, 84 F. Supp. 2d at 38-39, Finding No. 115. As with almost all other OEMs, IBM relied on Microsoft's Windows to make a profit because few consumers would buy IBM PCs if the PCs did not work with Windows. *Id*. But IBM's software applications division competed directly with Microsoft. *Id.* IBM had in the past marketed the OS/2 operating system as an alternative to Windows. *Id*. It also marketed the SmartSuite bundle of office productivity software applications as an alternative to Microsoft's Office. *Id*. The District Court concluded that Microsoft withheld licensing terms and other consideration from IBM as a result of its competing software offerings, finding that "the fact that IBM's software division markets products that compete directly with Microsoft's most profitable products has frustrated the efforts of the IBM PC Company to maintain a cooperative relationship with the firm that controls the product (Windows) without which the PC Company cannot survive." *Id.*

365. In particular, the District Court found that "Microsoft tried to convince IBM to move its business away from products that themselves competed directly with Windows and

Office. . . . When IBM refused to abate the promotion of those of its own products that competed with Windows and Office, Microsoft punished the IBM PC Company with higher prices, a late license for Windows 95, and the withholding of technical and marketing support." *Microsoft*, 84 F. Supp. 2d at 39, Finding No. 116.

366. In the summer of 1994, the IBM PC Company sought to obtain licensing terms from Microsoft as favorable as those given by Microsoft to Compaq, which seemed to pay the lowest effective royalty rate in the industry for Windows and received unparalleled marketing and technical support from Microsoft. *Microsoft*, 84 F. Supp. 2d at 39, Finding No. 117. In response, Microsoft proposed that IBM enter into a "Frontline Partnership," similar to the one that existed between Microsoft and Compaq. *Id*. Under this partnership, IBM and Microsoft "would perform joint sales, marketing, and development work, and the [IBM] PC Company would receive future Microsoft products at the lowest rates in the industry." *Id*. Microsoft also offered significant reductions in the royalty rate for Windows 95—of between $40 million and $48 million in one year—if IBM agreed to focus its marketing and distribution efforts on Microsoft's new Windows 95 operating system. *Id*., Finding No. 118. IBM rejected Microsoft's offer of a special reduction in the Windows royalty rate, as it would have (as a practical matter) required IBM to abandon its own OS/2 operating system. *Id*., Finding No. 119.

367. The District Court also previously found that in June 1995, IBM acquired the Lotus Development Corporation, including the Lotus groupware product, Lotus Notes, and the Lotus SmartSuite bundle of office productivity applications. *Microsoft*, 84 F. Supp. 2d at 39-40, Finding No. 120. Microsoft had already identified Notes as a middleware threat, because Notes presented users with a common interface, and ISVs with a common set of cross-platform APIs. *Id*. SmartSuite also competed directly with Microsoft Office. *Id*. In mid-July 1995, IBM

announced that it intended to make SmartSuite its primary desktop software offering in the United States. *Id*. In light of IBM's actions, "Microsoft began to retaliate in earnest against the IBM PC Company." *Id*. at 40, Finding No. 121.

368. As the District Court previously found, "just three days after IBM announced its intention to pre-install SmartSuite on its PCs, a Microsoft executive informed his counterpart at the IBM PC Company that Microsoft was terminating further negotiations with IBM for a license to Windows 95." *Microsoft*, 84 F. Supp. 2d at 40, Finding No. 122. Microsoft also refused to release the Windows 95 "golden master" code to IBM's PC Company, which "needed the code for its product planning and development." *Id*. IBM executives knew that Microsoft had released the "golden master" to IBM's OEM competitors on July 17. *Id.*

369. "Microsoft's purported reason for halting the negotiations was that it wanted first to resolve an ongoing audit of IBM's past royalty payments to Microsoft for several different operating systems." *Microsoft*, 84 F. Supp. 2d at 40, Finding No. 122. IBM understood that it might not get a license for Windows 95 until the audit process concluded. *Id*., Finding No. 123. IBM surmised that all of its major competitors had already signed licenses for Windows 95 and that the IBM PC Company would lose a great deal of business to those competitors during the crucial back-to-school season. *Id.*

370. IBM accordingly offered Microsoft a $10 million bond that Microsoft could use as indemnity against any discrepancies that the audit might ultimately reveal. *Microsoft*, 84 F. Supp. 2d at 40, Finding No. 123. In August 1995, Joachim Kempin, the Microsoft executive in charge of the firm's sales to OEMs, offered to accept a single, lump-sum $25 million payment from IBM that would close all outstanding audits. *Id*. at 40-41, Finding No. 124. Kempin's letter stated, "If you believe that the amount I am asking for is too much, I would be willing to

trade certain relationship improving measures for the settlement charges and/or convert some of the amounts into marketing funds if IBM too agrees to promote Microsoft's software products together with their hardware offerings." *Id*. at 41. The message was clear: IBM could resolve the royalty audit that was blocking its ability to obtain a Windows 95 license by promoting Microsoft's products and de-emphasizing its own products that competed with Microsoft. *Id*.

371. When IBM did not agree, "Microsoft did not grant IBM a license to pre-install Windows 95 until fifteen minutes before the start of Microsoft's official launch event on August 24, 1995." *Microsoft*, 84 F. Supp. 2d at 41, Finding No. 125. IBM's OEM competitors reaped the fruits of the surge in sales of Windows 95, "but because of the delay in obtaining a license, the IBM PC Company did not. The PC Company also missed the back-to-school market. These lost opportunities cost IBM substantial revenue." *Id*. Subsequently, Microsoft continued to treat the IBM PC Company less favorably than it did the other major OEMs, and Microsoft executives continued to tell PC Company executives that the treatment would improve only if IBM refrained from competing with Microsoft's software offerings. *Id.* at 41-42, Findings Nos. 126-27.

372. The District Court further found that Microsoft denied IBM access to the "'enabling programs' that Microsoft ran for the benefit of OEMs such as Compaq, Hewlett-Packard, and DEC, even though IBM met the prescribed objective criteria for admission. . . . IBM learned through surveys it conducted that the firm had lost between seven and ten large accounts, representing about $180 million in revenue for IBM, because the tension between Microsoft and IBM led customers to doubt that Windows would work as well with IBM PCs as with PCs produced by firms with which Microsoft was on cordial terms." *Microsoft*, 84 F. Supp. 2d at 42, Finding No. 128.

373. Microsoft persisted in its attempts to convince IBM to de-emphasize the IBM software that competed with Microsoft's products. In March 1997, for example, Microsoft "conditioned fulfillment of two objects of IBM's desires on the company's willingness to pre-install Microsoft's products in the place of competing applications, such as SmartSuite, and objectionable middleware, such as Notes." *Microsoft*, 84 F. Supp. 2d at 42, Finding No. 129. Microsoft offered IBM early access to Windows source code (already enjoyed by Compaq and a handful of other OEMs). *Id*. Such early access would help IBM "ensure its hardware's contemporaneous compatibility with Microsoft's operating system products." *Id*. Microsoft also offered IBM permission to certify itself as being compliant with certain hardware requirements that Microsoft imposed. *Id*. The Microsoft certification was something that customers had come to look for as a sign of an OEM's ability to support Windows. Self-certification would decrease "the time it took IBM PCs to reach the market, and IBM knew that the privilege was already being extended to some of its main OEM competitors." *Id*. Both benefits were extended to IBM "on the condition that it stop loading its PC systems with software that threatened Microsoft's interests." *Id.*

374. "The discriminatory treatment that the IBM PC Company received from Microsoft on account of the 'software directions' of its parent company also manifested itself in the royalty price that IBM paid for Windows. In the latter half of the 1990s, IBM (along with Gateway) paid significantly more for Windows than other major OEMs (like Compaq, Dell, and Hewlett-Packard) that were more compliant with Microsoft's wishes." *Microsoft*, 84 F. Supp. 2d at 42-43, Finding No. 130.

375. Additionally, Microsoft reduced the number of its OEM account managers handling its operational relationship with IBM from three to one. *Microsoft*, 84 F. Supp. 2d at

43, Finding No. 131. This reduced support further impaired "IBM's ability to test, manufacture, and ship its PCs on schedule, further delaying IBM's efforts to bring its PC products to market against the competition in a timely manner." *Id.*

376. Based on these dealings, as well as Microsoft's dealings with other third parties such as Netscape, RealNetworks, Intel and Apple, the District Court concluded that Microsoft actively employed a "business strategy of directing its monopoly power toward inducing other companies to abandon projects that threaten Microsoft and toward punishing those companies that resist." *Microsoft*, 84 F. Supp. 2d at 43, Finding No. 132.

377. These factual findings demonstrate Microsoft's willingness and ability to use Windows licensing agreement terms, access to Microsoft product support and technical information, marketing support and other monetary and non-monetary consideration, to coerce and induce OEMs to follow Microsoft's strategy of limiting the distribution of rival software products.

B. How States' Remedies 2.a and 2.b Achieve Their Intended Purpose

378. According to the terms of States' Remedy 2.a, Microsoft must offer uniform licensing terms and conditions, modified only by a reasonable volume-based discount schedule for licensing rates, to Covered OEMs and Third-Party Licensees. States' Remedy 2.b requires Microsoft to provide to Covered OEMs, as well as Third-Party Licensees who intend to sell Windows licenses, equal access to: licensing terms; discounts; technical, marketing and sales support; support calls; product information; technical information; information about future plans, developer tools or developer support; hardware certification; and permission to display trademarks or logos. Remedy 2.b does not apply to confidential information provided by Microsoft solely in connection with a bona fide joint development effort between Microsoft and a Covered OEM.

379. Both the States and Microsoft have proposed remedies that include a provision requiring, in differing degrees, that OEM licensing agreements be uniform: States' Remedy 2.a and Microsoft's Remedy III.B. Microsoft, however, offers no remedy proposal that mandates equal access to various licensing terms and other technical and non-technical support, as provided for in States' Remedy 2.b. For the reasons set forth below, States' Remedies 2.a and 2.b better address the potential for Microsoft to continue to engage in coercive tactics to thwart the distribution of non-Microsoft software, and thereby prevent the chance that the applications barrier to entry will be eroded.

1. Microsoft's Windows Licensing Practices

380. Microsoft licenses the Windows operating system and bundled software to OEMs through a group of interrelated agreements. As Mr. Fama of Gateway testified, these agreements resemble a hub and spokes arrangement, with the Business Terms Document agreement ("BTD") operating as the hub for various other related license agreements. Fama Dir. ¶ 98. The BTD, which previously had a three-year term, contains the standard legal terms that apply to various other license agreements that incorporate the BTD by reference. Fama Dir. ¶ 8; PX 1188 (under seal); PX 1207 (under seal); PX 54 (under seal).

381. One of the important related agreements that incorporates the BTD by reference is the Windows Desktop Operating System Agreement ("DTOS"), which previously had a one-year term. Fama Dir. ¶ 9; PX 1513 (under seal); PX 1164 (under seal); DX 141 (under seal).

382. Microsoft also offers OEMs the opportunity to receive potentially lucrative annual discounts on its Windows royalty through entering into Market Development Agreements ("MDAs"), now called Marketing Development Programs ("MDPs"). Fama Dir. ¶¶ 10-11; PX 56 (under seal). Under these annual agreements, Microsoft provided OEMs the opportunity to earn discounts off the royalty specified in the Windows licensing agreement in return for the

OEMs' compliance with certain other restrictions. *Id*. Because the discounts Microsoft has made available through MDAs/MDPs are substantial, participation, as a practical matter, is not optional. *Id*. Not receiving these discounts would put an OEM at a substantial competitive disadvantage vis-à-vis other competing OEMs who had participated. *Id*.

383. Other OEM agreements related to Windows licenses include the Windows Logo License Agreement (LLA), and various software application license agreements, including license agreements for Microsoft Office. Fama Dir. ¶ 12. Microsoft also provides OEMs with the OEM Preinstallation Kit (OPK), which is generally issued with each new version or upgrade of Windows, and thereafter supplemented frequently. *Id*. ¶ 13. Microsoft often includes additional licensing terms and conditions with these OPK supplements. *Id*. Microsoft's various licensing agreements in numerous instances reference or incorporate the terms of one another, and changes in one agreement frequently result in changes in other agreements. *Id*.

2. Uniform Terms and Conditions

384. States' Remedies 2.a and 2.b seek to ensure that Microsoft will not frustrate the ability of OEMs to license, distribute, and promote non-Microsoft software by providing for mandatory uniform licensing terms for Covered OEMs and Third-Party Licensees requiring Microsoft to establish uniform terms and conditions as part of the Windows operating system license agreement, with an exception only for reasonable uniform discounts based on volume. In particular, Remedy 2.a prohibits Microsoft from offering financial or non-financial incentives as part of MDPs or MDAs, and otherwise prohibits Microsoft from providing or withholding terms and conditions based on factors aside from volume of sales. Remedy 2.a also prevents Microsoft from improperly using the threat of termination of its valuable Windows licensing agreement to discipline OEMs, by providing for termination only for good cause and after written notice and a 60-day opportunity for the OEM to cure the alleged breach.

385. In the past, Microsoft has been able to "'reward' OEMs that comply with its wishes by giving those OEMs favorable pricing and other terms, and by enforcing its contract terms more liberally with those OEMs, while providing less favorable pricing and strictly enforcing its contracts with other, 'less compliant' OEMs. . . . An effective remedy must both prohibit such conduct and provide effective deterrence to such conduct in the future." Fama Dir. ¶ 22.

386. States' Remedy 2.a nonetheless does not require that Microsoft offer to every OEM the exact same royalty fee for the Windows Operating System license. Remedy 2.a.ii allows for "reasonable, uniform volume discounts to be offered on a non-discriminatory basis." Thus, Microsoft can offer a lower royalty rate to large-volume purchasers of Windows Operating System licenses compared to lower-volume purchasers. Ashkin Dir. ¶ 130.

387. Remedy 2.a.ii, however, does require that volume discounts be reasonable, uniformly available, and offered on a non-discriminatory basis to any OEM or Third-Party Licensee that meets a volume discount level, thus preventing Microsoft from setting the discount schedule in such a way as to favor OEMs who comply with Microsoft's wishes, but disadvantage those who do not. Ashkin Dir. ¶ 131.

388. Uniform licensing terms for OEMs based upon volume of PC sales and consistent, non-discriminatory enforcement of those terms would give OEMs and Third-Party Licensees more freedom and incentive to configure PCs with rival, non-Microsoft middleware products and to innovate more broadly in the design of the PC. *See* Fama Dir. ¶ 26.

389. By eliminating any opportunity for Microsoft to set a particular OEM's royalty or make available certain license terms as a way of inducing that OEM to decline to promote non-

Microsoft software, States' Remedies 2.a and 2.b ensure that OEMs can make their own independent choices.

390. Gateway, for example, has long sought the flexibility to configure hardware and software products to meet customers' preferences, but at times this goal has been in tension with Microsoft's interest in limiting the distribution of certain non-Microsoft products and applications. Fama Dir. ¶¶ 24-25.

3. States' Remedies 2.a and 2.b Prohibit MDAs, MDPs and Other Special Discounts

391. States' Remedies 2.a and 2.b also prevent Microsoft from accomplishing indirectly, by offering marketing development funds or discounts to Covered OEMs and Third-Party Licensees, that which it will not be able to attain directly—namely discrimination against and coercion of OEMs and Third-Party Licensees. "Because money is fungible, . . .mandating uniform licensing terms and prices does absolutely no good if Microsoft remains free to bestow upon or withhold from certain OEMs other forms of consideration depending upon whether they behave as Microsoft would like . . . ." Tiemann Dir. ¶ 81.

392. One of Microsoft's important tools for controlling OEMs through economic incentives has been the Market Development Program or MDP (formerly called the Market Development Agreement or MDA). Ashkin Dir. ¶¶ 109, 112, 114-16; Fama Dir. ¶¶ 116-17. Through the MDP, Microsoft has provided financial rebates or discounts to OEMs for reaching "milestones" or prerequisites established solely by Microsoft. Fama Dir. ¶¶ 116-17. Determining an OEM's compliance with the MDP also is in Microsoft's sole discretion, as is the "penalty" or amount of the discount the OEM would lose for less than full compliance with any MDP milestone. *Id*.

393. The MDP and MDA milestones have varied from year to year, but generally have included restrictions or proscriptions that do not appear to be related to the marketing of Windows products. Ashkin Dir. ¶ 109. For example, the milestones have included restrictions or proscriptions on such things as the time a computer takes to "power-on" or "boot up," the amount of system memory (RAM) or resources available when the computer first ships, and other product configuration restrictions. Fama Dir. ¶ 118.

394. The term "market development agreement" is a misnomer because MDAs or MDPs often have little to do with "marketing" and much more to do with controlling the configuration of OEM-manufactured PCs. Ashkin Dir. ¶ 119. For example, milestone 1 of the 2000 MDP provided a sizeable **[REDACTED]** discount for OEMs that carried the Windows logo. *Id*. To obtain that logo, an OEM had to receive certification from Microsoft's Windows Hardware Quality Labs (WHQL). *Id*. To obtain WHQL certification, an OEM must subject itself to a meticulous checklist of technical requirements established by Microsoft. *Id*. The WHQL checklist contained both hardware and software configuration requirements that established a uniform design blueprint for PCs. *Id.* Therefore, to obtain this necessary **[REDACTED]** discount per license, OEMs had to allow Microsoft to essentially dictate the design of their PCs. Ashkin Dir. ¶ 119.

395. Other milestones were tailored to keep competitive middleware off of Windows PCs. Milestone 2 of Gateway's 2000 MDP required that the PC complete the initial boot-up sequence within 10 seconds. Ashkin Dir. ¶ 120; PX 1168 (under seal). Microsoft's boot-up sequence already took almost the entire 10 seconds. Ashkin Dir. ¶ 120. Thus, by requiring boot-up within ten seconds, Microsoft was essentially prohibiting OEMs from promoting or

advertising competing software applications, including middleware and Web services, during the boot-up sequence. *Id*.

396. Similarly, the milestone that required that PCs power-up within 10 seconds restricted OEMs from launching their own software automatically as part of the initial boot sequence. Ashkin Dir. ¶ 121; PX 1168 (under seal). Launching competitive products would have extended the time for power-up beyond the required 10 seconds established by the milestone. Ashkin Dir. ¶ 121.

397. Microsoft's requirement of 85% free system memory also effectively stopped OEMs from pre-installing and/or launching non-Microsoft software applications and middleware. Ashkin Dir. ¶ 122; PX 1168 (under seal). Because Windows consumes close to 15% of the system's memory, any significant application installed by an OEM would bring the machine beyond the 85% benchmark. Ashkin Dir. ¶ 122. If the OEM installed such a program, it would be denied the discount associated with that milestone. *Id*.; PX 1168 (under seal).

398. Mr. Fama testified that through the use of MDPs or MDAs, "Microsoft has the discretion to set each milestone and prerequisite, determine the dollar value associated with each one, and determine whether Gateway has complied with the milestones and the prerequisites. If Microsoft determines that Gateway has not achieved full compliance with a particular milestone, Microsoft also has the ultimate discretion to determine what percent, if any, of the possible discount to allocate to Gateway for that milestone. It is this level of discretion that gives Microsoft the power to use market development allowances in an arbitrary and discriminatory manner." Fama Dir. ¶ 125; *see also* Tr. 1308:21-1313:14 (Fama).

399. Mr. Fama further testified that Gateway received no advance information or objective criteria according to which its performance with the MDP would be measured. In

particular, Mr. Fama testified that "in a letter dated December 27, 2001, Mark Gunter, an OEM Account Manager at Microsoft, informed Gateway that Microsoft had determined that Gateway earned a fraction of the total discount available under the 2001 MDP. Neither Mr. Gunter's letter nor any prior correspondence I have seen from Microsoft indicates the basis for Microsoft's calculation of the specific deductions it has imposed. In fact, it is difficult, if not impossible, to discern any 'objective, verifiable' basis for Microsoft's application and enforcement of the 2001 MDP document against Gateway. As such, Microsoft's final determination appears completely arbitrary." Fama Dir. ¶¶ 126-127; PX 1190 (under seal).

400. Microsoft refers to the MDP as a voluntary program in which an OEM can choose to participate. Ashkin Dir. ¶ 114; Fama Dir. ¶ 121. However, compliance with Microsoft's MDP has been worth a substantial discount off the Windows royalty rate. The 2000 MDP, for example, contained six specific milestones that Gateway could meet to obtain a discount of up to **[REDACTED]** per Windows license. Ashkin Dir. ¶ 117. No OEM can ignore such a substantial discount, especially if its competitors are earning the discounts. *Id*. ¶ 118. To put the MDP discount in perspective, Gateway shipped approximately five million products with Windows licenses in the year 2000, and so compliance with the MDP milestones were worth somewhere around **[REDACTED]** million to Gateway. *Id*. ¶ 117. Because of the large financial discounts at stake, the MDP is more a necessity for OEMs than it is a voluntary program. *Id*. ¶ 114; Fama Dir. ¶¶ 121-23.

401. The ability to define and to allocate these discounts as it sees fit gives Microsoft substantial control over OEMs. Fama Dir. ¶ 124; Ashkin Dir. ¶ 123. Allowing Microsoft to continue to use MDPs would enable Microsoft to continue to discriminate among the OEMs, as the Findings of Fact established it has done in the past. "Microsoft could continue to reward

OEMs that comply with its wishes and penalize those that do not. Microsoft has the power to determine compliance with the MDP milestones and withhold some or all of the available discounts in an apparently arbitrary manner." Fama Dir. ¶ 130.

402. It is not sufficient to allow Microsoft to continue to offer MDPs but suggest that Microsoft cannot use them for anti-competitive ends, or must offer them "equally." Fama Dir. ¶¶ 124-25. Microsoft can always concoct some allegedly neutral reason for denying to a disfavored OEM the necessary financial rewards offered by these types of programs. *Id*. Moreover, even facially "neutral" milestones, as explained above, can have the practical effect of significantly deterring the use of competing middleware.

403. Microsoft's ability to provide marketing allowances to those OEMs who promote Microsoft middleware, while at the same time denying financial payments to those OEMs who market competing software, was advocated recently in connection with the promotion of Windows Media Player as part of the marketing of Windows XP by James Allchin and Will Poole, two of the most senior executives at Microsoft. *See* Tr. 6214:23-6218:9 (Poole) (Mr. Poole concedes that he advocated taking away marketing monies from those OEMs who promoted competing multimedia software); PX 1012 ("It's already agreed that we have a problem of OEMs taking our money and then pulling parts of XP out so as to sign deals with other vendors like Music Match. We have agreed that for H2 money, a key criteria will be shipping WM player.").

404. Continuing to allow MDPs will enable Microsoft to continue to stifle the distribution and promotion of non-Microsoft software and undermine the potential competition that competing middleware products can bring to the PC market. Ashkin Dir. ¶ 126. To be effective, the remedy in this case must enable OEMs to use and support non-Microsoft

middleware and other applications and features without fear that it will be financially penalized for doing so. *Id*. ¶ 127.

4. States' Remedy 2.a Prevents Discriminatory Enforcement of Any Licensing Agreement.

405. Remedy 2.a also requires *enforcement* of Windows license agreements to be done in a non-discriminatory fashion. Non-discriminatory enforcement is critical because discrimination in enforcement has the same effect as discrimination with respect to licensing terms.

406. Moreover, the record in this case suggests that discriminatory enforcement of licensing provisions has occurred. Gateway periodically performed cost analyses in an attempt to estimate the net price for Windows paid by Gateway's competitors. Ashkin Dir. ¶ 110. Without fail, Gateway's calculations suggested that Gateway paid a higher price for Windows than "favored" OEMs. *Id*.

407. Moreover, Peter Ashkin testified that in his experience, Microsoft often referred to OEMs that were "good partners" and those that were not. Ashkin Dir. ¶ 111. A "good partner" is an OEM that "toes the Microsoft line" by, for example, shipping Microsoft products and middleware in the way dictated by Microsoft, or by avoiding business with Microsoft's competitors. *Id*. When Gateway shipped an Internet appliance using AOL and Linux software, Microsoft told Mr. Ashkin that Gateway was not acting like a "good partner." *Id*. Gateway knew that "good partners" were offered important benefits, including a more favorable "effective" price for Windows—*i.e.*, a price that is a composite of the actual price of Windows, less marketing allowances and other discounts that help offset the licensee fee. *Id*.

5. States' Remedy 2.a Prohibits Termination Without Good Cause and Requires an Opportunity to Cure

408. Given the complexity of the various license agreements relating to Windows, and the interlocking nature of these agreements, it would not be unusual for an OEM to be in technical breach of its Windows license agreement. States' Remedy 2.a addresses the scenario where Microsoft uses a technical breach as a pretext to punish or coerce an OEM or Third-Party Licensee who is distributing or promoting competing software, by providing that Microsoft cannot terminate any OEM's or Third Party's license without "good cause" and without an opportunity to cure. These safeguards are nowhere found in Microsoft's Remedy.

409. In particular, States' Remedy 2.a requires that Microsoft give OEMs 60 days after written notice to cure any alleged breach before Microsoft can terminate a Windows license agreement. Fama Dir. ¶¶ 140-41. This written notice and cure period is important to OEMs like Gateway, which has previously received as many as four notices of default under its Microsoft Office licensing agreement in one day. *Id*. ¶ 53; PX 1243-1247 (under seal); Tr. 1260:14-18; 1261:19-1262:3 (Fama).

410. In contrast, III.A of Microsoft's Remedy would expressly permit Microsoft to terminate an OEM's Windows license after written notice and thirty days' opportunity to cure. And, more importantly, III.A provides that "Microsoft shall have no obligation to provide such a termination notice and opportunity to cure to any Covered OEM that has received two or more such notices during the term of its Windows Operating System Product license." There is no requirement that Microsoft have good cause for issuing the two prior breach notices, or that the breaches even be material. Fama Dir. ¶ 50. Nor is there any provision for a cure period after the second notice. *Id*. Although Microsoft never had this "two strikes" provision in its prior agreements with Gateway, it has been incorporated in Section 11(a)(ii) of the new Uniform

Business Terms Document (BTD) distributed by Microsoft pursuant to the Consent Decree. *Id.* ¶ 49; PX 54 (under seal); DX 392 (under seal).

6. Remedy 2.b Ensures Equal Access to Necessary Terms, Discounts, Technical Information and Product Support

411. States' Remedy 2.b "prevents Microsoft from discriminating among OEMs or Third-Party Licensees when it is sharing technical support, information, and future plans with these entities—without requiring the OEMs or Third Parties to prove that the basis for withholding that information is discriminatory." Ashkin Dir. ¶ 139. States' Remedy 2.b also "prevents Microsoft from using access to such items as source code, support, beta releases, and technical information as an inducement to support Microsoft's technologies, because the Remedy requires such items to be made available uniformly." Barksdale Dir. ¶ 118. As such, Remedy 2.b will help prevent Microsoft from rewarding or punishing OEMs based on whether they use, support or distribute rival middleware." Shapiro Dir. ¶ 158.

412. Remedy 2.b does *not* require Microsoft to disclose its proprietary information to third parties. Rather, the remedy requires that if Microsoft is going to share some information with certain third parties, it must share such information with all, equally. "Making this information available to both OEMs and Third-Party Licensees is essential to making any disclosure provision effective. If Microsoft can withhold critical information from Third-Party Licensees that it is sharing with OEMs, then those Licensees will find themselves at a severe disadvantage in bringing their products to market." Ashkin Dir. ¶ 140.

413. States' Remedy 2.b also does not require that Microsoft expend the same resources for every customer who licenses 10,000 units of Windows per year. Shapiro Dir. ¶ 160. Rather, the provision requires merely that Microsoft provide "equal *quality* of support." *Id.*

414. In addition, Remedy 2.b provides that Microsoft "need not provide equal access to technical information and information about future plans for any bona fide joint development effort between Microsoft and a Covered OEM with respect to confidential matters solely within the scope of that joint effort." This exception "allows Microsoft to protect specific technical and business information as part of a joint development effort between Microsoft and a Covered OEM." Shapiro Dir. ¶ 158.

C. Microsoft's Remedy Fails to Remove Microsoft's Control over OEMs

415. The "uniform terms" provision in III.B of Microsoft's Remedy does not prevent Microsoft from providing financial and non-financial incentives to OEMs in return for providing favorable distribution or promotion of Microsoft software, including Microsoft middleware. The requirement that Microsoft not only offer uniform terms but also refrain from rewarding or punishing OEMs based on whether they provide preferential treatment for Microsoft software is important to achieving the goal of providing OEMs with the freedom to distribute and promote rival middleware. Tr. 1319:24-1321:15 (Fama).

416. Microsoft's Remedy fails to address the many means that Microsoft has at its disposal to induce or coerce OEMs to favor Microsoft's software over rivals' software. In particular, the safeguards provided by the "equal access" requirements found in States' Remedy 2.b are nowhere addressed in Microsoft's Remedy.

1. MDPs Allow Microsoft to Favor Certain OEMs

417. One of the primary flaws with Microsoft's Remedy is that III.B.3 expressly allows Microsoft to continue using "market development allowances, programs or other discounts" without meaningful limitations to prohibit Microsoft from using them to undermine rival software manufacturers from successfully distributing and promoting their products. As described above, the Findings of Fact established that Microsoft has used MDAs/MDPs in a

discriminatory manner to coerce OEMs to adhere to Microsoft's wishes. Although III.B of Microsoft's Proposed Remedy would require that any MDA/MDP be "offered and available" to all Covered OEMs and be "based on objective, verifiable criteria that [are] applied and enforced on a uniform basis," MDAs/MDPs still can used by Microsoft to effectively dole out discounts to OEMs in a manner that favors those that comply with Microsoft's wishes and disadvantages those who do not. Fama Dir. ¶ 115; Ashkin Dir. ¶¶ 113-27; Borthwick Dir. ¶ 40; Barksdale Dir. ¶¶ 97-100.

418. First, Microsoft can offer unlimited MDAs/MDPs—which are de facto discounts off the Windows royalty rates—to OEMs in return for OEMs taking actions that will significantly limit the ability of competing ISVs to distribute and promote their software products. For example, Microsoft could offer to pay MDAs/MDPs depending on the volume of PCs sold that did not have end-user access to Microsoft Middleware disabled. Similarly, Microsoft could pay MDAs/MDPs based on the number of PCs shipped with Microsoft Middleware not set as the default middleware.

419. Allowing effective discounts off the Windows royalty so long as they are not purportedly tied to some anticompetitive end is also ineffective. Ashkin Dir. ¶ 124. Microsoft can always create some possible rationale why one OEM can participate in a marketing program and another OEM cannot, and thereby mask the true anticompetitive intent. Indeed, Gateway had such experiences, where some of the reasons given to Gateway for denial of certain discounts were doubtlessly "shams" to punish Gateway. Ashkin Dir. ¶ 125. Microsoft's favoring one OEM over another can almost always be justified by some plausibly "neutral" rationale, and will substantially vitiate the effectiveness of the remedy. *Id.*

420. MDPs also allow Microsoft to reward OEMs for taking actions that Microsoft could not otherwise require under either the States' or Microsoft's Remedy. For example, although Microsoft could no longer condition a Windows license on an OEM including icons for Microsoft products on the PC desktop, it can, through the MDP, reward those OEMs that do. Given the tight margins on PCs, such rewards can become requirements. Ashkin Dir. ¶ 127.

421. Microsoft's ability to offer significant discounts or marketing development allowances can effectively coerce OEMs into carrying only Microsoft software products. As James Barksdale, the former Chief Executive Officer of Netscape testified, "[m]y experience with Netscape taught me that most OEMs will refuse to support more than one middleware product that performs the same function, because that drives support costs up too much, a prospect OEMs can ill afford. This means that Microsoft's ability to force OEMs to carry, support, and promote Microsoft middleware also allows it effectively to prevent rival middleware from being distributed through the OEM channel." Barksdale Dir. ¶¶ 99-100.

2. Microsoft Has Used the "Uniform Terms" Provision of the Consent Decree to Impose More Onerous Terms on OEMs

422. Gateway and other OEMs received a letter dated December 12, 2001 from Richard Fade, Senior Vice President for OEM Sales and Marketing at Microsoft, notifying OEMs of the Consent Decree, announced on November 6, 2001 between Microsoft, the Department of Justice and nine States, and advising OEMs that there would be changes to OEM licensing agreements that would be "required" by December 16, 2001. PX 543; Fama Dir. ¶ 27.

423. Mr. Fade wrote that Microsoft was "obligated" by the Consent Decree to effectuate the changes by December 16, 2001 and that Microsoft's "new terms" would be effective for the "top 20 OEMs" for all new desktop operating system license agreements "written after" December 16, 2001. Fama Dir. ¶ 28; PX 543. Mr. Fade noted that Microsoft

would create interim license agreements "between now and July 31, 2002" to synchronize with the Microsoft fiscal year. *Id*. The uniform terms would be posted on Microsoft's OEM Online (MOO) website by December 16, 2001. *Id*. The new Market Development Program (MDP) would be made available at the same time to all OEMs whose sales exceed 25,000 Windows desktop units annually. Fama Dir. ¶ 29; PX 543.

424. On December 17, 2001, Gateway was told by its account representative at Microsoft, Lisa Georgi, that the new Uniform Terms Documents had been posted on the MOO website. Fama Dir. ¶¶ 31-32; PX 1224.

425. Gateway was informed that because its DTOS agreement would expire on January 31, 2002, Gateway would need to sign a new Uniform DTOS agreement prior to that time in order to not experience any delivery interruptions. Fama Dir. ¶ 33; PX 1224. Gateway was also advised that if it wanted to participate in the 2002 MDP, Gateway would need to sign a new Logo License Agreement (LLA) and a new Non-Disclosure Agreement (NDA). *Id*. Although Gateway's DTOS agreement was due to expire on January 31, 2002, its NDA, BTD and Logo License Agreements were not. Fama Dir. ¶ 34. In fact, the BTD would not have expired until October 31, 2003; the Logo License would not have expired until May 2003; and the NDA had an "evergreen" clause. *Id*.; PX 1697.

426. Mr. Fama testified that it is not clear that all OEMs were being made subject to the new Uniform Term Documents as of December 16, 2001, but rather that OEMs are being subjected to these agreements on a rolling basis as their DTOS agreements with Microsoft expire. As Mr. Fama noted, this seems inconsistent with the concept of uniform terms. Fama Dir. ¶ 44; Tr. 1193:1–1194:4, 1263:23-1264:9, 1289:13-23, 1299:7-18 (Fama).

427. Microsoft has used the Consent Decree to increase its leverage over Gateway. Fama Dir. ¶¶ 46-114. Mr. Fama testified that from his perspective, "it appears that Microsoft has used the Consent Decree to force Gateway into agreements containing terms that dramatically deviate from industry standards or what one would expect to find in agreements negotiated at arms-length. The Uniform Term Documents, in fact, worsen terms that Gateway found objectionable in our previous agreements. Microsoft has also changed other provisions that were reciprocal in [its] previous agreements and made them one-sided terms that benefit only Microsoft." Fama Dir. ¶ 47; Tr. 1305:15-1306:11 (Fama).

428. One of the more onerous terms of the new Uniform BTD, compared with similar provisions of Gateway's BTD that otherwise would be in effect until October 31, 2003, is the "two strikes" provision. Fama Dir. ¶¶ 49-57. As expressly allowed under III.A of Microsoft's Remedy, the new BTD provides that Microsoft may terminate an OEM's license agreement for Microsoft products without notice if the OEM had previously received two default notices under such license agreement. *Id*. ¶¶ 49-50; PX 54 (under seal); DX 392 (under seal). Because Microsoft licenses its software products through a web of interlocking agreements and other documents, and because of the numerous requirements set forth in these interlocking documents, it would not be surprising if an OEM often was not in compliance with one ministerial requirement or another. Fama Dir. ¶ 51. Once two such ministerial breaches occur, however, Microsoft's Remedy does not require an opportunity for the OEM to cure future alleged breaches. *Id*. ¶ 50.

429. In the new uniform BTD, Microsoft also changed the covenant not to sue or non-assertion of patent provisions ("NAP") of the previous BTD and made that provision much less favorable to Gateway. Fama Dir. ¶ 58; PX 54 (Section 8(d)) (under seal). This provision

significantly restricts Gateway's ability to assert claims or bring actions against Microsoft for infringement of Gateway's patents. Fama Dir. ¶¶ 63-66; PX 1207 (under seal); PX 1188 (under seal); Tr. 1249:11-20; 1252:3-1255:13 (Fama). This provision undermines the value of Gateway's intellectual property rights by effectively granting Microsoft and its customers a royalty-free license to develop and market products that use Gateway's patented technology without reasonable compensation to Gateway. Fama Dir. ¶¶ 58-61; PX 54 (under seal); DX 392 (under seal). Gateway's 2000 BTD specifically provided that the NAP provision did not apply if Microsoft developed and marketed a "general purpose personal computer," thus becoming a competitor of Gateway. Fama Dir. ¶ 63; PX 1207 (Section 8(d)(vi)) (under seal). Microsoft announced on February 15, 2002 a change to the NAP provision of the uniform BTD "in response to feedback from various OEM customers." Fama Dir. ¶¶ 110-11; PX 1209 (Provision 8(d)).

430. Microsoft made other changes to the Uniform BTD that are adverse to OEMs compared with previous versions, including Section 7, which limits Microsoft's obligation to defend OEMs against an intellectual property (IP) infringement suit arising from a Microsoft product; Section 8(c), which establishes an exclusion of "consequential, incidental, indirect, lost profits, and punitive damages," that now applies only to Microsoft but previously applied to both parties; Section 8(a)(ii), a new provision that reduces Microsoft's exposure to liability for IP infringement claims by setting a cap at the amount an OEM such as Gateway has paid for the infringing Microsoft's product, meaning that OEMs may face greater exposure to a third party for an IP infringement of a Microsoft product that Microsoft does; and Section 11(a), now a one-sided provision that gives the express right to terminate the contract for an uncured, material

breach by the other party only to Microsoft. Fama Dir. ¶¶ 67-77; PX 54 (under seal); DX 392 (under seal); PX 1207 (under seal); PX 1188 (under seal).

431. Section 2(h) of the Uniform BTD contains what has been referred to in previous negotiations as a "gun-jumping" provision that prohibits OEMs from advertising or distributing new releases of Microsoft products until the "official OEM ship date" communicated to Gateway by Microsoft, but omits the previous provision that Gateway would not be precluded from distributing a Microsoft product as early as any other OEM. Fama Dir. ¶¶ 88-91; PX 54 (under seal); DX 392 (under seal). Thus, it ironically eliminates uniformity and allows Microsoft to provide different ship dates to different OEMs. Fama Dir. ¶92.

432. As Mr. Fama testified, Microsoft also made changes in the Uniform MDP that accrue to Microsoft's sole benefit. Under Section 3(d) of the Uniform MDP, every computer that OEMs ship must have a Windows operating system or a license for an operating system. Fama Dir. ¶ 96; PX 56 (under seal). Thus, OEMs like Gateway cannot sell a computer without an operating system or at least a license for an operating system, even if the customer has software from another source, *e.g.*, Linux, or has a separate license for operating system software. Fama Dir. ¶ 97. Section 3(d) is one of several prerequisites for eligibility under the MDP, meaning that an OEM must comply with this provision to be eligible to receive any market development funds under the Uniform MDP. *Id*. ¶ 98. Thus, although there is no particular dollar value attached to Section 3(d), the entire **[REDACTED]** per unit discount that an OEM may achieve under the Uniform MDP hinges upon its compliance with Section 3(d), as well as the other prerequisites identified in Section 3 of the Uniform MDP. *Id*. Because the **[REDACTED]** discount under the MDP would apply to every PC that the OEM distributes during 2003, compliance with Section 3(d) is not commercially "optional." *Id*. ¶ 100.

3. Uniform Windows Royalty Rates and Volume Discounts

433. Under the new Uniform DTOS, Microsoft set royalty fees for its Windows desktop operating system license in four volume-based tiers. Fama Dir. ¶¶ 105-06. The uniform rates were published to Gateway, and presumably to all other OEMs, through a "Microsoft OEM Price List for Covered OEMs" (Uniform Price List). *Id.*; PX 543A (under seal); PX 543B (redacted).

434. The practical effect of Microsoft's new volume tiers is that none of the Covered OEMs qualifies for any volume-based discount until the OEM distributes 6 million copies of Windows. Fama Dir. ¶ 107. This means that only two or three of the 20 Covered OEMs would qualify for any volume-based discount: Dell, Compaq, and Hewlett-Packard (assuming a merger with Compaq). *Id.* ¶ 108. These OEMs also are the "more compliant" OEMs identified by Judge Jackson that paid substantially lower royalty fees than Gateway and IBM. *Id.* ¶ 109; Tr. 1268:9-1271:19 (Fama); *Microsoft*, 84 F. Supp. 2d at 27, Finding No. 64.

4. Microsoft's Remedy III.A Would Enable Microsoft to Favor Certain OEMs

435. Microsoft's Remedy III.A would allow Microsoft to provide consideration to any OEM where the level of consideration is commensurate with the OEM's development, distribution, promotion or licensing of a Microsoft product or service. Thus, Microsoft could provide valuable consideration to OEMs that support Microsoft products at the expense of competing products, including non-Microsoft middleware products. Because this provision is so vague and difficult to enforce, it could effectively permit Microsoft to retaliate against "disfavored" OEMs. Tr. 1264:13-1267:18, 1327:6-1328:22 (Fama).

436. The anti-retaliation provision in III.A of Microsoft's Remedy can be largely circumvented through this exception. Tr. 1264:13-1267:18 (Fama); Barksdale Dir. ¶¶ 96, 98-100.

437. As demonstrated during the course of the liability phase and as set forth in the Findings of Fact, Microsoft has the ability and the incentive to treat OEMs differently based on their relative support of Microsoft's products and rivals' products. The District Court found that Gateway was one of the OEMs subjected to less favorable treatment by Microsoft in terms of royalty rates for Windows licenses. *Microsoft*, 84 F. Supp. 2d at 27, 42-43, 67-68, Findings Nos. 64, 130, 234-236. According to the testimony of Mr. Fama, it appears that Microsoft is continuing its less favorable treatment of certain OEMs, including Gateway.

5. Microsoft's Remedy Does Not Address "Equal Access"

438. Microsoft's Remedy contains no companion provision to provide equal access to terms, discounts, technical information or product support to Covered OEMs and Third-Party Licensees. Microsoft's Remedy III.A provides in pertinent part that "Microsoft shall not retaliate against an OEM by altering Microsoft's commercial relations with that OEM, or by withholding newly introduced forms of non-monetary Consideration . . . from that OEM" based on the OEM's support for non-Microsoft middleware. However, III.A. also allows Microsoft to provide "'Consideration' to any OEM with respect to any Microsoft product or service where that Consideration is commensurate with the absolute level or amount of that OEM's development, distribution, promotion, or licensing of that Microsoft product or service.'" Barksdale Dir. ¶ 96 (quoting III.A).

439. "Consideration" is broadly defined in VI.C of Microsoft's Remedy to include "any monetary payment or the provision of preferential licensing terms; technical, marketing and sales support; enabling programs; product information; information about future plans; developer

support; hardware or software certification or approval; or permission to display trademarks, icons or logos." Remedy III.A thus would allow Microsoft to condition an OEM's receipt of the various forms of consideration on, for example, that OEM's "absolute level or amount of that OEM's" support for Microsoft middleware. That ability essentially would allow Microsoft to punish or reward OEMs based on whether they carry Microsoft's Middleware or a competitor's. Barksdale Dir. ¶ 95.

440. Furthermore, the requirement in Microsoft's Remedy III.A that the Consideration provided to certain OEMs be "commensurate" with the OEMs' support for Microsoft is impossibly vague. Even Microsoft's expert economist testified that he would be "unable" for "any particular contract or deal," to discern whether the consideration provided to certain OEMs by Microsoft would be commensurate with the absolute level or amount of that OEM's support for Microsoft middleware. Tr. 6763:25-6765:11 (Elzinga). Rather, he hoped "that the Court and the technical committee would be competent to be able to evaluate that." *Id*. With such vague terminology, III.A would not prevent the reoccurrence of the actions Microsoft took against IBM.

441. In short, "the Microsoft Proposal does not adequately address Microsoft's restrictive and anti-competitive dealings with OEMs. If adopted by the Court, the provisions of the Microsoft/DOJ proposal will do little, if anything, to change Microsoft's behavior toward PC manufacturers, leaving both OEMs and consumers at the mercy of Microsoft. Ashkin Dir. ¶ 5; *see also* Tr. 1264:13-1267:18, 1327:6-1328:22 (Fama).

442. In contrast, States' Remedy 2.b mandates that all Covered OEMs and Third-Party Licensees have "equal access" to these types of Microsoft resources and non-monetary

incentives. This remedy prevents the reoccurrence of precisely this type of conduct by Microsoft against IBM, Gateway and other OEMs that opt to support non-Microsoft middleware.

D. States' Remedies 2.a and 2.b Meet the Court of Appeals' Objectives for Relief

443. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

444. Uniform licensing of Windows to OEMs and Third-Party Licensees will prohibit Microsoft from rewarding or punishing OEMs and other Windows licensees based on whether and to what extent they choose to distribute and/or otherwise support platform threats such as rival middleware. *See* Shapiro Dir. ¶¶ 157, 162.

445. Thus, States' Remedy 2.a will achieve the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by preventing the use of a practice, the use by Microsoft of discrimination and retaliation in response to the support of competing middleware and other platform threats, that will predictably have the same adverse effects on potential platform threats, and by creating an environment in which OEMs are likely to take advantage of the flexibility given them in Remedy 2.c.

446. States' Remedy 2.b restricts the selective provision by Microsoft of Windows support, technical information and marketing support. Thus, an OEM or licensee cannot be discriminated against on the basis of their support for rival middleware or another platform threat. Remedy 2.b will therefore also achieve the objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in

monopolization in the future by preventing the use of another practice, discriminatory information disclosure and support, that will predictably have the same adverse effects on potential platform threats. Further, like Remedy 2.a, Remedy 2.b will also help to foster an environment in which OEMs are likely to take advantage of Remedy 2.c.

E. Microsoft's Criticisms of States' Remedies 2.a and 2.b

447. Microsoft's primary criticism of States' Remedies 2.a and 2.b is that Microsoft should not have to treat all licensees the same by providing uniform license terms and equal access to the various forms of consideration, technical information and product support that it makes available to its best customers.

448. In particular, Microsoft complains that "[i]t does not make business sense to license software products to licensees in different distribution channels—and even end customers (large corporations) on 'uniform terms and conditions,' including a single price discount schedule." Gates Dir. ¶ 245. Accordingly, Microsoft offers Windows to OEMs at lower prices than it does to distributors in other channels. *Id*. Microsoft asserts that these lower prices reflect the value that OEMs add to building, promoting and supporting PCs that run on Windows. *Id*. ¶ 246. Distributors in other channels do not add these services according to Microsoft. *Id*.

449. Microsoft also argues that it should be able to compensate OEMs differently through the use of MDA/MDPs to induce OEMs to undertake "various activities that serve to promote Windows-based PCs." Gates. Dir. ¶ 249. According to Microsoft, MDAs/MDPs are a way to share the cost of engineering and promotional activities that benefit both the OEM and Microsoft. *Id.*

450. The volume based discounts provision in States' Remedy 2.a, however, addresses these concerns because the OEM channel is overwhelmingly the main distribution channel for Windows. Tr. 4922:8-14 (Gates). Because OEMs purchase the overwhelming bulk of

Windows' licenses, they will qualify for volume discounts that licensees in other distribution channels will not receive. These discounts can compensate OEMs for the costs associated with the extra value they provide.

451. In addition, as Messrs. Fama and Ashkin made clear, OEMs cannot afford not to participate in MDAs/MDPs, and they have been used to coerce OEMs to engage in actions that increase the applications barrier to entry, by, for example, mandating a certain time limit for a computer to boot-up which restricts OEMs' ability to pre-install, promote and automatically launch rivals' software. Fama Dir. ¶¶ 121-24; Ashkin Dir. ¶¶ 113, 116-21.

452. Microsoft further argues that Remedy 2.b will prevent Microsoft from engaging in an number of beneficial activities with OEMs. For example, Mr. Gates testified that "[u]nder Section 2.b Microsoft cannot enter into many kinds of beneficial business relationships with a large OEM such as Compaq or Dell without also offering to enter into the same relationships with the 150th largest OEM (shipping only 10,000 Windows-based PCs per year)." Gates. Dir. ¶ 254. Mr. Gates' testimony misrepresents the clear wording of States' Remedy 2.b, which requires Microsoft to afford "equal access" only to "Covered OEMs." As defined in 22.g, "Covered OEMs" are the "20 Personal Computer OEMs having obtained the highest volume of licenses of Windows Operating System Products from Microsoft in the calendar year preceding the effective date of this Final Judgment." There is no requirement that Microsoft extend the equal access provisions to OEMs beyond the top 20.

453. Mr. Gates further contends that "Section 2.b could effectively shut down engineering collaboration between Microsoft and large OEMs." Gates Dir. ¶ 255. But 2.b expressly addresses this concern by "allow[ing] Microsoft to protect specific technical and

business information as part of a joint development effort between Microsoft and a Covered OEM." Shapiro Dir. ¶ 158.

454. Mr. Gates' contention that "Section 2.b would make it impractical for Microsoft to enter into routine and beneficial co-marketing agreements with OEMs," Gates Dir. ¶ 256, is equally without foundation. Mr. Gates appears to assume that Remedy 2.b requires that Microsoft "devote 'equal' resources—money and time—to all third parties that license 10,000 copies of Windows . . ." Gates Dir. ¶ 256. But Dr. Shapiro correctly notes that 2.b does not require that Microsoft expend the same resources for every customer who licenses 10,000 units of Windows per year. Shapiro Dir. ¶ 160. Rather, the provision requires merely that Microsoft provide "equal *quality* of support." Shapiro Dir. ¶ 160 (emphasis in original).

455. Mr. Gates also complains that 2.b requires Microsoft to "provide highly sensitive 'information about future plans' to Sun and AOL as soon as Microsoft had a discussion with any OEM on the subject." Gates Dir. ¶ 257. However, to the extent that Microsoft sincerely is concerned with this scenario, it need only develop such "future plans" pursuant to a bona fide joint development effort with a Covered OEM.

F. Purpose of States' Remedy 2.c

456. The Court of Appeals upheld the District Court's determination that Microsoft's imposition of restrictions on OEMs had the anticompetitive effect of preventing OEMs from promoting and distributing Netscape Navigator (thereby also hindering the distribution of Java), which in turn served to protect Microsoft's operating system monopoly. *Microsoft*, 253 F.3d at 60-62, 74-76. With one narrow exception, the Court of Appeals upheld the District Court's determinations that Microsoft's anticompetitive licensing restrictions on OEMs were not justified (the narrow exception was "a shell that automatically prevents the Windows desktop from ever being seen."). *Id*. at 63.

457. Before Microsoft imposed these licensing restrictions, many OEMs had inserted registration sequences into the boot sequence, to allow consumers to sign up for various Internet Access Providers (IAP), many of which supported Netscape's Navigator Browser. *Microsoft*, 84 F. Supp. 2d at 60-61, Finding No. 210. Microsoft, however, prohibited OEMs from modifying the boot up sequence so that third party IAPs would not receive more prominent display than Microsoft's own Internet access service, MSN, which employed Internet Explorer. *Id*., Findings Nos. 212-13. These prohibitions, along with Microsoft's other actions to prevent OEMs from bundling any browser except Microsoft's Internet Explorer, had a substantial effect on protecting Microsoft's monopoly power. *Microsoft*, 253 F.3d at 62.

458. The District Court found that Microsoft also prohibited OEMs from removing icons, folders and Start menu entries that would result in the removal of visible end-user access to Internet Explorer. *Microsoft*, 84 F. Supp. 2d at 59, Finding No. 203. The District Court found these, and other restrictions, including prohibiting OEMs from altering the initial boot sequence or altering the appearance of the Windows desktop, to be anticompetitive. *Id*. at 61, Finding No. 213. As noted above, the Court of Appeals found these restrictions to be anti-competitive and found only one narrow restriction to be justified. *Microsoft*, 253 F.3d at 64.

459. Similarly, Microsoft imposed other restrictions on OEMs to prevent the promotion of alternative browsers, including prohibitions on the removal of icons; the addition of icons of a different size or shape; the automatic launch of any alternative user interface, and any change in the appearance of the Windows desktop. *Microsoft*, 84 F. Supp. 2d at 61, Finding No. 213; *Microsoft*, 253 F.3d at 62. None of these restrictions will be available to Microsoft under States' Remedy 2.c.

460. The purpose of Remedy 2.c is to prevent the recurrence of Microsoft's illegal efforts to stifle the distribution and support of non-Microsoft middleware. To that end, Remedy 2.c provides OEMs and Third-Party Licensees the freedom to choose and distribute non-Microsoft Middleware and to design and configure PCs to suit consumer needs and desires.

461. Remedy 2.c gives OEMs flexibility and choice in product configuration, including placement of icons, menu entries, and other features. The remedy achieves these goals by prohibiting Microsoft from restricting such OEM choices, whether contractually or otherwise. Thus, Microsoft will no longer be able to dictate what personal computer (PC) products are available to consumers and how those products are configured. Ashkin Dir. ¶ 3.

462. OEMs today face a dilemma: they can license the Windows Operating System and give up the ability to differentiate their PCs from any other PC running Windows, or they can choose not to load Windows onto their PCs, in which case only very few applications or software would run on their PCs. Ashkin Dir. ¶ 8.

463. OEM's efforts to institute flexibility in PC product configuration have been stymied by Microsoft. Mr. Ashkin testified that he "and others at Gateway repeatedly asked Microsoft for the ability to modify the Windows desktop and user interface to better meet the needs and demands of our customers. These requests were routinely denied." Ashkin Dir. ¶ 32. These denials by Microsoft "resulted in [Microsoft's] control and standardization of the desktop, stifling innovation and denying consumers' choices." Ashkin Dir. ¶ 54.

464. "Because of current business arrangements, OEMs have difficulties customizing the desktop experience. Indeed, computer manufacturers can do little more than customize the color of the physical box in which they ship computers or make other superficial changes."

Borthwick Dir. ¶ 16. As a result, consumers are denied the benefits of choice in PC offerings. *Id*.

465. The effect of Microsoft's efforts to restrict OEM flexibility in product configuration "has been to greatly limit consumer choice and stifle technological innovation." Ashkin Dir. ¶ 3. "Because Microsoft has hampered the ability of OEMs to configure their PCs according to an end user's or consumer's requirements, consumers are not getting the full range of choices and options that a competitive market would provide." Ashkin Dir. ¶ 8.

466. Even after the conclusion of the liability trial, Microsoft continued to frustrate OEMs' efforts to create customized PCs that would appeal to consumers. Mr. Ashkin testified, for example, that Microsoft's restrictions on OEM flexibility in product configuration precluded Gateway from automatically launching its "Go-Back" software. Ashkin Dir. ¶¶ 55-57. "This software, developed by Gateway in 1999 and 2000, enabled consumers to restore their computer to a previous state if the computer crashed or if the consumers made an error that they wanted to reverse." *Id*. ¶ 55. Microsoft's restrictions in fact meant that "Gateway could not automatically launch any application code during the initial start-up sequence (also called Out of Box Experience or OOBE) even when, like 'Go Back,' it would be a central piece of the product offering." Ashkin Dir. ¶ 56.

467. Nor did Microsoft "allow Gateway the flexibility to differentiate the 'Go Back' application with a prominent icon." Ashkin Dir. ¶ 57. "Microsoft's restrictions prevented those consumers from receiving the full benefit of this application, because it prevented Gateway from installing the product in a manner in which it was automatically invoked or easily activated. Because Gateway was unable to pre-install it in a way that consumers could easily find and use it, the 'Go Back' program did not succeed." Ashkin Dir. ¶ 57. Because Gateway could not

automatically invoke the program to help the users who needed it most, there was consumer dissatisfaction with the application. Tr. 897:12-898:12 (Ashkin). Without a bigger, more prominent icon to draw the user's attention to the Go-Back feature, or a way to tell the user to double-click on the feature, Go-Back sometimes was not activated by the consumer. *Id*. If the program was not activated, it was not of use to the consumer who most needed it to restore the PC. *Id.*

468. Similarly, Mr. Ashkin testified that in the summer of 1999, Microsoft frustrated Gateway's effort to market its Internet Service Provider ("ISP"), known as "Gateway.net." Ashkin Dir. ¶¶ 58-59; Tr. 891:23-896:25 (Ashkin). Microsoft "frustrated the project by imposing overly restrictive OS licensing requirements on Gateway. For example, Microsoft limited Gateway's ability to modify the boot-up sequence, which made it confusing for consumers to realize that their machine included [Gateway's] ISP and increased the chance that they would inadvertently switch to MSN. The result was that customers would order Gateway.net, but would then fail to register for it when they booted-up the PC because they did not know that registration was necessary or understand how to do it. Thus, Microsoft's restrictions frustrated consumers, built ill will toward our product, and made it difficult to execute our business plan." Ashkin Dir. ¶ 59. This consumer confusion also increased the volume of (expensive) support calls by customers to Gateway. Tr. 896:6-25 (Ashkin).

469. Providers of rival middleware products have been hampered in their efforts to gain meaningful access to the OEM channel of distribution and promotion as a result of Microsoft's restrictions on OEMs even after the liability trial in this case. For example, David Richards of RealNetworks testified to the difficulties that his company has encountered in negotiating with OEMs to have the company's RealOne Player set as the default media player on

Windows and to auto-launch RealNetworks' products or services. Tr. 779:3-789:23 (Richards). RealNetworks' efforts to get OEMs to automatically launch its RealOne media service have been unsuccessful. Tr. 788:13-789:3 (Richards).

470. Mr. Borthwick of AOL testified that OEMs' inability to create and market a customized PC was evidenced by Compaq's proposal to develop a customized "Harry Potter" PC. Borthwick Dr. ¶ 19; PX 661 (statements in the proposal not admissible for the truth). While Mr. Borthwick believed that Compaq and other OEMs wished to offer consumers a customized PC experience, he believed that the level of customization reflected in Compaq's proposal was insignificant. *Id.*; Tr. 2305:6-2310:9, 2419:1-24 (Borthwick).

471. In the summer of 2001, AOL approached two leading OEMs to discuss how those OEMs "could benefit from customizing the Out-Of-Box-Experience" for their customers. Borthwick Dir. ¶ 24. Though the OEMs displayed interest in AOL's proposal, no further discussions ensued. Borthwick Dir. ¶¶ 25-28.

472. States' Remedy 2.c prevents Microsoft from controlling the OEM channel of distribution to exclude non-Microsoft Middleware, products, applications and services. This remedy enables OEMs and third-party licensees to offer a "full range of choices and options" to consumers. Ashkin Dir. ¶ 8.

473. Under States' Remedy 2.c, OEMs will be free to select and distribute the software and applications that they believe will meet consumer needs and choice. The distribution of non-Microsoft Middleware with PCs will give developers a choice of applications for which to develop additional products, which in turn will help to reduce the applications barrier to entry.

474. Remedy 2.c also will foster consumer choice and competition among PC configurations made available in the marketplace, as it "make[s] available to OEMs a wide array of choices, which they in turn can pass on to consumers." Ashkin Dir. ¶ 9.

G. How States' Remedy 2.c Achieves Its Intended Purpose

475. States' Remedy 2.c is designed to provide OEMs freedom to configure the personal computer to meet customers' needs. Ashkin Dir. ¶ 83. This includes the right to select, distribute and promote non-Microsoft Middleware Products, such as RealNetworks' media player and Netscape's Navigator browser. This remedy also gives OEMs the flexibility to feature products, services and features that its consumers want. Ashkin Dir. ¶ 84. This OEM flexibility, in turn, will offer ISVs the opportunity to choose to develop applications for non-Microsoft products, which may lower the applications barrier to entry. Ashkin Dir. ¶ 40.

476. Under Remedy 2.c, Microsoft cannot use its Windows licensing agreements, pre-installation kit, or any other manner or method to restrict OEMs from: including a registration sequence in the initial boot sequence; automatically launching rival Middleware, products, applications or services; adding or removing icons, menu entries, folders or means of presenting products, applications and services; displaying a non-Microsoft desktop as long as the user has access to the Microsoft desktop; or carrying any non-Microsoft product, application or service. For example, Microsoft cannot prevent an OEM from choosing to offer Netscape Navigator bundled with the computer, or to remove the code for Windows Media Player if it so chooses. As a result, Microsoft can no longer control the OEM channel of distribution, can no longer be able to dictate choices to the OEMs, and can no longer restrict the distribution of rival software products.

477. States' Remedy 2.c "is one of the key provisions in the States' Remedy" because "it serves to prevent a recurrence of a number of the illegal acts committed by Microsoft that

could otherwise impede third-party middleware from gaining distribution and usage through the important OEM channel." Shapiro Dir. ¶ 161. As Mr. Ashkin testified, "Proposal No. 2.c goes a long way toward freeing OEMs from Microsoft's restrictions." Ashkin Dir. ¶ 82.

478. This remedy, for example, "seeks to prevent the type of desktop and boot sequence restrictions" on OEMs that the District Court found to be anticompetitive. Shapiro Dir. ¶ 162.

479. Remedy 2.c.i allows a Covered OEM or Third-Party Licensee to add a registration sequence to the initial boot-up sequence to obtain information from the consumer or to provide information or product opportunities to the consumer. This remedy "guarantees OEMs and third-party licensees the freedom to negotiate with [third parties] to provide promotions and opportunities for consumers to sign-up for [Web services] during the initial boot sequence and upon connection to the Internet." Pearson Dir. ¶ 91.

480. Remedy 2.c.i will also allow Gateway, for example, to modify the boot-up sequence to include a registration sequence for Gateway's ISP service, "Gateway.net." Ashkin Dir. ¶¶ 59, 82. Many consumers purchased Gateway.net with the Gateway PC. *Id*. ¶ 59. Because of Microsoft's restrictions, however, Gateway could not include the registration for Gateway.net in the initial boot-up sequence. *Id.* Consumer confusion about whether or not they were registered for Gateway.net resulted in customer dissatisfaction as well as in increased calls to Gateway's customer support center. Tr. 895:7-896:25 (Ashkin).

481. Under Remedy 2.c.i, "OEMs will be able to promote an identity/authentication/ authorization service that competes with .NET Passport." Borthwick ¶ 111; *see also* Schwartz Dir. ¶ 153. Such a service is increasingly important as the industry moves to a Web services model. *See* Schwartz Dir. ¶ 47 (security standards and protocols essential to the successful

implementation and use of Web services); Borthwick Dir. ¶ 70 (Microsoft's identification/authentication/authorization service is a "critical bridge" to Web services).

482. In short, this remedy "offers real flexibility—OEMs and third-party licensees could include a registration sequence as part of the Out-Of-Box-Experience to promote non-Microsoft middleware and web services . . . ." Borthwick Dir. ¶ 58 (emphasis in original).

483. Remedy 2.c.ii in turn gives OEMs and third-party licensees wide flexibility to promote non-Microsoft products, services and features by displaying icons, menu entries, short cuts and to remove or modify icons, folders, links, start menu entries, smart folder applications for Microsoft products, services and features. *See* Pearson Dir. ¶ 92. Pursuant to this remedy, OEMs can "display or arrange icons or short cuts to any products or services as they see fit." Borthwick Dir. ¶ 58.

484. Remedy 2.c.ii also gives OEMs the freedom to display icons on the desktop for non-Microsoft software and features. This remedy allows OEMs to "design special features, including big buttons or icons, or features that make it very difficult to delete things," like Gateway's Go-Back. Ashkin Dir. ¶ 85.

485. Remedy 2.c.iii permits an OEM or third-party licensee to "display any non-Microsoft desktop as long as there is an icon or other means of access to the Windows desktop." Borthwick Dir. ¶ 58. For example, OEMs and other Windows licensees will have "the ability to set the SBC-Yahoo! home page as the default home page upon connection to the Internet, and thereby provide users an easy way to access [SBC's] UMS" Web service. Pearson Dir. ¶ 92.

486. Remedy 2.c.iv allows OEMs and third-party licensees, among other things, to add and promote a non-Microsoft PC operating system. As Mr. Tiemann testified, such access to the

OEM channel of distribution is critical if Linux is to compete with Windows. Tiemann Dir. ¶¶ 47-54.

487. Significantly, Remedy 2.c.iv also ensures that OEMs and other licensees may offer an option to make non-Microsoft middleware the default middleware. This remedy, along with States' Remedy 10, enables OEMs and other Windows licensees to designate non-Microsoft middleware products to be the default middleware running on the PC. Developers, armed with the knowledge that rival middleware products (such as media players and Internet browsers) are broadly distributed, will be more likely to develop applications for these non-Microsoft middleware products. Borthwick Dir. ¶ 57.

488. Remedy 2.c.v allows OEMs and Third-Party Licensees to add non-Microsoft Middleware, applications or services to the desktop. This remedy will help provide a fair opportunity for non-Microsoft middleware to gain distribution through the OEM channel, which will in turn help erode the applications barrier to entry. Borthwick Dir. ¶ 14. It also allows OEMs and other Windows licensees "to create customized versions of Windows that include competing middleware products, targeted at various audiences and interests." Borthwick Dir. ¶ 13.

489. This remedy also allows OEMs and other Windows licensees to equally promote non-Microsoft Web services and other software. "Thus, OEMs will be able to promote an identity/authentication/ authorization service that competes with .NET Passport, thereby preventing Microsoft from using .NET Passport to tilt the end user towards its own web services to the exclusion of others." Borthwick Dir. ¶ 111; *see also* Schwartz Dir. ¶ 153.

490. Moreover, Remedy 2.c achieves these objectives without impairing Microsoft's ability to innovate. As Dr. Shapiro testified, "[n]othing in this provision impedes Microsoft from improving its operating system or middleware." Shapiro Dir. ¶ 162.

H. Microsoft's Remedy Fails to Offer OEMs True Desktop Flexibility

491. States' Remedy 2.c corresponds to III.C of Microsoft's Remedy. States' Remedy 2.c, however, offers far more flexibility and choices to OEMs and third-party licensees—and thus, to consumers—than Microsoft's competing provision. Microsoft's Remedy would enable Microsoft to continue to control many aspects of how non-Microsoft Middleware can be presented to users on the PC desktop.

492. The desktop flexibility provisions of Microsoft's Remedy "are too restrictive and are subject to unjustifiable conditions." Schwartz Dir. ¶ 177. Under III.C.1, Microsoft could still control many facets of how and where rival middleware can be displayed. Borthwick Dir. ¶ 38.

493. "OEMs are undoubtedly offered some flexibility to display icons, shortcuts and menu entries for non-Microsoft middleware in Section III.C.1" of Microsoft's Proposed Remedy. Ashkin Dir. ¶ 67. However, under III.C.1, "Microsoft retains the right to restrict OEMs from displaying icons, shortcuts or menu entries to the desktop or Start menu 'or anywhere else in a Windows Operating System product where a list of icons, shortcuts or menu entries for applications are generally displayed.'" *Id.* ¶ 68 (quoting III.C.1).

494. Further, III.C.1 would allow Microsoft to "restrict an OEM from displaying icons, shortcuts and menu entries for any product in any list of such icons, shortcuts or menu entries specified in the Windows documentation as being limited to products that provide particular types of functionality . . ." This means that, for example, "an OEM can only put the icon for a media player product in the place where Microsoft puts media player icons." Ashkin Dir. ¶ 68.

495. Under III.C.1 of the Microsoft's Remedy, an OEM's ability to display icons, short cuts and menu entries for a non-Microsoft product would depend "on decisions made by Microsoft (*e.g.*, whether to develop certain functionality or where to place access to certain functionality) . . ." Schwartz Dir. ¶ 154. This would enable Microsoft to continue to control the look and feel of the PC desktop, including user access to non-Microsoft middleware.

496. Microsoft's Remedy III.C.2 also explicitly authorizes Microsoft to ban the display of shortcuts for non-Microsoft Middleware on the desktop whenever Microsoft decides that the shortcuts "impair the functionality of the user interface." But Microsoft's Remedy gives Microsoft unbridled discretion to decide whether and when to invoke this exception. In addition, it is not clear how such shortcuts for non-Microsoft Middleware might actually impair the functionality of the Windows interface. Dr. Elzinga, for example, testified that he interpreted the phrase "functionality of the user interface" to mean "something different than appearance" of the desktop. Tr. 6773:22-24 (Elzinga). In addition, Dr. Elzinga could not identify a "real world" example of a shortcut that would impair the functionality of the user interface. Tr. 6774:23-6775:3 (Elzinga).

497. Microsoft's Remedy III.C.3 also "severely limits an OEM's ability to launch a competing middleware product." Ashkin Dir. ¶ 69. That provision provides that non-Microsoft middleware may launch automatically (or upon connection or disconnections from the Internet) only "if a Microsoft Middleware Product that provides similar functionality would otherwise be launched automatically at that time . . . ." Microsoft's Remedy III.C.3. Microsoft Vice-President Chris Jones conceded that this limitation has no technical justification. Tr. 5131:24-5133:3 (Jones). "This means that Microsoft still has the final say about whether an OEM can

launch a competing middleware product automatically." Ashkin Dir. ¶ 69; *see also* Tr. 5130:20-5131:23 (Jones).

498. The "supposed benefits" of III.C.3 would be "restricted to non-Microsoft products that provide similar functionality to a Microsoft middleware product, again allowing Microsoft to restrict OEMs from introducing new middleware products into the marketplace." Borthwick Dir. ¶ 38; *see also* Schwartz Dir. ¶ 179. This provision would not promote innovation in new middleware products by any software developer other than Microsoft because when non-Microsoft middleware products first come out, Microsoft generally does not yet have a product to compete with it. Barksdale Dir. ¶ 76.

499. Microsoft's Remedy would also limit an OEM's ability to automatically launch a rival middleware product. Under that remedy, an OEM could only launch a non-Microsoft middleware product if a Microsoft middleware product would otherwise automatically launch. This type of unwarranted restriction would limit innovation and consumer choice. Indeed, as Peter Ashkin testified, Microsoft's Remedy "does not protect an OEM's right to install an automatically invoked middleware product if that product is an innovation for which no similar Microsoft product exists." Ashkin Dir. ¶ 70. Chris Jones also conceded that "if a third-party developed some type of new or innovative middleware for which there was no equivalent Microsoft middleware product, this particular provision, Section [III.C.3] would not allow the OEM to automatically launch that new and innovative middleware." Tr. 5130:20-5131:23 (Jones).

500. Microsoft may also avoid the obligations of III.C.3 by simply not characterizing its automatically-launched middleware as a "Microsoft Middleware Product." As Chris Jones conceded, if Microsoft launches software code that does not meet the definition of "Microsoft

Middleware Product" under Microsoft's Remedy, then an OEM would not "have the right to replace that particular software code with a different product." Tr. 5135:24-5136:4 (Jones).

501. Microsoft's Remedy III.C.3 also would enable Microsoft to control which products, if any, can be launched automatically. Therefore, "if any competing product were to seriously challenge a Microsoft product, Microsoft could discontinue any automatic launch feature of its middleware product and thereby thwart the automatic launch of a competing product." Ashkin Dir. ¶ 71. This is because Microsoft "retains the discretion to decide which middleware products" are automatically launched at the boot sequence. Tr. 5132:15-20 (Jones).

502. Remedy III.C.3 would profoundly limit OEM flexibility in other significant respects. For example, under III.C.3, the icon for a non-Microsoft middleware product may only be displayed on the desktop if it has "a user interface of similar size and shape to the user interface displayed by the corresponding Microsoft Middleware Product." *See* Schwartz Dir. ¶ 180.

503. To promote innovation in software development and consumer choice, OEMs, not Microsoft, "should have the flexibility to design icons and user interfaces that fit the consumer and the product." Ashkin Dir. ¶ 72.

504. Taken together, the overlapping restrictions in III.C.3 could effectively strip OEMs of many of the benefits purportedly guaranteed by that provision. "For example: [i]f an OEM wanted to enable the Real Media Player to launch automatically after boot up because the consumer chose the Real Media product, Microsoft allows the OEM to automatically launch the Real Media Player only if Microsoft's Windows Media Player (WMP) would otherwise automatically launch at that time. Furthermore, the OEM could only put a Real Media icon on the desktop with 'a user interface of similar size and shape to the user interface displayed by the

corresponding Microsoft Middleware Product.' So, even if the consumer selected Real Media, the OEM could have it automatically launch only if Microsoft would otherwise automatically launch WMP, and the OEM could either put no Real Media icon on the desktop or put one on that is the same size and shape of Microsoft's WMP." Ashkin Dir. ¶ 70 (quoting in part III.C.3).

505. Microsoft's Remedy III.C.5 theoretically would allow OEMs to include their own IAP offers in the boot sequence for the PC. But this proposed remedy contains an exception that would permit Microsoft to prohibit modifications to the boot sequence unless the OEM "complies with reasonable technical specifications established by Microsoft, including a requirement that the end user be returned to the initial boot sequence upon the conclusion of any such offer." Again, III.C.5 gives Microsoft free rein to develop these additional "technical specifications" that OEMs must hurdle.

506. Microsoft's Remedy also contains no provision similar to States' Remedy 2.c to allow "third-party licensees, such as software developers, the same flexibility as OEMs." Ashkin Dir. ¶ 87. Under States' Remedy 2.c, software developers and other third-party licensees could repackage Windows with non-Microsoft middleware and thereby create software packages differentiated from and competitive with Windows. Ashkin Dir. ¶¶ 82-87; Borthwick Dir. ¶¶ 12-14.

507. Microsoft's Remedy III.H.3 would enable a new function in Windows XP, the "Desktop Cleanup Wizard." Tr. 5115:24-5116:1 (Jones) (Microsoft's Proposed Remedy explicitly authorizes the "Wizard"). This "Wizard" goes into effect 14 days after the initial boot-up of the computer and periodically thereafter to prompt users to "clean" the desktop. *Id*. at 5113:22-5114:9 (Jones). It removes icons for all but the most frequently invoked software applications. *Id*. Within 14 days after the initial boot-up of the computer it is unlikely that the

consumer will have had an opportunity to even use—much less to use frequently—features of this unfamiliar product whose icon was placed by the OEM on the PC desktop. Barksdale Dir. ¶ 82.

508. Had this "wizard" been in effect when Navigator first came out, it would have had a chilling effect. Barksdale Dir. ¶ 84. OEMs would have been less willing to adopt Navigator if they knew that it could be so easily swept off the desktop. *Id*. ¶ 83. Going forward, new middleware products would not have the chance to become popular among users if the "Wizard" remains in effect. *Id.* ¶ 84. The middleware products developers would not pay OEMs to put the icon on the desktop if it can be so easily removed from the desktop. If the non-Microsoft middleware is not on many desktops, developers will not write to it. *Id*.

509. Even if the consumer is able to have the non-Microsoft middleware icon on the desktop under III.H.1, Microsoft could use its power to convince users to switch to Microsoft's middleware by programming this repeated prompt to users to switch. Barksdale Dir. ¶ 85. In many cases, users will respond to these many prompts and warnings. *Id.* This allows Microsoft to build into Windows a feature that will decrease the likelihood that developers of non-Microsoft middleware will find it worth their while to develop rival products—"why even bother, when Microsoft can stack the deck so disproportionately in its own favor?" *Id*.

510. Under Microsoft's Remedy, an OEM like Gateway could, within restrictions discussed above, configure a personal computer to a customer's specifications, say with Netscape Navigator added as the browser, because this is the program the customer chooses. The customer must actually start up the computer to launch the programs. After 14 days, Microsoft could send a message to the user offering Internet Explorer, perhaps even by suggesting that IE works better with Windows. Except for the most computer-sophisticated

users, many consumers may check the IE box offered by Microsoft and therefore end up with IE. The consumer may then wonder what happened to Netscape Navigator, which the consumer would remember ordering with the purchase of the PC. The consumer would be confused, and dissatisfied, and would call the OEM customer service line. Ashkin Dir. ¶ 152.

511. This scenario can be played out for various Microsoft Middleware Products under Microsoft's Remedy. The inevitable result of Microsoft's remedy will be consumer confusion and likely additional expense to consumers. It also will result in additional cost to OEMs when confused consumers call customer support for help. Ashkin Dir. ¶ 153.

512. Microsoft's Remedy "continues to give Microsoft substantial authority over the desktop," and fails to accomplish the objective that "[c]onsumers and OEMs should have the ability to display and launch whatever functions and applications that best fit the user's need, regardless of how, where or if Microsoft displays features or applications of similar functionality." Ashkin Dir. ¶ 73.

I. States' Remedy 2.c Meets the Court of Appeals' Objectives for Relief

513. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

514. States' Remedy 2.c will achieve the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by preventing the continued use of a particular anticompetitive practice, the imposition by Microsoft of license restrictions that limit OEMs' flexibility to promote competing platform threats.

J. Microsoft's Criticisms of States' Remedy 2.c

515. Mr. Gates levels a variety of criticisms at States' Remedy 2.c. He contends, for example, that 2.c is "another way of enabling third parties, including competitors, to deconstruct Windows," ostensibly because that remedy "essentially lets any OEM or Third-Party Licensee modify Windows any way they like. . . ." Gates Dir. ¶ 261. He also claims that Section 2.c would permit OEMs and others to modify Windows beyond recognition, including the removal of new capabilities and features designed by Microsoft. *Id.* ¶¶ 262-66; *see also* Jones Dir. ¶ 42.

516. These concerns are not well-founded in a competitive marketplace. "Nothing in this provision [States' Remedy 2.c] impedes Microsoft from improving its operating system or middleware." Shapiro Dir. ¶ 162. If the market demands PCs with Windows as designed by Microsoft, then OEMs and other licensees will provide such versions of Windows to consumers. In a competitive market, OEMs and other Windows licensees will provide only such customized versions of Windows that consumers desire.

517. Mr. Gates also contends that States' Remedy 2.c would be "bad for consumers," because the remedy supposedly contains "no safeguards to ensure product quality." Gates. Dir. ¶¶ 267-68. In a competitive marketplace, the level of quality that consumers desire will be established. Lower quality products will quickly disappear if there is no market for them. *See* Borthwick Dir. ¶ 67.

518. Next, Mr. Gates contends that "Section 2.c would make it more difficult for consumers to walk up to any PC running Windows and feel comfortable that they know how to use it." Gates Dir. ¶ 269. This criticism is hollow, as Microsoft itself makes significant changes to Windows whenever it releases a new version. For example, even though prior versions of Windows contained a variety of icons, the Windows XP user interface contains no icons. See Tr.

5102:4-19 (Windows XP is "a change to the look and feel of Windows"). Microsoft has confidence that users can adjust from one version of Microsoft's Windows to another.

519. Mr. Gates fears that OEMs will act in their own short-term interest and accept payments to put rival products on the PCs, which will "present a classic tragedy of the commons problem." Gates Dir. ¶¶ 270-72. However, in a competitive market, any profit-minded enterprise must respond to consumer demand. If customized versions are not demanded by consumers, payments from rival ISVs will soon disappear.

520. Mr. Jones of Microsoft also offered a number of criticisms of States' Remedy 2.c, including that it would permit OEMs to place icons "of any size or shape anywhere on the Windows desktop or Start menu" which will create customer confusion and allow appropriation of Microsoft's valuable property. Jones Dir. ¶ 47. Mr. Jones offers no support for his conclusion that a differently-shaped icon will somehow confuse customers, even novice users. His testimony is contradicted by Mr. Ashkin, who testified in support of OEM flexibility in desktop configuration, including the size and shape of icons, to enable consumers to more easily find and access certain helpful software programs and features. Ashkin Dir. ¶ 72. Moreover, OEMs have significant incentive not to configure PCs in a fashion that confuses consumers because OEMs pay for the cost of consumer support.

521. Mr. Jones also testified that automatically-launched software programs consume system resources and make new PCs run more slowly out of the box. Jones Dir. ¶ 51. Currently, a number of Microsoft software programs launch automatically upon completion of the boot sequence. Tr. 5150:11-5151:16 (Jones) (discussing automatic launch of Windows Messenger). Moreover, the automatic launch of certain software applications can benefit consumers, particularly novice users. For example, Mr. Ashkin testified that a central piece of the product

offering of Gateway's innovative Go-Back was that it would be automatically running on the PC. Ashkin Dir. ¶ 56. Thus, the success of the application hinged on the ability to launch it automatically. *Id.* Its ability to reverse errors by the PC user could not be effective if the application was not automatically launched and thus always running. *Id*. In a competitive market, consumer choice will determine whether a slightly longer initial boot up time is offset by the automatic launch of a software application.

522. Dr. Bennett also contends that Remedy 2.c is technically infeasible, but this criticism lacks merit. First, he complains that by allowing Windows licensees under 2.c.iv to "'remove the means of End-User Access for Microsoft Middleware Products'" may "permit the removal of potentially vital operating system code." Bennett Dir. ¶¶ 83-85 (quoting in part States' Remedy 2.c.i). But, again, profit-minded Windows licensees will not sell consumers customized versions of Windows that lack vital operating system code. Second, Dr. Bennett argues that under Remedy 2.c, products that are developed to run on middleware will fail to operate correctly if the middleware is not present. Bennett Dir. ¶ 86. But Microsoft's own witnesses testified, for example, that Microsoft removed its Java Virtual Machine (or "JVM") from Windows XP, even though ISVs wrote applications to the APIs exposed by Microsoft's JVM. Tr. 4177:24-4178:4 (Borduin); Tr. 5473:23-5474:3 (Short). Thus, the removal of such middleware is hardly "infeasible," as Dr. Bennett claims. Third, he complains that all operating systems "routinely invoke" certain (unspecified) middleware, and that any bar to such invocation would be "catastrophic to the functioning of any operating system." Bennett Dir. ¶ 86. But in a competitive market, OEMs will have no reason to produce, and consumers will not long purchase, operating systems that are known to suffer "catastrophic" failures.

VIII. States' Remedies 1 and 2—Third-Party Licensees

A. Purpose of States' Third-Party Licensee Provisions

523. Microsoft has been adjudicated to have engaged in unlawful monopoly maintenance by taking actions to prevent OEMs from effectively distributing and promoting non-Microsoft middleware (Sun's Java and Netscape's Navigator browser). *Microsoft*, 253 F.3d at 59-67, 74-76.

524. These actions prevented the developers of Netscape and Java from gaining a sufficient market presence in terms of OEM distribution to begin to erode the applications barrier to entry that protects the Windows desktop operating system monopoly. *Microsoft*, 253 F.3d at 59-67, 74-76.

525. States' Remedies 1 and 2 require Microsoft to offer to third-party licensees an unbound version of the Windows operating system—an operating system that allows Microsoft middleware to be removed so that a third-party can customize the desktop experience for consumers. Borthwick Dir. ¶ 12; Ashkin Dir. ¶ 99. The third-party licensing provisions in the States' Remedy would require Microsoft to license an unbound version of the Windows operating system not just to traditional OEMs, but also to third parties, such as media companies, software developers and others interested in developing customized versions of the Windows operating system to resell to OEMs and consumers. *Id*.

526. Upon purchasing an unbound version of Windows, these third parties could remove Microsoft middleware that they do not wish to include in their retail offering, and replace it with non-Microsoft middleware products and other software. Borthwick Dir. ¶¶ 12-14. The result would be the development of customized PCs that give OEMs and consumers a real choice of middleware—separate and apart from Microsoft's traditional, "one size fits all," fully loaded operating system product. *Id*. Such customized PCs also would enhance the opportunity for the

development and widespread distribution of competing middleware that could erode the applications barrier to entry. *Id*. ¶¶ 12-14, 54-56; Ashkin ¶¶ 106-07.

1. OEMs Alone Will Not Take Full Advantage of Increased Desktop Flexibility

527. Because Windows' market share today is over 90% (and is stronger today than when the liability trial began), OEMs have no choice but to agree to the restrictions contained in Microsoft's Windows licenses. Ashkin Dir. ¶ 44. OEMs have, in effect, no choice but to offer PCs with Windows operating systems. OEMs cannot afford to run the risk of having their licenses terminated. *Id*.

528. OEMs also suffer from tight profit margins that make them highly dependent upon receiving the best possible financial deal from Microsoft with respect to their Windows licenses. *See* Ashkin Dir. ¶¶ 46, 98, 104.

529. Moreover, Microsoft already has been found to have engaged in a history of financially rewarding those OEMs who comply with Microsoft's wishes and promote Microsoft products to the exclusion or detriment of competing middleware products. *See Microsoft*, 84 F. Supp. 2d at 27, 66-68, Findings Nos. 64, 230-38; *see also* Ashkin Dir. ¶¶ 44-48.

530. Microsoft can and does vary the effective royalty rate that OEMs pay for the Windows PC operating system by adjusting the royalty rate itself, and by market development allowances, joint marketing funds and a variety of other financial arrangements. Those variations can and do reflect, among other things, Microsoft's judgment about how good a partner each OEM has been to Microsoft. Ashkin Dir. ¶¶ 60, 62, 112, 125, 137.

531. Most OEMs also have limited in-house resources and technical expertise to allow them to take advantage of the OEM flexibility provisions that would facilitate greater PC

customization and offer a greater diversity of competing middleware products. Ashkin Dir. ¶¶ 95-99; 104-05; *see also* Borthwick Dir. ¶ 52.

532. OEMs have in the past attempted only limited and superficial changes to the Windows desktop. Borthwick Dir. ¶¶ 17-22; Tr. 2419:1-24 (Borthwick). These changes have been the result of OEMs' limited expertise and limited freedom from Microsoft. Ashkin Dir. ¶¶ 101-05; Borthwick Dir. ¶ 52. Nonetheless, OEMs would, if given the opportunity, likely work with third party ISVs, like AOL or RealNetworks, or even large media and consumer electronics manufacturers, to attempt to develop customized PCs with competing middleware products. Borthwick Dir. ¶¶ 13-35, 52; Ashkin Dir. ¶¶ 99, 101-07; Richards Dir. ¶¶ 165-68; Tr. 2436:2-2437:1 (Borthwick); PX 1709 (Lego PC and AOL PC Prototypes); PX 1710 (HP Prototype).

533. In July 2001, Microsoft announced a new policy that purportedly gave OEMs additional flexibility with respect to the configuration of their desktops. No OEM has to date undertaken any substantial new initiative in response to Microsoft's announced new flexibility on the desktop. However, OEMs did express interest in presentations made by AOL that described the increased desktop flexibility and customization, including promotions of software and Web services as part of the Out-of-Box Experience, that third parties and OEMs would enjoy under the States' Remedy. Borthwick Dir. ¶¶ 23-28.

2. Allowing Third-Party Licensing Will Increase the Likelihood That Non-Microsoft Middleware Will Flourish

534. If third parties, aside from OEMs, are given the opportunity to license and customize versions of Windows, the development and distribution opportunities for non-Microsoft middleware will increase, and thereby increase the opportunities for a reduction in the applications to barrier to entry. Borthwick Dir. ¶¶ 2, 12-14, 54-56; Tr. 2294:14-25, 2425:25-2426:23 (Borthwick). Indeed, third-party middleware developers such as AOL and

RealNetworks expressed support for and interest in this remedy, and officials from these companies testified that other third parties also likely would take advantage of this provision. Borthwick Dir. ¶¶ 13, 52, Richards Dir. ¶¶ 165-68.

535. First, third-party ISVs and other media or consumer electronics companies have resources, technical expertise and the financial independence from Microsoft that OEMs lack. Borthwick Dir. ¶ 52; Ashkin Dir. ¶¶ 97, 101, 103-05. Allowing third parties who have the expertise and incentives to license and develop customized versions of Windows that consumers want will increase the likelihood that consumers will have the opportunity to use and access competing middleware products. Borthwick Dir. ¶¶ 2, 12, 14, 52, 54-56; Ashkin Dir. ¶¶ 102, 106.

536. Second, by creating an alternative channel of Windows distribution in addition to Microsoft, third-party licensing diminishes Microsoft's ability to coerce and control OEMs' promotion and distribution of competing products. Borthwick Dir. ¶ 53. With the third-party licensing provision, OEMs will be able to license directly from third parties if Microsoft decided to terminate their license for competitive reasons. *Id*.; Ashkin Dir. ¶ 103. In addition, OEMs will not be left with the "all or nothing" proposition of either licensing a fully loaded Microsoft version of Windows or undertaking the time and expense to develop a more customized version on their own. Borthwick Dir. ¶¶ 53-55; Ashkin Dir. ¶ 102. Instead, OEMs could both license versions from Microsoft, and at the same time license customized versions developed by third parties. Borthwick Dir. ¶ 55; Ashkin Dir. ¶ 103.

537. Third, third-party licensing creates an additional distribution channel for middleware developers, apart from OEMs. Borthwick Dir. ¶¶ 2, 12, 14, 54-56; Tr. 2294:14-25, 2425:25-2426:23 (Borthwick). Having an additional distribution channel increases the

likelihood that competing non-Microsoft middleware will gain promotion and distribution. *Id.*; Ashkin Dir. ¶¶ 102, 106.

B. Microsoft's Criticisms of Third-Party Licensing

538. Microsoft's criticism of the Third-Party Licensing Remedy essentially amounts to unfounded speculation that Microsoft's competitors will invest in Windows licenses and then create customized versions of Windows that consumers find confusing or that are of poor quality—solely in an attempt to harm Microsoft and the goodwill associated with the Windows product. Gates Dir. ¶¶ 266-69; Jones Dir. ¶¶ 47, 73.

539. Nothing in the States' Remedy prevents Microsoft from including within any Third-Party License or OEM license, reasonable and non-discriminatory provisions requiring third parties to meet certain quality specifications in order to use the Windows brand or logo, either on the computer itself or in advertising or promotional materials. Borthwick Dir. ¶ 67. States' Remedy 2.b simply provides that Microsoft must afford OEMs and Third-Party Licensees equal access to Microsoft's "permission to display trademarks or logos." Remedy 2.b does not constrain Microsoft from including provisions in Windows' license agreements requiring OEMs and Third-Party Licensees to satisfy reasonable quality control standards designed to preserve the goodwill associated with the Windows logo or trademark.

540. Indeed, States' Remedy 15, which specifically addresses licensing of Microsoft's intellectual property, requires Microsoft to license only that intellectual property that is required to exercise any of the options or alternatives provided for by other substantive remedies. And although States' Remedy 15 prohibits Microsoft from imposing certain licensing restrictions in connection with disclosing or providing intellectual property under the States' Remedies, nothing in States' Remedy 15 prevents Microsoft from imposing reasonable and non-discriminatory quality control standards in its licenses. Although Mr. Borthwick testified that he

would not oppose including within the States' Remedy a provision expressly permitting Microsoft to impose a reasonable quality control standard before allowing a licensee use of the Windows trademark, Tr. 2327:3-19 (Borthwick), in fact, no such language is required because nothing in the States' Remedy prohibits it.

541. Finally, while there is no evidence to suggest that third parties would develop and market customized versions of Windows that are of extremely poor quality, such an occurrence will have little or no impact on Microsoft or the marketplace because consumers will not purchase the poor quality version and it will not last long in the market. Tr. 2327:11-19 (Borthwick).

IX. States' Remedy 3—Continued Licensing of Predecessor Versions

A. Purpose of States' Remedy 3

542. By requiring Microsoft, when it releases a new version of Windows, to continue licensing and supporting for five years the immediate previous version of Windows, States' Remedy 3 prevents Microsoft from using the occasion of a new Windows release to harm third party ISVs whose software, including middleware, successfully interoperated with and/or was distributed as part of the predecessor version. In short, continued licensing and support for the immediate prior versions of Windows prevents Microsoft from coercing OEMs and consumers to upgrade to the newest version of Windows simply because there is no longer support for the older version.

543. Remedy 3 is necessary because Microsoft has the unquestionable ability to thwart any middleware threat by simply introducing a new version of Windows that contains technical changes that render the competing middleware either non-interoperable or degraded when compared to Microsoft middleware. Microsoft's commingling of code for Internet Explorer in Windows 98 is an example of a technical change made to a new version of Windows that had anticompetitive effects on competing middleware that enjoyed widespread success running on the predecessor version of Windows. *Microsoft*, 253 F.3d at 64-67. Remedy 3 also benefits consumers by providing them additional choices in products, and lessening Microsoft's ability to coerce Windows users to upgrade when they are satisfied with the predecessor version.

544. The Court of Appeals expressly found anticompetitive changes Microsoft made in Windows 98 for the purpose of preventing OEMs from removing Internet Explorer from Windows. *Microsoft*, 253 F.3d at 64 (quoting *Microsoft*, 84 F. Supp. 2d at 50, Finding No. 160). Microsoft made these changes believing that the "contractual restrictions [it] placed on OEMs

would not be sufficient in themselves to reverse the direction of Navigator's usage share." *Id.* (quoting *Microsoft*, 84 F. Supp. 2d at 50, Finding No. 160).

545. The technical changes Microsoft made to Windows 98 that had negative consequences for users who wished to use Netscape's Navigator were (a) removing Internet Explorer from the Add/Remove utility (which had been included in Windows 95), (b) designing Windows 98 so that Windows would override Navigator as the default Internet browser in favor of Internet Explorer, and (c) commingling Internet Explorer code into the code of Windows 98 to prevent OEMs from removing it. *Microsoft*, 253 F.3d at 65.

546. Testimony during the remedies hearing demonstrated that Microsoft has continued to make changes in new versions of Windows that disadvantage rival middleware. For example, Microsoft made various technical changes in Windows XP that disadvantage RealNetworks multimedia software. In particular, Microsoft engineered Windows XP to override media player default designations to favor Microsoft's Windows Media Player in various scenarios, such as (a) when a user upgrades from Windows 2000 to Windows XP, (b) whenever a new user account is created on a computer running Windows XP, (c) when using the IE Media Bar, (d) when playing a CD using RealNetworks' RealJukebox software, and (e) when playing MP3 files on a data CD. Richards Dir. ¶¶ 150-57. Microsoft also has designed Windows XP such that it has caused interference with and degraded functionality of RealNetworks multimedia software. Richards Dir. ¶¶ 180-87.

547. Microsoft has also continued and increased its commingling of middleware code in Windows XP, including increased integration of Windows Media Player. *See supra* Section VI.A ("Purpose of States' Remedy 1").

548. Important to Microsoft's ability to drive adoption of each new version of Windows is Microsoft's ability to remove prior versions of Windows from the market. If OEMs can continue to sell prior versions of Windows that have popular non-Microsoft middleware preinstalled, it becomes more difficult for Microsoft to effectively target such middleware for adverse treatment in its new release of Windows. Shapiro Dir. ¶ 154.

549. Because Microsoft desires the mass adoption of its newest technology, Microsoft would prefer that customers purchase and operate the newest version of Windows. Gates Dir. ¶¶ 278-79; Tr: 4676:14-18 (Gates). Microsoft therefore heavily promotes the newest versions of Windows, and seeks to phase out older versions from the market. Gates Dir. ¶¶ 278-79. The District Court observed this phenomenon when it found that Microsoft priced Windows 95 and Windows 98 in a counterintuitive fashion because "Microsoft . . . was only concerned with inducing OEMs to ship Windows 98 in favor of the older version." *Microsoft*, 84 F. Supp. 2d at 26-27, Finding No. 62.

550. However, the new technology that Microsoft seeks to promote is not always benign and beneficial to consumers. By virtue of its monopoly power, Microsoft can coerce significant numbers of consumers to upgrade to the newest version of Windows by dropping support for older versions, thereby benefiting from any adverse impact that such upgrades cause to rival middleware products. *See Microsoft*, 84 F. Supp. 2d at 52, Findong No. 169 ("To make [users] switch away from Netscape, we need to make them upgrade to Memphis [next version of Windows]."

B. How States' Remedy 3 Achieves Its Intended Purpose

551. States' Remedy 3 requires Microsoft in the future to continue to offer the immediately preceding version of Windows to OEMs and Third-Party Licensees for five years

after the first release of a new version of Windows. Microsoft must support the prior version both directly and indirectly. Until Microsoft introduces its first new Windows version after Windows XP, Remedy 3 will require Microsoft to offer Windows 98 SE to any OEM or Third Party Licensee, in addition to Windows 2000.

552. Under Remedy 3, Microsoft must offer the prior version of Windows to an OEM or Third-Party Licensee at a price no higher than the lowest royalty that they have paid for that version of Windows. Microsoft will therefore be fully compensated for the prior versions of Windows that it sells. By providing a price cap of the lowest price a licensee has previously paid for that version, Remedy 3 prevents Microsoft from raising to prohibitively high levels the price of older versions of Windows, thereby forcing OEMs to sell only the newest version.

553. Under States' Remedy 3, Microsoft also must allow OEMs and Third-Party Licensees to continue to market older versions of Windows as they do the current version. Microsoft may not restrict OEMs from actually marketing and selling older versions of Windows to prevent consumers who might desire those versions from ever learning about or accessing them.

554. This provision will remove from Microsoft's arsenal a powerful tool to frustrate OEMs' ability to promote rival middleware. Because OEMs and Third-Party Licensees will be guaranteed the choice to ship and market the predecessor version of Windows at a reasonable royalty rate, Microsoft will no longer have the same incentive to make technical changes to new Windows versions to harm competitive middleware. If Microsoft chooses to do so, OEMs may continue to ship, and consumers may continue to purchase and use, rival middleware on the predecessor version of Windows. Shapiro Dir. ¶ 154.

555. Remedy 3 also provides an important safeguard to ISVs that market rival middleware. Because they know that Microsoft cannot foreclose the OEM market to them by creating a new version of Windows containing harmful technical changes, ISVs have a greater incentive to create new middleware. They can act with the assurance that any new middleware they create will have a market in the OEM distribution channel for at least five years. Shapiro Dir. ¶ 154.

556. Remedy 3 also removes a method through which Microsoft could subvert the OEM flexibility provisions of Remedy 2 pertaining to Third-Party Licensees. Similar to the situation faced by middleware ISVs, Third-Party Licensees would be reluctant to invest resources into creating a customized version of Windows if they know that Microsoft could "thwart their investment by suddenly announcing the release of a new superseding version" of Windows. Borthwick Dir. ¶ 59. Remedy 3 ensures that Third-Party Licensees can continue to market their new versions of Windows for at least five years.

557. Finally, States' Remedy 3 benefits consumers by guaranteeing them greater choices at a minimal cost to Microsoft. One of the core principles of economics is that consumers are better off it they have more choices. Shapiro Dir. ¶ 155. Even Mr. Gates admits that some consumers with older hardware would be better off with the predecessor versions of Windows than with the newest version. Tr. 4680:16-23 (Gates).

C. Microsoft's Remedy Does Not Address the Impact of New Versions of Windows

558. Microsoft's Remedy does not contain a comparable provision to States' Remedy 3.

D. States' Remedy 3 Meets the Court of Appeals Objectives for Relief

559. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

560. States' Remedy 3 will achieve the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by preventing the use of practices that will predictably have the same adverse effects on potential platform threats.

561. Remedy 3 restricts Microsoft from using its control of the dominant software platform to "treadmill" licensees, developers and consumers, *i.e.*, force them to upgrade to new versions of Windows. This loosens Microsoft's control over the OEM channel of distribution and provides developers of platform threats, whose products require, at least initially, interoperability with Windows, with an assurance that the version of Windows with which they achieve interoperability (through, *e.g.*, use of disclosure provided under Remedy 4) will be available and supported for a significant length of time. Without this guarantee, such products may never come to market or may fail due to interoperability problems with the latest version of Windows.

E. Microsoft's Criticisms of States' Remedy 3

1. States' Remedy 3 Will Not Create an Insurmountable Support Burden

562. A consistent Microsoft criticism of Remedy 3 has been that the proposal will exacerbate the effects of States' Remedy 1, which requires Microsoft to offer to OEMs and

Third-Party Licensees an unbound version of Windows. Gates Dir. ¶¶ 275-76; Jones Dir. ¶ 77; Bennett Dir. ¶ 89.

563. This criticism, however, relies upon Microsoft's misreading of Remedy 1. Microsoft contends that Remedy 1 will lead to a countless number of Windows versions, which will be impossible for it to support. Accordingly, Microsoft also now contends that supporting prior versions of Windows will necessarily require it to support thousands more versions of Windows. In the words of Mr. Gates, "eight years from today, we would potentially have thousands of versions of Windows in the marketplace, thousands of versions of Windows XP +2 (the successor to Windows XP, code-named Longhorn), thousands of versions of Windows XP+4, etc." Gates Dir. ¶ 275.

564. Microsoft's criticism on States' Remedy 1 is unfounded. Remedy 1 requires Microsoft to make a single unbound operating system available for applicable versions, so that OEMs and Third-Party Licensees can then customize the unbound version through, among other things, the removal of middleware code. Once Microsoft has performed the engineering work to produce an unbound version, supporting that version when a future version of Windows is released will simply be a continuation of the support they already were providing. Accordingly, Microsoft's prediction that it will need to support thousands of old Windows versions is equally unfounded.

565. Microsoft also criticizes Remedy 3 for requiring Microsoft to support the predecessor version of Windows "directly and indirectly." According to Microsoft, this requirement will impose enormous engineering costs on Microsoft. Jones Dir. ¶ 76; Bennett Dir. ¶ 88. Microsoft reaches this conclusion by misreading the import of the words "directly and indirectly." Under Microsoft's reading, "when a new feature was added to the latest Windows

release, Section 3 would require that the new feature be added to the preceding Windows release as well." Bennett Dir. ¶ 88; *see also* Jones Dir. ¶ 76.

566. Remedy 3 contains no such requirement. As Dr. Bennett admitted on cross-examination, Microsoft surely does not consider product "support" of older operating systems to require any such thing in the course of its current business. Tr. 7085:25-7086:11 (Bennett). This is because the term "support" does not currently bear any such sweeping connotation in the computer industry.

567. If the Court, however, believes that the term "support" in Remedy 3 could hypothetically bear Microsoft's extreme reading, it could easily add one sentence in clarification. The States propose a sentence to the following effect: *"Product support does not include a requirement to add any new functionality into a predecessor version of the Windows operating system."*

2. States' Remedy 3 Will Not Confuse Customers or Slow Technological Growth

568. Microsoft also claims that States' Remedy 3 will slow the growth of the "PC ecosystem" and confuse consumers. According to Mr. Gates, phasing out "obsolete" operating systems is important to speed the adoption of new technology. Gates Dir. ¶¶ 278-79. Moreover, Mr. Gates testified that, were consumers provided a choice to buy older operating systems, they would inevitably be confused when they purchased versions that did not contain the newest features or support the newest technology. Gates Dir. ¶ 277.

569. Mr. Gates' concerns about consumer confusion are amplified by his misreading of the "marketing freedom" section of Remedy 3.c Mr. Gates reads that section to prohibit Microsoft from requiring OEMs to notify consumers that predecessor versions are older versions of Windows without the newest features. Tr. 4672:18-4674:13 (Gates). In his view, such a

requirement would violate an OEM's right to market that prior version "in the same manner" as the current version of Windows. Tr. 4672:23-4673:7 (Gates).

570. Those criticisms are based on a strained reading of Remedy 3 that is not supported by its text. First, nothing in Remedy 3 could possibly be read to prevent Microsoft from truthfully advertising the capabilities of predecessor as well as the latest versions of Windows. Second, Microsoft, as well as OEMs, both have significant financial interests in minimizing consumer confusion, so there is every reason to believe that they take steps to communicate to consumers that, for example, Windows 2000 is a later version of Windows than Windows 98 SE. However, were this Court concerned about such a hypothetical reading, it could simply add the following to the end of Remedy 3.c: *"in accordance with any reasonable licensing requirements, which may include a requirement to notify consumers of those features found in the latest version of Windows that are not supported in the predecessor version."*

571. In the end, Mr. Gates' concerns about consumer confusion are for the most part simply a reiteration of his view that consumers cannot be trusted with choice. Mr. Gates simply does not trust consumers to purchase the version of Windows that best meets their specific needs. Instead, he apparently views Microsoft as a necessary guardian guiding consumers to their best technological future—which of course results in the purchase of Microsoft's latest technology. That viewpoint, however, is antithetical to providing true consumer choice – one of the central principles animating the antitrust laws.

3. States' Remedy 3 Will Not Require Microsoft To Offer Versions of Windows with Technical Bugs or that Infringe Valid Patents

572. Microsoft also contends that States' Remedy 3 will require Microsoft to continue offering versions of Windows containing bugs or infringing non-Microsoft patents, in instances

where Microsoft would otherwise take such versions of Windows off the market. Gates Dir. ¶ 280; Tr. 4682:2-4683:16 (Gates).

573. As a preliminary matter, these criticisms are based upon highly speculative future events, none of which Microsoft asserts will occur or are likely to occur in the future. Indeed, Microsoft does not point to any past instance in which (a) it has even *considered* pulling, much less actually pulled, a version of Windows from the market because it could not come up with a security patch, or (b) it has been sued for patent infringement relating to Windows, or considered pulling Windows off the market in the face of any claim or allegation of patent infringement.

574. Moreover, in the event that a security issue arises or a patent infringement claim is made, such that Microsoft would have good cause to pull a version of Windows from the market, Microsoft could expeditiously petition the Court for a modification to the Final Judgment. *See* States' Remedy 18.g (Court retains power to modify or amend the Final Judgment as necessary at the request of the parties). Given that a dramatic event such as pulling a version of Windows from the market could not occur overnight, Microsoft would have ample time to initiate Court proceedings to obtain relief. In any event, these speculative concerns do not warrant rejection of this important remedy provision.

X. States' Remedy 4—Disclosure of APIs, Communications Interfaces and Technical Information

575. As recognized by both Microsoft and the States, an appropriate remedy in this case should require Microsoft to disclose to third parties the technical information necessary to interoperate with its software, including application programming interfaces ("APIs") and communications protocols. *See* Microsoft's Remedy III.D, III.E; States' Remedy 4.

576. Although both remedies require disclosure in order to allow interoperation with Microsoft software, that is where the similarity between the two provisions ends. While the States' Remedy provides for full disclosure of interfaces and the information needed to make use of those interfaces, the disclosure provisions of Microsoft's Remedy are quite narrow and contain a number of important exemptions that even further limit Microsoft's disclosure obligations. Among the fundamental differences between the States' and Microsoft's disclosure requirements (which are discussed in greater detail below) are the following:

- Both remedies require disclosure in order to allow third party software and Microsoft software to "interoperate"—a term that can have a broad range of meanings according to Microsoft's experts. Yet only the States' Remedy defines this important term. (*See infra* Sections X.B.2.b, X.C.1).

- Microsoft's Remedy III.D purports to require disclosure of APIs between Windows and its own middleware, but it exempts important categories of its middleware—and thus the Windows APIs that they use—from the disclosure requirements. The States' Remedy requires comprehensive disclosure of Windows APIs used by Microsoft's middleware. (*See infra* Sections X.B.1.b, X.C.2).

- Microsoft's Remedy leaves it to Microsoft's discretion whether to disclose new Windows APIs used by future middleware products. The States' Remedy expressly requires disclosure of the Windows APIs used by Microsoft Middleware Products during the term of the Court's judgment. (*See infra* Section X.C.3).

- Microsoft's Remedy does not require the disclosure of APIs exposed by Microsoft middleware—even middleware such as the most recent Windows Media Player that is *only* distributed as part of the Windows Operating System Product. The States' Remedy requires disclosure of these important categories of APIs. (*See infra* Sections X.B.1, X.C.4)

- Microsoft's Remedy III.E purports to require disclosure of protocols used by different computer systems to communicate with one another, but it excludes important categories of protocols—such as those used to enable server-to-server interoperation. The States' Remedy requires disclosure of these important protocols needed for interoperation. (*See infra* Sections X.B.1.C, X.C.5)

- Microsoft's Remedy does not require disclosure of the technical data needed by developers to make effective use of the disclosed APIs and protocols. The States' Remedy expressly requires that such "Technical Information" be made available to developers. (*See infra* Sections X.B.2.a, X.C.6)

- Microsoft's Remedy does not allow developers to review the Microsoft source code—a step that Microsoft's own witnesses say is sometimes necessary to create interoperable software products. The States' Remedy provides for source code review to achieve interoperability. (*See infra* Sections X.B.2.d, X.C.7).

- The disclosures of APIs and protocols under Microsoft's Remedy come far too late in the development cycle and permit Microsoft's own developers to work with new software code long before it is made available to third-party developers. The States' Remedy ensures that this information is disclosed to third parties at the same time that it is disclosed to competing Microsoft developers. (*See infra* Sections X.B.2.c, X.C.8).

- The disclosures under Microsoft's Remedy can be used only for a single, limited purpose—namely, to create software that interoperate with Windows. The States' Remedy contains no such limitation and would allow, for example, the creation of competing platform software. (*See infra* Section X.C.9).

- Microsoft's Remedy contains an overly broad and technically unjustified "security" exception that threatens to undermine entirely Microsoft's obligation to disclose APIs and protocols. The States' Remedy contains no such exemption—it simply does not require the disclosure of information that is truly needed to preserve computer security. (*See infra* Section X.C.10).

A. Purpose of States' Remedy 4

577. The purpose of States' Remedy 4 is to promote opportunities for competing software platforms by broadly requiring disclosure of the interfaces and technical information needed to interoperate effectively with applications and middleware used by Microsoft Windows-dominated PCs, as well as with the Windows PC operating system itself. This purpose is expressly stated by States' Remedy 4.a, which would require Microsoft to make available to third parties APIs, Technical Information, and Communications Interfaces "for the purpose of

enabling non-Microsoft Platform Software and non-Microsoft applications to Interoperate with Microsoft Platform Software and/or applications for Microsoft Platform Software." States' Remedy 4.a.

578. The broad disclosure mandated by States' Remedy 4 is necessary for at least two reasons. *First*, Remedy 4 is necessary to ensure that the information needed to interoperate with Microsoft platform software is disclosed to third parties on a full, timely, and non-discriminatory basis. Remedy 4 prevents Microsoft from controlling access to information about its interfaces and other technical information in a manner that disadvantages competing software platforms. It also allows for the emergence of software platforms that can compete effectively with Microsoft Windows, whether those platforms take the form of middleware, Web services, competing operating systems, or some other platform. In order to flourish, such platforms, at least initially, need the ability to interoperate with the ubiquitous PC operating system. *See infra* Section X.A.1.

579. *Second*, in order to overcome the applications barrier to entry that Microsoft strengthened through its anticompetitive practices, States' Remedy 4 gives competing software platform developers the information and ability to support some of the software programs that currently run only on Windows. *See infra* Section X.A.2.

1. States' Remedy 4 Is Necessary to Ensure Full, Timely, and Non-Discriminatory Access to Information Necessary for Interoperation with Microsoft Platform Software

580. The first purpose served by States' Remedy 4 is to ensure that third parties who need to interoperate with Microsoft platform software receive the information they need in a complete and timely manner and to the same extent as their competitors—including competing software developers within Microsoft. Stated differently, Microsoft should not be permitted selectively to disclose and withhold this important data as a means to disadvantage its

competitors—as it was found to have done on a number of occasions and as it continues to do today.

a. Microsoft used selective disclosure of technical information to disadvantage its platform competitors Netscape and Java

581. The Court of Appeals held that Microsoft entered numerous "First Wave" Agreements with ISVs under which the ISVs received access to Windows technical information in exchange for distributing, promoting, and relying on Microsoft's platform rather than that of rivals Netscape and Java. *Microsoft*, 253 F.3d at 71-72, 75-76.

582. With respect to Netscape, Microsoft entered the "First Wave" agreements to induce third-party software developers to rely on the APIs exposed by Microsoft rather than those exposed by Navigator. *Microsoft*, 253 F.3d at 71-72, 75-76; *see Microsoft*, 84 F. Supp. 2d at 93-94, Findings Nos. 334-35, 340. The Court of Appeals held that:

> "In dozens of First Wave agreements signed between the fall of 1997 and the spring of 1998, Microsoft has promised to give preferential support, in the form of early Windows 98 and Windows NT betas, other technical information, and the right to use certain Microsoft seals of approval, to important ISVs that agree to certain conditions. One of these conditions is that the ISVs use Internet Explorer as the default browsing software for any software they develop with a hypertext-based user interface. Another condition is that the ISVs use Microsoft's HTML Help, which is accessible only with Internet Explorer, to implement their applications' help systems."

Microsoft, 253 F.3d at 71-72 (quoting *Microsoft*, 84 F. Supp. 2d at 93, Finding No. 339).

583. The Court of Appeals held that "the effect of these deals is to ensure that many of the most popular Web-centric applications will rely on browsing technologies found only in Windows, and . . . Microsoft's deals with ISVs therefore increase the likelihood that the millions of consumers using applications designed by ISVs that entered into agreements with Microsoft will use Internet Explorer rather than Navigator." *Microsoft*, 253 F.3d at 72 (quoting *Microsoft*, 84 F. Supp. 2d at 93-94, Finding No. 340) (alterations & internal quotations omitted).

584. Microsoft's "First Wave" Agreements with each ISV also "conditioned receipt of Windows technical information upon the ISV's agreement to promote Microsoft's JVM exclusively" (rather than the cross-platform version of the Java Virtual Machine that complied with Sun standards). *Microsoft*, 253 F.3d at 75. Because the products of the First Wave ISVs reached millions of consumers, these agreements had a substantial effect on the distribution on the Sun-compliant JVM and protected Microsoft's monopoly from a middleware threat. *Id.* at 75-76.

585. The Court of Appeals held that these exclusive deals had no procompetitive business justification and violated Section 2 of the Sherman Act. *Microsoft*, 253 F.3d at 72, 76. Thus, Microsoft has been held to have selectively disclosed technical information needed to interoperate with its Windows platform for the purpose of illegally maintaining its monopoly.

b. Microsoft used untimely disclosure of an API and technical information to disadvantage its platform competitor Netscape

586. The District Court also found that Microsoft purposely delayed disclosure of a necessary API and technical information to Netscape Navigator in order to disadvantage its platform competitor. In June 1995, Microsoft knew that "Netscape needed certain critical technical information and assistance in order to complete its Windows 95 version of Navigator" in time for the retail release of Windows 1995 in August 1995. *Microsoft*, 84 F. Supp. 2d at 33, Findings Nos. 90, 91. This technical information included a Windows API needed by Netscape. *Id.* at 33, Finding No. 90. Microsoft advised Netscape that the haste with which Netscape would receive the required technical information would depend on whether Netscape entered a "special relationship" with Microsoft in which Netscape essentially agreed to forfeit any prospect of becoming a comprehensive platform for the development of network-centric applications. *Id.* at 32-33, Findings Nos. 84, 87-91. When Netscape declined, Microsoft withheld release of the

technical information to Netscape by more than three months, causing Netscape to postpone the release of its Windows 95 browser until substantially after the release of Windows 95 and Internet Explorer. *Id.* at 33, Finding No. 91.

587. Microsoft also "withheld a scripting tool that Netscape needed to make its browser compatible with certain dial-up ISPs," even though Microsoft had made the tool freely available to ISPs and had even negotiated the terms of a license with Netscape. *Microsoft*, 84 F. Supp. 2d at 33-34, Finding No. 92. Senior executives at Microsoft had "decided to link the grant of the license to the resolution of all open issues between the companies." *Id.* In the end, "Netscape never received a license to the scripting tool and, as a result, was unable to do business with certain ISPs for a time." *Id.* at 34, Finding No. 92.

588. Thus, Microsoft has used the timing of disclosure of technical information needed to interoperate with the Windows platform for the purpose of directly disadvantaging its platform rival Netscape.

c. Microsoft attempted to use access to its source code as a means to stifle competition

589. Microsoft also used the promise of access to its source code to induce IBM to end its efforts to compete with Microsoft Office. *Microsoft*, 84 F. Supp. 2d at 41-42, Findings Nos. 127, 129. In 1996 and 1997, IBM planned to pre-install on its PCs its SmartSuite and Notes business productivity software that competed with Microsoft Office. *Id.* In February 1997, Microsoft offered inducements to IBM to moderate its support for its competing software and to pre-install Microsoft's business productivity software, rather than its own, on its PCs. *Id.* at 42, Finding No. 129.

> The first inducement that the Microsoft representatives blandished before the [IBM] PC Company was early access to Windows source code, which Compaq and a handful of other OEMs enjoyed. IBM wanted this early access in order to

> ensure its hardware's contemporaneous compatibility with Microsoft's operating system products.

Id. This withholding information, and Microsoft's other actions, ultimately impaired IBM's ability to test, manufacture, and ship its PCs on schedule and placed IBM at a competitive disadvantage. *Id.* at 43, Findings Nos. 129-32.

d. Microsoft continues to use selective disclosure of APIs and technical information to disadvantage platform competitors

590. The remedy proceedings provided numerous examples of conduct involving Microsoft withholding or selectively disclosing APIs, protocols, or other technical information, thus advantaging Microsoft developers and disadvantaging potential competitors.

591. For example, David Richards, a senior executive of RealNetworks, testified that Microsoft has withheld APIs and technical information relating to various functions of Windows and the Windows Media Player while making such information available to its internal developers. These functions include: the Windows XP Copy to audio CD function, Richards Dir. ¶¶ 65, 67-68; the Windows XP Play All function, *id*. ¶¶ 65, 69-70; the Windows XP media search function, *id.* ¶¶ 65, 71-74; the Windows Secure Audio Path technology, *id.* ¶¶ 65, 75-78; and the Internet Explorer 6.0 Media Bar, *id.* ¶¶ 65, 79-84.

592. In many cases, Microsoft did not dispute that such information was available to Microsoft developers but had been withheld from third party multimedia middleware developers. *See* Averett Dir. ¶¶ 25-27 (Windows XP Copy to audio CD function); *id.* ¶ 33 (Windows Secure Audio Path technology); *id.* ¶ 45 (Internet Explorer 6.0 Media Bar). Instead, Microsoft argued that although it was comfortable making such functionalities available to consumers, it was not comfortable making them available to third party developers, at least without those developers adopting the Windows Media platform technologies wholesale, an unattractive and impractical alternative for a competing middleware platform developer like RealNetworks. *See* Averett Dir.

¶¶ 25-26 (Windows XP Copy to audio CD function); *id*. ¶¶ 32-33 (Windows Secure Audio Path technology); *id.* ¶ 46 (Internet Explorer 6.0 Media Bar).

593. There was also a substantial amount of testimony regarding the Kerberos security protocol, which is used for authentication and authorization of members of computer networks. Ledbetter Dir. ¶¶ 92-96; Tr. 5831:23-5832:25 (Madnick). This protocol, created by the Massachusetts Institute of Technology, was designed to be cross-platform so that virtually any server, running any operating system, could securely exchange data. *See* Ledbetter Dir. ¶¶ 94-95. It is undisputed that Microsoft added undisclosed and proprietary extensions to this protocol, such that non-Microsoft servers and clients could not be authorized to receive services from networks that included Microsoft servers and clients. Ledbetter Dir. ¶¶ 98-104; Tr. 5833:15-5834:22 (Madnick); Short Dir. ¶ 72; Schwartz Dir. ¶¶ 115-19; Tiemann Dir. ¶ 161; Pearson Dir. ¶ 48. A question exists as to whether recent disclosure by Microsoft relating to its proprietary extensions is sufficient to allow complete interoperability by third-party software with respect to Kerberos' authorization function. Cole Direct Testimony (DX 1505) ("Cole Dir.") ¶ 33; Madnick Direct Testimony (DX 1528) ("Madnick Dir.") ¶ 102; Short Dir. ¶ 74; *cf*. Ledbetter Dir. ¶¶ 103-04; Schwartz Dir. ¶ 119; Tiemann Dir. ¶ 165.

594. Significantly, an internal Microsoft email suggests that Microsoft only intended partial disclosure of its Kerberos extensions, PX 466A, and Microsoft Vice President Robert Short confirmed that the disclosure was in fact incomplete, although he asserted that the non-disclosed portions were for testing purposes. Tr. 5519:21-5520:5, 5532:15-5535:8 (Short). Microsoft Senior Vice President David Cole was unsure whether the disclosure was even now sufficient for interoperability. Tr. 4471:18-4472:13 (Cole). Although Mr. Short testified that Microsoft's extensions do not impede interoperability, Short Dir. ¶ 73, he confirmed that this

testimony was limited to the authentication, as opposed to the proprietary authorization, function. Tr. 5520:6-13 (Short).

595. Although a question exists as to whether Microsoft's Kerberos disclosure is complete, there is no question that it is untimely. Microsoft's Kerberos extension was incorporated into the Windows 2000 operating system, Ledbetter Dir. ¶ 98, Schwartz Dir. ¶ 116, Tiemann Dir. ¶ 164, launched in early 2000, Schwartz Dir. ¶ 116, but the recent disclosures did not occur until nearly two years later, in February 2002. Schwartz Dir. ¶ 118, Tiemann Dir. ¶¶ 165-66.

596. The record also reflects a lack of disclosure regarding other important protocols. For example, Microsoft does not disclose its Common Internet File System ("CIFS") protocol, which is used for file and print sharing. Tiemann Dir. ¶¶ 135-42. Similarly, Microsoft does not disclose its Tabular Data Stream ("TDS") Protocol, designed to communicate between Microsoft desktop PCs and Microsoft's SQL database servers. Tiemann Dir. ¶¶ 143-44; Tr. 1148:11-1149:13 (Tiemann). Nor has Microsoft fully disclosed its "ADSI" interface extension to the industry standard LDAP directory services protocol. Tiemann Dir. ¶¶ 150-52; Bennett Dir. ¶¶ 199-200.

597. Although Microsoft does not dispute that many of its protocols have been only partially disclosed, it points to efforts made by third-parties or even Microsoft itself to promote some sort of interoperability in the absence of such disclosure. *See* Bennett Dir. ¶ 194. The problem with reliance on such reverse-engineering projects is that the solution is only good until Microsoft changes the protocol again, and may in any event only be a partial solution. Tiemann Dir. ¶¶ 140-41; Tr. 1148:14-1149:13 (Tiemann). Furthermore, Microsoft's efforts to promote

interoperability appear to be at least as focused on migrating users of non-Microsoft software to Microsoft software. Tr. 5507:22-5514:22 (Short).

e. States' Remedy 4 is necessary to ensure that nascent platform threats can interoperate with Windows on the PC

598. As recognized by the Court of Appeals, a hallmark of a platform threat to Microsoft's Windows monopoly is that it is able to interoperate across multiple operating systems, or platforms. *Microsoft*, 253 F.3d at 53; *see also Microsoft*, 84 F. Supp. 2d at 28, Finding No. 68.

599. In order to pose a threat, the technology must be able to interoperate with Windows and with other platforms. *See Microsoft*, 253 F.3d at 53; Shapiro Dir. ¶¶ 144-45. Indeed, the potential attractiveness of Navigator and Java to developers was that each was written to run on Windows in addition to other operating systems. *See Microsoft*, 253 F. 3d at 53. As with Navigator and Java, the nascent platform threats identified in the liability trial and the remedy proceedings cannot evolve into true threats to Windows without multi-platform interoperability, which, given the dominance of Windows among consumers and developers, must include Windows interoperability.

600. For example, any Web service or Web service platform that seeks to compete with Microsoft must ensure that it can interoperate across many devices, including particularly PCs running Windows. Schwartz Dir. ¶ 128. Because Windows is the virtually ubiquitous desktop operating system, almost any Web service or Web services platform will have to be able to interact effectively with end-users running Windows PCs. *Id.* ¶ 191.

601. Handheld computing devices, such as the Palm Pilot, are competing platforms that can perform functions such as running word processors and spreadsheets and sending and receiving email. Mace Dir. ¶ 12. They are also particularly dependant on interoperability. Just

the fear that a handheld may not interoperate in the future can be enough to drive customers away from a handheld platform. *Id.* ¶ 30. And again, it is interoperability with Windows that is key. About 95% of Palm users synchronize their handhelds to Windows PCs. *Id.* ¶ 26.

602. Similarly, as set-top box and PC technologies converge, it is critical that set-top box developers be given the necessary interfaces and technical disclosures to enable their middleware to interoperate effectively with Microsoft PC platform software. Kertzman Dir. ¶ 66.

603. Interoperability with Windows is also critical for server operating systems. If non-Microsoft servers cannot interoperate efficiently with Microsoft servers and with client PCs that run Windows, then those non-Microsoft servers will be less able to offer an attractive set of applications to end users. Ledbetter Dir. ¶ 63. If a Windows PC will not interoperate with, for example, a Linux server, then the server will not be able to compete and fewer Linux applications will be written. Tiemann Dir. ¶ 127.

604. Thus, in order for current nascent platform threats to evolve into serious alternatives to Windows, the ability to interoperate with Windows is, at least initially, a prerequisite.

2. The Disclosures Mandated by States' Remedy 4 Are Necessary to Help Overcome the Applications Barriers to Entry

605. The District Court found that "[t]he main reason that demand for Windows experiences positive network effects . . . is that the size of Windows' installed base impels ISVs to write applications first and foremost to Windows, thereby ensuring a large body of applications from which consumers can choose. The large body of applications thus reinforces demand for Windows, augmenting Microsoft's dominant position and thereby perpetuating ISV

incentives to write applications principally for Windows. This self-reinforcing cycle is often referred to as a 'positive feedback loop.'" *Microsoft*, 84 F. Supp. 2d at 20, Finding No. 39.

606. "What for Microsoft is a positive feedback loop is for would-be competitors a vicious cycle. For just as Microsoft's large market share creates incentives for ISVs to develop applications first and foremost for Windows, the small or non-existent market share of an aspiring competitor makes it prohibitively expensive for the aspirant to develop its PC operating system into an acceptable substitute for Windows." *Microsoft*, 84 F. Supp. 2d at 20, Finding No. 40.

607. "To provide a viable substitute for Windows, another PC operating system would need a large and varied enough base of compatible applications to reassure consumers that their interests in variety, choice, and currency would be met to more-or-less the same extent as if they chose Windows. Even if the contender attracted several thousand compatible applications, it would still look like a gamble from the consumer's perspective next to Windows, which supports over 70,000 applications. The amount it would cost an operating system vendor to create that many applications is prohibitively large." *Microsoft*, 84 F. Supp. 2d at 20, Finding No. 40.

608. One way to break the vicious cycle is to enable would-be competitors to support some of the thousands of applications created for Windows. This can be achieved by providing competing software platform developers with sufficient disclosure to provide a substitute platform that exposes some of the APIs exposed by Windows. Appel Dir. ¶ 49. This would enable multiple platform vendors to produce competing implementations of some of these APIs and for consumers to choose among those competing software platforms. Tr. 2930:17-2931:12 (Schwartz). Because the implementations of the APIs could potentially support a similar set of

applications, the choice would be made on the relative merits of the platform, rather than being predetermined by the effects of the feedback loop identified by the District Court.

609. The ability to expose some of the same APIs would not, as Microsoft argues, require the same underlying source code. *See supra* Section V.C ("States' Remedies Will Not Enable Cloning of Windows"). Microsoft itself, in merging its two former Windows code bases, known as "NT" and "9.x," to create Windows XP worked to ensure that the new Windows code base supported the same APIs as the former code bases, despite different underlying source codes. Tr. 4550:6-4551:18 (Gates). As a technical matter, the ability to support a set of APIs does not require the copying of source code underlying a particular implementation of those APIs. *See* Appel Dir. ¶¶ 52-53, 105. For example, Sun delivers a standard set of APIs, and multiple competing companies produce implementations of those APIs without making use of each other's source code. Tr. 2930:17-2931:4 (Schwartz).

610. Without cross-platform APIs, the other option to escape the effects of the vicious cycle is to port applications written to the dominant platform so that they operate on competing platforms. But porting applications to another platform is both time-consuming and expensive, and ISVs will not undertake this effort unless the marginal added sales justify the cost of porting. *Microsoft,* 84 F. Supp. 2d at 20, Finding No. 38; *see* Appel Dir. ¶¶ 39-43. Even "ISVs that do go to the effort of porting frequently set the price of ported applications considerably higher than that of the original versions written for Windows," thus making such option less desirable for both developers and consumers. *Microsoft*, 84 F. Supp. 2d at 20, Finding No. 38.

B. How States' Remedy 4 Achieves Its Intended Purpose

611. States' Remedy 4 requires the disclosure of the interfaces and other technical information that will facilitate the creation and adoption of competing software platforms. It accomplishes its purpose by requiring both that the disclosures are broad—*i.e.,* that all

appropriate interfaces are disclosed—and that the disclosures are deep—*i.e.*, that third parties are provided the information and ability to make effective use of the disclosed interfaces.

612. *First*, States' Remedy 4 requires the comprehensive disclosure of interfaces that are used by Microsoft's applications and middleware to interoperate with Microsoft platform software. In this way, the States' disclosure remedy ensures that Microsoft does not unfairly advantage its own software by allowing it to interoperate through APIs and Communications Interfaces that are not disclosed to third party competitors. Shapiro Dir. ¶¶ 145, 195; *see* Pearson Dir. ¶ 88; Kertzman Dir. ¶ 74; Richards Dir. ¶ 92. It also allows completing software platforms to overcome the applications barrier to entry by providing them with the information they need to support some of the applications and middleware that today only run on Microsoft platforms. Appel Dir. ¶¶ 90-92.

613. *Second*, States' Remedy 4 requires not only the disclosure of interfaces, but also ensures that third parties are able to make effective use of those interfaces. Thus, the States' disclosure remedy requires Microsoft to disclose the technical data concerning how to use the APIs; requires that this information is sufficient to allow effective interoperation with Microsoft software; requires that the interfaces be disclosed to third parties at the same time they are provided to Microsoft's developers; and allows third parties to review Microsoft source code if necessary to achieve interoperation.

1. States' Remedy 4 Requires Broad Disclosure of Interfaces

614. States' Remedy 4 requires that Microsoft disclose to third parties all of the interfaces that Microsoft itself uses to allow its own applications and middleware to interoperate with Microsoft Platform Software. States' Remedy 4 provides:

4. Disclosure of APIs, Communications Interfaces and Technical Information

a. Interoperability Disclosure. Microsoft shall disclose to ISVs, IHVs, IAPs, ICPs, OEMs and Third-Party Licensees on an ongoing basis and in a Timely Manner, in whatever media Microsoft customarily disseminates such information to its own personnel, for the purpose of enabling non-Microsoft Platform Software and non-Microsoft applications to Interoperate with Microsoft Platform Software and/or applications for Microsoft Platform Software, all APIs, Technical Information and Communications Interfaces that Microsoft employs to enable:

i. each Microsoft application to Interoperate with Microsoft Platform Software installed on the same Personal Computer;

ii. each Microsoft Middleware Product to Interoperate with Microsoft Platform Software installed on the same Personal Computer; and

iii. each Microsoft software program installed on one computer (including without limitation Personal Computers, servers, Handheld Computing Devices and set-top boxes) to Interoperate with Microsoft Platform Software installed on another computer (including without limitation Personal Computers, servers, Handheld Computing Devices and set-top boxes).

b. Necessary Disclosure. Microsoft shall disclose to each OEM and Third-Party Licensee all APIs, Communications Interfaces and Technical Information necessary to permit them to fully exercise their rights under Section 2.c.

c. Compliance. To facilitate compliance, and monitoring of compliance, with this Section 4, Microsoft shall create a secure facility where qualified representatives of OEMs, ISVs, IHVs, IAPs, ICPs, and Third-Party Licensees shall be permitted reasonable access to study, interrogate and interact with the source code and any related documentation and testing suites of Microsoft Platform Software for the purpose of enabling their products to Interoperate effectively with Microsoft Platform Software (including exercising any of the options in Section 2.c).

615. States' Remedy 4.a.i-iii sets forth the specific interface disclosures that would be required of Microsoft. Three categories of disclosure are required.

a. States' Remedy 4.a.i requires the disclosure of interfaces between Microsoft applications and Microsoft Platform Software

616. States' Remedy 4.a.i requires the disclosure of APIs, Communications Interfaces and Technical Information used by "each Microsoft application to Interoperate with Microsoft Platform Software Installed on the same Personal Computer." "Microsoft Platform Software" is

defined as "a Windows Operating System Product or Microsoft Middleware Product or any combination of a Windows Operating System Product and a Microsoft Middleware Product." States' Remedy 22.y. Thus, States' Remedy 4.a.i would require the disclosure of the interfaces that Microsoft uses to allow its own applications to interoperate with its own middleware and operating systems.

617. States' Remedy 4.a.i is necessary to ensure that third party application developers are provided access to the same information that is available to Microsoft application developers for the purpose of interoperating with Microsoft Platform Software such as Windows. *See* Shapiro Dir. ¶¶ 146-50, 195. This parity principle will improve the performance of third party applications running on Microsoft Platform Software, to the benefit of consumers. *Id.*

618. States' Remedy 4.a.i also ensures that Microsoft will disclose the interfaces made available to software applications by middleware platforms, not just by operating systems. This disclosure is necessary because modern software applications often call on interfaces exposed by middleware rather than, or in addition to, interfaces exposed by the operating system. Appel Dir. ¶¶ 65-67; Richards Dir. ¶¶ 36, 37, 43-46. Microsoft's Internet Explorer, Common Language Runtime, Office, and Windows Media Player are all examples of middleware that expose APIs and/or Communications Interfaces that are used by other software programs. Green Dir. ¶¶ 149, 154-55; Appel Dir. ¶¶ 74-87; Tr. 4193:20-4194:18 (Borduin); Tr. 6175:16-6176:6 (Poole).

619. Disclosure of these middleware interfaces is particularly important in the case of middleware that Microsoft distributes as part of the Windows Operating System Product, *i.e.*, bundled with the Windows operating system. Appel Dir. ¶ 67. Software is infinitely malleable, and functionality can be moved from one software component to another in the discretion of the

developer. *Id.* Thus, Microsoft could choose to move its most significant interfaces from the operating system level to the middleware level. *Id.*; *see also* Tr. 6173:11-6181:11 (Poole). States' Remedy 4.a.i would require that these important interfaces be disclosed to third parties.

620. States' Remedy 4.a.i also helps to break down the applications barrier to entry by allowing third party developers to create platform software that can run some or all of the applications that today have been written to run only on Windows. Appel Dir. ¶¶ 90-92. As the District Court found, the cost and burden of porting applications deters ISVs from rewriting their applications to run on new software platforms. *Microsoft*, 84 F. Supp. 2d at 18, Finding No. 30. Thus, a developer of a new operating system or middleware platform may want to create interfaces that will support preexisting applications that have been developed for other operating systems (in particular Windows, which is the dominant PC operating system product). Appel Dir. ¶ 90. In order to do so, the developer would need access to the APIs that the Microsoft operating system uses to interact with applications and middleware. *Id.*; *see* Tiemann Dir. ¶¶ 170-72. Of course, the developer would still need to develop and test all of the underlying software code that implements the APIs, which is an enormous task. *See* Appel Dir. ¶ 105; *see also supra* Section V.C ("States' Remedies Will Not Enable Cloning of Windows"). But without this information, the competing platform would not be able to run the applications that currently run on Microsoft platform software, and thus the applications barrier to entry would inhibit consumer acceptance of the competing platform. *See Microsoft*, 84 F. Supp. 2d at 20, Finding No. 40.

b. States' Remedy 4.a.ii requires the disclosure of interfaces between Microsoft Middleware Products and Microsoft Platform Software

621. States' Remedy 4.a.ii requires the disclosure of the APIs, Communications Interfaces, and Technical Information used by "each Microsoft Middleware Product to

Interoperate with Microsoft Platform Software installed on the same Personal Computer." Once again, "Microsoft Platform Software" is defined to mean Windows Operating System Products and Microsoft Middleware Products, either alone or in combination. The term "Microsoft Middleware Product" is specifically defined to include Office; Internet browsers (such as Internet Explorer); media creation, delivery and playback software (such as Windows Media Player); and "the Common Language Runtime component of the .NET framework, and Compact Framework." States' Remedy 22.x.i. The States' definition of "Microsoft Middleware Product" constitutes a comprehensive and appropriate list of software that meets the technical definition of middleware. Appel Dir. ¶¶ 72, 80, 87; Green Dir. ¶ 160.

622. As the Court of Appeals and the District Court recognized, middleware has the potential to erode the applications barrier to entry that sustains Microsoft's monopoly by making software applications more easily ported to competing operating systems. *Microsoft*, 253 F.3d at 53-55; *Microsoft*, 84 F. Supp. 2d at 28, Finding No. 68. However, third party middleware products will not gain initial acceptance unless they work well with Windows. Shapiro Dir. ¶ 144. So long as Windows remains the dominant desktop operating system, rival middleware developers will have difficulty gaining widespread adoption for their products unless they are given information necessary to achieve parity with Microsoft middleware regarding interoperation with Windows. *Id.* States' Remedy 4.a.ii seeks to achieve parity by ensuring that developers of non-Microsoft middleware are given access to the same information that is used by developers of Microsoft middleware for the purpose of interoperating with Microsoft Platform Software. *Id.* ¶ 146.

623. The information that third party developers need to create middleware that effectively interoperates with Microsoft Platform Software are (1) the APIs and Communications

Interfaces exposed by the Microsoft Platform Software and (2) the Technical Information concerning how to make effective use of those APIs and Communications Interfaces. Appel Dir. ¶¶ 70-72. Full disclosure of this information is important because Microsoft can disadvantage rival middleware products by failing to disclose even a small number of functions that its middleware uses to interoperate with the Windows operating system. *See* Richards Dir. ¶¶ 65, 67-68, 75-78 (Windows Copy to CD function and Secure Audio Path technology are made available to Windows Media Player but not to RealNetworks' rival middleware); *accord* Averett Dir. ¶¶ 25, 27, 33.

624. As with States' Remedy 4.a.i, Remedy 4.a.ii requires disclosure of the interfaces exposed by both Microsoft middleware and operating systems. This is important because some non-Microsoft middleware makes use of interfaces that are exposed by Microsoft middleware. For example, the Java Virtual Machine ("JVM)" needs APIs that are exposed by both Microsoft's Internet Explorer and by the Windows operating system. Green Dir. ¶ 155. Microsoft, however, does not disclose the Internet Explorer API needed by Java. *Id.* ¶ 149. Although Sun has been able to make use of this API through the cumbersome process of reverse engineering, Microsoft could change it at any time—causing the Sun JVM to longer work on Windows and placing it at an obvious disadvantage to Microsoft's own JVM. *Id.*

c. States' Remedy 4.a.iii requires the disclosure of interfaces between Microsoft software on one device and Microsoft Platform Software on another device

625. States' Remedy 4.a.iii requires the disclosure of the APIs, Communications Interfaces and Technical Information used by "each Microsoft software program installed on one computer (including without limitation Personal Computers, servers, Handheld Computing Devices and set-top boxes) to Interoperate with Microsoft Platform Software installed on another computer (including without limitation Personal Computers, servers, Handheld Computing

Devices and set-top boxes)." Again, "Microsoft Platform Software" is defined to mean Windows Operating System Products and Microsoft Middleware Products, either alone or in combination. States' Remedy 22.y.

626. Developers of platform threats to the Windows monopoly, such as Web services, server operating systems, handheld devices and set-top boxes, must make their products work well with Windows to gain initial acceptance of their products. Schwartz Dir. ¶ 128; Ledbetter Dir. ¶ 63; Mace Dir. ¶¶ 26, 30; Kertzman Dir. ¶¶ 25, 66; Tiemann Dir. ¶ 127; *see* Schwartz Dir. ¶ 134 (If Microsoft alone can guarantee full and efficient interoperability with users of its ubiquitous PC operating system, then it influences not only what software or services consumers purchase tomorrow, but the platform that developers write to today.).

627. An effective remedy must therefore place great emphasis on making sure that Microsoft cannot use its Windows monopoly to impede the ability of these platform threats by restricting interoperability. *See* Shapiro Dir. ¶¶ 173-75 (server-based threats, including server operating systems and Web services); *id.* ¶ 191 (handheld devices); *id.* ¶ 134 (Web services); Kertzman Dir. ¶ 66 (set-top boxes); Tiemann Dir. ¶ 4 (rival operating systems).

628. States' Remedy 4.a.iii ensures that developers of such third-party platforms have access to the same information that is available to developers of Microsoft's competing platforms (*e.g.*, Microsoft's .NET Web services platform, Windows server operating systems, Windows CE and PocketPC handheld operating systems and set-top boxes) for the purpose of interoperating with Microsoft Platform Software, thus facilitating the ability of such third-party platforms to interoperate in a similar fashion. *See* Shapiro Dir. ¶ 184 (server operating systems and other platform competitors); *id.* ¶ 192 (handheld devices); Mace Dir. ¶¶ 93-94 (handheld devices); Ledbetter Dir. ¶¶ 85, 177 (server operating systems); Tiemann Dir. ¶¶ 186, 190 (rival

operating systems); Schwartz Dir. ¶ 135 (Remedy 4 extends to the interoperation between multiple devices and various types of software, covering the multitude of interactions that are at the heart of a Web services network like .NET).

629. The disclosure of the interoperation between Microsoft's Platform Software and Microsoft platforms on other devices will loosen Microsoft's control over these interactions, and lessen the potential that Microsoft will be able to lock in developers, consumers, and businesses through undisclosed proprietary interfaces and protocols. Schwartz Dir. ¶ 135; *see* Kertzman Dir. ¶ 72; Shapiro Dir. ¶¶ 188, 192. It will also permit competitors to support some of the applications and/or services written to Microsoft's versions of these emerging platforms. *See* Schwartz Dir. ¶¶ 143-44.

630. As with States' Remedies 4.a.i and 4.a.ii, Remedy 4.a.iii requires disclosure of the interfaces exposed by both Microsoft middleware and operating systems. This is important because current platform threats make use or will make use of interfaces that are exposed by Microsoft middleware. For example, Web services predominantly interoperate with Microsoft's Internet Explorer. *See* Schwartz Dir. ¶¶ 51, 80, 82. Even more importantly, Microsoft's new platform for Web services is the .NET framework (the Common Language Runtime and its APIs), middleware that will sit on Windows. *Id.* ¶¶ 68-70, 73-74, 76. Remedy 4.a.iii will ensure that the disclosure obligations encompass Web services resident on the Internet interacting with the CLR on PCs. Schwartz Dir. ¶ 143.

2. States' Remedy 4 Provides Developers With the Information and Ability to Make Effective Use of the Disclosed APIs and Communications Interfaces

631. States' Remedy 4 not only requires the disclosure of the Microsoft APIs and Communications Interfaces needed for interoperation, it also requires Microsoft to provide developers with the information and ability to make effective use of those APIs and

Communications Interfaces. It does this by requiring disclosure of the technical data needed to interoperate effectively with Microsoft Platform Software; by appropriately defining what it means to "interoperate" (a term that Microsoft's Remedy also uses but does not define); by requiring that these interfaces and data be provided to third parties at the same time as they are given to competing Microsoft developers; and by allowing developers to review the Microsoft source code if the disclosures alone are insufficient to enable interoperation.

a. States' Remedy 4 provides the disclosure of the information needed to ensure effective interoperation

632. States' Remedy 4 ensures that developers can make effective use of the disclosed APIs and Communications Interfaces by requiring Microsoft to disclose the technical data needed to do so. It does this by appropriately defining the terms "APIs" and "Communications Interfaces" to make clear what information must be disclosed, and also by requiring Microsoft to provide "Technical Information" needed to use those APIs and Communications Interfaces. States' Remedy 4.a, 22.c, 22.f, 22.nn. As a result, the States' Remedy ensures that all information that software developers need is fully disclosed. McGeady Dir. ¶ 48; Tiemann Dir. ¶ 187.

1) The importance of disclosing sufficient information to make effective use of interfaces

633. Merely disclosing APIs and Communications Interfaces, without more information, is inadequate to allow developers to make use of those interfaces. Dr. Appel illustrated this principle in his direct testimony by explaining that APIs provide middleware or applications with the information necessary for it to make the proper "calls" to receive services from an operating system. Appel Dir. ¶ 59. Disclosure of the APIs allows software developers to write code that can make these "calls." *Id.* But the APIs do not provide the means for interpreting the data that is received from the operating system. *Id.* In order to interpret, and

thus make use of, this data, the middleware or application needs additional information, such as data structure definitions and layouts, syntaxes and grammar. *Id.* Other data, such as threading and synchronization conventions, and memory allocation and deallocation conventions, are needed because they prescribe the order in which different calls should be performed. *Id.* And a developer also needs to know technical information such as the syntax and parameters of the calls to the interface, the type and nature of the parameters to be passed to those entry points, error codes, and registry entries. McGeady Dir. ¶ 41.

634. Thus, simple disclosure of the relevant API is generally not sufficient, because other technical information is needed to make use of the interface. By properly defining the terms "APIs" and "Communications Interfaces" to describe what information must be disclosed, and by also requiring disclosure of needed "Technical Information," the States' Remedy expressly requires Microsoft to disclose the technical details needed by software developers to make effective use of the interfaces that are disclosed by Microsoft. Appel Dir. ¶ 64; McGeady Dir. ¶¶ 48-52; Tiemann Dir. ¶ 187.

2) The States' Remedy properly defines the term "APIs"

635. The States' Remedy defines "APIs" as follows:

> *"APIs" or application programming interfaces mean the interfaces, service provider interfaces, file formats, data structures, Component Object Model specifications and interfaces, registry settings, global unique identifiers ("GUIDs") and protocols that enable a hardware device or an application, Middleware, server Operating System or network Operating System to efficiently obtain services from (or provide services in response to requests from) and fully Interoperate with Platform Software and to use, benefit from, and rely on all the resources, facilities, and capabilities of such Platform Software. APIs include all interfaces, methods, routines and protocols that enable any Microsoft Operating System or Middleware Product installed on a Personal Computer to (a) execute fully and properly applications or Middleware designed to run in whole or in part on any Microsoft Platform Software installed on that or any other device (including servers, telephones and devices), (b) fully Interoperate with Microsoft Platform Software, applications or directories installed on the same computer or on any other computer or device, and (c) perform network security protocols such*

> *as authentication, authorization, access control, encryption/decryption and compression/decompression.*

States' Remedy 22.c.

636. This definition of "APIs" captures the spectrum of information that software uses to interact with and interface to Microsoft Platform Software. McGeady Dir. ¶ 48. Without this disclosure, development of innovative Windows-compatible software would be effectively prevented or severely hindered by the high cost of discovering these interfaces, by an incomplete understanding of undisclosed interfaces leading to unpredictable operation, and by the likelihood that the interfaces will change without notice, rendering products suddenly inoperative. *Id.* ¶ 49. For that reason, the States' broad definition of "APIs" is important to software developers. *Id.*

637. The States' definition of "APIs" also takes into account the evolution of the industry. For example, as Web services evolve and computing moves from stand-alone desktops to distributed networks, authentication and authorization systems are becoming increasingly important. Schwartz Dir. ¶ 47 (security standards and protocols essential to the successful implementation and use of Web services); Borthwick Dir. ¶ 70 (Microsoft's identification/authentication/authorization service is a "critical bridge" to Web services). The States' definition of "APIs" thus specifically includes "all interfaces, methods, routines and protocols that enable any Microsoft Operating System or Middleware Product installed on a Personal Computer to . . . perform network security protocols such as authentication, authorization, access control, encryption/decryption and compression/decompression." States' Remedy 22.c. It thus extends to the information necessary for third-party software to interact with Microsoft's user authentication and authorization systems. Schwartz Dir. ¶¶ 138-39.

3) The States' Remedy properly defines the term "Communications Interfaces"

638. The States' Remedy contains a similarly comprehensive definition of "Communications Interfaces:"

> *"Communications Interfaces" means the interfaces and protocols that enable software, directories, software, directories, networks, Operating Systems, network Operating Systems or Web-Based Software installed on one or application (including Personal Computers, servers and Handheld Computing Devices) to Interoperate with the Microsoft Platform Software on another computer including without limitation communications designed to ensure security, authentication or privacy.*

States' Remedy 22.f.

639. As with the definition of API, the definition of "Communications Interfaces" ensures full disclosure. The States' definition encompasses the protocols necessary to enable communications with client and network operating systems, web-based software and hand-held devices. McGeady Dir. ¶ 51.

640. Furthermore, the States' definition includes important network and communications protocols that in part may have authentication, security and privacy capabilities. Schwartz Dir. ¶¶ 138-39. This fact is extremely important. If a computer or software program is attempting to interoperate over a network, without access to protocols that include security or authentication components, that program will not be able to authenticate into the Windows platform, thereby either preventing interoperation or forcing the application to communicate in an insecure fashion. McGeady Dir. ¶ 51.

4) The States' Remedy requires disclosure of the technical information needed to make effective use of disclosed interfaces

641. A key distinction between the States' and Microsoft's Remedies is that the States would require the disclosure not only of APIs and Communications Interfaces, but also of

"Technical Information" that is needed to make use of those APIs and Communications Interfaces. States' Remedy 4.a; Appel Dir. ¶ 64. Microsoft's Remedy has no equivalent requirement. Appel Dir. ¶¶ 58-64.

642. The States' Remedy defines "Technical Information" as:

> *"Technical Information" means all information regarding the identification and means of using APIs and Communications Interfaces that competent software developers require to make their products running on any computer Interoperate effectively with Microsoft Platform Software or applications for Microsoft Platform Software running on a computer. Technical information includes but is not limited to reference implementations, communications protocols, file formats, data formats, syntaxes and grammars, data structure definitions and layouts, error codes, memory allocation and deallocation conventions, threading and synchronization conventions, functional specifications and descriptions, encryption algorithms and key exchange mechanisms for data translation, reformatting, registry settings and field contents.*

States' Remedy 22.nn.

643. As discussed above, third party software developers need information concerning how to use effectively the interfaces that are disclosed to them. The States' definition of "Technical Information" specifies—and gives examples of—this important information that must be disclosed. Appel Dir. ¶ 64. Different interfaces require the disclosure of different types of technical information; no single interface is likely to require *all* the types of information enumerated in the States' definition of "Technical Information." *Id.* ¶ 108. However, each type of information listed in the States' definition of "Technical Information" is necessary to allow *some* software to interoperate with Microsoft software. *Id.*

644. Thus, while developers of different forms of middleware may all share the need for a certain type of information—such as file formats—they also each have needs for particular types of information that they need to achieve effective interoperation with Microsoft Platform Software. For example, information concerning file formats and registry settings is critical to developers of media middleware for the desktop, Richards Dir. ¶ 90, yet this information has not

always been disclosed by Microsoft. Richards Dir. ¶ 80 (special Internet Explorer registry not disclosed to third-party ISVs). File formats are also particularly important to developers of handheld computers, which depend upon sharing documents between devices. Mace Dir. ¶ 27. Meanwhile, developers of distributed computing applications, such as web services, need a variety of information, including file formats, data structures, and information concerning authentication and authorization systems. Green Dir. ¶ 161.

645. Even Microsoft's computer science expert Dr. Madnick agreed that a number of these types of "Technical Information"—data formats, data structure definitions and layouts, error codes, and threading and synchronization conventions—are needed by software developers to use APIs, and that there may be cases in which other types of Technical Information are also needed. Tr. 5801:1-5803:13 (Madnick).

b. The States' Remedy expressly and appropriately defines the term "Interoperate"

646. States' Remedy 4 requires the disclosure of APIs, Technical Information, and Communications Interfaces used by certain Microsoft software to "Interoperate" with Microsoft Platform Software. The States' Remedy ensures that the disclosures will be meaningful by defining "Interoperate" to mean "the ability of two products to effectively access, utilize and/or support the full features and functionality of one another." States' Remedy 22.q.

647. The States' definition of "Interoperate" tracks well-accepted industry usage of the term as used to describe the ability of two products to work effectively together on the same computer or in the same network. Ledbetter Dir. ¶ 67. It makes clear that sufficient disclosure will be available to third parties to allow for full and effective interoperability. Richards Dir. ¶ 91. Stated differently, it makes clear that Microsoft may not fulfill its disclosure obligations by disclosing only some bare minimum amount of information that would permit only basic or

degraded interaction with Microsoft Platform Software. Pearson Dir. ¶¶ 65, 67. For third-party products that seek to make use of features provided by Microsoft software products, the States' definition of "Interoperate" requires that the third-party products must be able to use the APIs and Communications Interfaces—in the same way as Microsoft products use them—to request the different functionalities that may be available from the Microsoft software. Tr. 3193:6-3194:25 (Appel); Tr. 1789:21-1790:22 (Ledbetter). Thus, if Microsoft does not disclose how to access some of the features of its software product, Microsoft is not permitting third-party software to "Interoperate" according to the States' definition. Tr. 3193:6-3194:25 (Appel).

c. Disclosure under States' Remedy 4 is provided in a timely manner

648. The States' Remedy ensures that third-party developers will be able to make effective use of Microsoft's interface disclosures by requiring that third parties receive access to those interfaces at the same time that they are provided to Microsoft's own developers. Green Dir. ¶ 168. States' Remedy 4.a requires Microsoft to disclose APIs, Technical Information, and Communications Interfaces in a "Timely Manner." "Timely Manner" is defined as follows:

> *"Timely Manner": Disclosure of APIs, Technical Information and Communications Interfaces in a Timely Manner means, at a minimum, publication on a Web site accessible to ISVs, IHVs, OEMs and Third-Party Licensees at the earliest of the time that such APIs, Technical Information, or Communications Interfaces are (i) disclosed to Microsoft's applications developers, or (ii) used by Microsoft's own Platform Software developers in software released by Microsoft in alpha, beta, release candidate, final or other form, or (iii) disclosed to any third party, or (iv) within 90 days of a final release of a Windows Operating System Product, no less than 5 days after a material change is made between the most recent beta or release candidate version and the final release.*

States' Remedy 22.pp.

649. The States' timing provision allows for fair competition between third-party applications and middleware and Microsoft software. Green Dir. ¶ 169; Mace Dir. ¶ 97; Shapiro Dir. ¶ 195. Most significantly, it requires both third party and Microsoft developers to receive

new Windows interfaces at the same time—thus allowing concurrent development of software that can make use of those interfaces to interoperate effectively with Windows. Green Dir. ¶¶ 168-69; Richards Dir. ¶ 95; Mace Dir. ¶ 97; Borthwick Dir. ¶ 60. Given the fast-moving nature and short product cycles in the software industry, it is crucial for developers to receive this timely access to new interfaces. Schwartz Dir. ¶ 136; Richards Dir. ¶ 92. If third-party developers are not provided with interface information at the same time as Microsoft's competing developers, the Microsoft developers are given a significant head start in both developing and marketing products that make use of the new functionalities of the interfaces. Richards Dir. ¶ 92; Green Dir. ¶¶ 166-67. Indeed, without such timely access, third-party developers may not even have sufficient time to meet deadlines for creating and shipping their Microsoft-compatible products. Richards Dir. ¶¶ 92-94; Green Dir. ¶¶ 166-67.

d. The States' Remedy 4.c allows developers to review the source code for Microsoft platform software if necessary to enable interoperation

650. In some cases, the documentation of an interface is insufficient to allow third-party developers to create software that effectively makes use of that interface. In those cases, the decades-old practice in software development is "when in doubt, read the source code;" that is, the developer can gain a better understanding of an interface by reviewing the underlying source code. Appel Dir. ¶ 93. The States' Remedy 4.c allows adherence to this well-established practice by permitting third parties "reasonable access" to review the source code for Microsoft Platform Software in a secure facility.

651. As Dr. Appel testified, the need to review source code in order to interoperate with that software may arise in a number of circumstances. Appel Dir. ¶ 94. It may arise when the interface is particularly complex and difficult to document. *Id.* Or it may arise when the software under development is innovative and seeks to interact with the interface in a manner not

envisioned when the API documentation was prepared. *Id.* In such cases, reviewing the source code not only assists the developer in creating software that effectively interoperates with the platform software, but also allows the developer to prevent any unintended consequences that might result from an innovative use of the interface. *Id.*

652. Microsoft witness Scott Borduin, Chief Technology Officer of ISV Autodesk, Inc., also testified that he has personally been involved in a situation in which it was necessary to review the source code of a software product in order to allow Autodesk's product to make use of poorly-engineered APIs. Tr. 4201:7-4202:5 (Borduin); Borduin Dir. ¶¶ 1, 3. Mr. Borduin testified that reviewing source code is not the preferred method to achieve interoperability because it involves additional work by the ISV and is not a reliable means to ensure interoperation over the long term. Tr. 4201:7-4202:5 (Borduin). However, Mr. Borduin agreed that sometimes reviewing source code is *necessary* to allow a software developer to get its product to market. *Id.*

653. In addition to Dr. Appel and Mr. Borduin, a number of other States' and Microsoft witnesses testified as to the need to review source code in some instances to achieve interoperation with another software product. Tr. 5490:4-18 (Short) (acknowledging instances in which it has been necessary to interrogate the Windows source code to solve interoperability problems); Tr. 5750:24-5751:20, 5755:5-5756:7, 5964:12-15 (Madnick) (ISVs sometimes review source code, including Windows source code, to achieve interoperability; it is helpful to review source code to clarify details of an unclear API specification); McGeady Dir. ¶¶ 37-39 (recalling that Intel software engineers needed access to Microsoft source code to develop an interoperable product); Tiemann Dir. ¶ 189; Schwartz Dir. ¶ 176.

654. Microsoft also recognizes the value of allowing review of the Windows source code by third parties whose software products need to interoperate with Windows. Microsoft currently has a "source code access" program under which Microsoft's OEM—and ISV—partners can get access to the Microsoft source code in order to help them develop their products. Appel Dir. ¶ 95 & n.7 (citing deposition testimony of Microsoft Senior Vice President Brian Valentine). Microsoft also shares its source code with its enterprise customers, service providers who offer support services for Windows, and research institutions. Shapiro Dir. ¶ 151 & n.132 (citing deposition testimony of Microsoft Group Vice President Jim Allchin).

655. Under States' Remedy 4.c, qualified representatives of third parties would be permitted "reasonable access" to the secure facility to review source code for the purpose of enabling their products to interoperate with Microsoft Platform Software. The "reasonable access" language means that Microsoft could impose appropriate conditions—such as requiring execution of licenses—to ensure that the third parties did not engage in improper conduct such as illegally copying the Microsoft source code. DX 1530, at 112:7-23, 134:18-135:16 (Greene deposition).

C. The Disclosure Provisions of Microsoft's Remedy Are Inadequate

656. The disclosure provisions of Microsoft's Remedy are set forth in III.D and III.E. Microsoft's Remedy III.D addresses the disclosure of application programming interfaces ("APIs") "that are used by Microsoft Middleware to interoperate with a Windows Operating System Product." It provides:

> *Starting at the earlier of the release of Service Pack 1 for Windows XP or 12 months after the submission of this Final Judgment to the Court, Microsoft shall disclose to ISVs, IHVs, IAPs, ICPs, and OEMs, for the sole purpose of interoperating with a Windows Operating System Product, via the Microsoft Developer Network ("MSDN") or similar mechanisms, the APIs and related Documentation that are used by Microsoft Middleware to interoperate with a Windows Operating System Product. For purposes of this Remedy III.D, the term*

> *APIs means the interfaces, including any associated callback interfaces, that Microsoft Middleware running on a Windows Operating System Product uses to call upon that Windows Operating System Product in order to obtain any services from that Windows Operating System Product. In the case of a new major version of Microsoft Middleware, the disclosures required by this Remedy III.D shall occur no later than the last major beta test release of that Microsoft Middleware. In the case of a new version of a Windows Operating System Product, the obligations imposed by this Remedy III.D shall occur in a Timely Manner.*

657. Microsoft's Remedy III.E addresses the disclosure of "Communications Protocols" used to interoperate or communicate with a Windows Operating System Product. It provides:

> *Starting nine months after the submission of this proposed Final Judgment to the Court, Microsoft shall make available for use by third parties, for the sole purpose of interoperating or communicating with a Windows Operating System Product, on reasonable and non-discriminatory terms (consistent with Section III.I), any Communications Protocol that is, on or after the date this Final Judgment is submitted to the Court, (i) implemented in a Windows Operating System Product installed on a client computer, and (ii) used to interoperate, or communicate, natively (i.e., without the addition of software code to the client operating system product) with a Microsoft server operating system product.*

658. In a number of respects, Microsoft's Remedies III.D and III.E are inadequate to enable third-parties to create products that interoperate effectively with Microsoft Platform Software.

1. The Meaning of "Interoperate" is Undefined in Microsoft's Remedy

659. Although both III.D and III.E of Microsoft's Remedy purport to provide disclosures to allow software to "interoperate" with Windows, Microsoft's Remedy never defines this important term. Given that Microsoft's own experts testified that "interoperate" can have a broad range of meanings, this omission creates substantial uncertainty as to the meaning and effect of Microsoft's disclosure remedy—and it casts serious doubt as to whether third parties will receive meaningful disclosures.

660. Microsoft's Remedy III.D requires the disclosure of "the APIs and related Documentation that are used by Microsoft Middleware to *interoperate* with a Windows Operating System Product." (Emphasis added). Microsoft's Remedy III.E requires Microsoft to make available Communications Protocols that, *inter alia*, are "used to *interoperate*, or communicate, natively (*i.e.*, without the addition of software code to the client operating system product) with a Microsoft server operating system product." (Emphasis added). Microsoft's Remedy III.E. also provides that such Communications Protocols shall be made available to third parties "for the sole purpose of *interoperating* or communicating with a Windows Operating System Product." (Emphasis added).

661. Microsoft's Remedy does not set forth a definition of the term "interoperate" or "interoperating." Tr. 5794:21–5795:5 (Madnick); Tr. 7108:21-23 (Bennett); Pearson Dir. ¶ 67; Richards Dir. ¶ 91; Tiemann Dir. ¶ 179.

662. Microsoft's technical experts testified that, within the field of computer science, there can be disagreement as to the meaning of the term "interoperate." Dr. Madnick testified that "interoperability means different things to different people," Tr. 5846:13–24 (Madnick), and he agreed that different people in the field of computer science might have different understandings of the term "interoperate" as it is used in Microsoft's Remedy. Tr. 5796:21-25 (Madnick). Dr. Madnick further testified that within the field of computer science, there is no single recognized approach to interoperability. Tr. 5794:21-23 (Madnick). Dr. Bennett also agreed that reasonable people could disagree as to what constitutes interoperability between computer programs. Tr. 7109:13-7110:12 (Bennett).

663. Microsoft expert Dr. Madnick testified that within the field of computer science, the term "interoperate" spans a broad continuum from almost no interaction to perfect interaction

between computer software. Tr. 5775:18-5779:3 (Madnick); Madnick Dir. ¶ 46 & fig. 2 (at 24-25). The term "interoperate" could be used to mean a very limited and very difficult interaction between computers. Tr. 5776:16-5777:24 (Madnick). Dr. Madnick agreed that *any* degree of interaction between computers—no matter how limited—meets the definition of "interoperation." Tr. 5777:10-24 (Madnick). For example, Dr. Madnick testified that the long-obsolete practice of computers interacting by reading hand-carried punch cards would constitute "interoperation." Tr. 5776:16-5777:24 (Madnick); *see* Tr. 4778:18-5779:3 (Gates) (interoperation is "a matter of degree").

664. Dr. Madnick also testified that the Microsoft Windows PC operating system could be considered to "interoperate" with a non-Microsoft server even if does not operate in the same manner as it does with a Microsoft server. Tr. 5788:11-22 (Madnick). Under his interpretation of the term "interoperate," the Windows PC operating system would not have to behave identically in its interactions with Microsoft and non-Microsoft servers. Tr. at 5792:22-5793:2 (Madnick). Dr. Madnick's opinion directly contradicts the portion of the Department of Justice's Competitive Impact Statement that explains Microsoft's Remedy as follows:

> Thus, if the Windows system product is using all the communications protocols that it contains to communicate with two servers, one of which is a Microsoft server and one of which is a competing server that has licensed and fully implemented all the communications protocols, *the Windows operating system product should behave identically in its interaction with both the Microsoft and the non-Microsoft servers.*

Tr. 5790:6-15 (emphasis added); *cf.* Tr. 5792:22-5793:2 (Madnick).

665. The failure of Microsoft's Remedy to define "interoperate" means that the disclosures provided under that Remedy may not be sufficient to allow third parties to achieve full and effective interoperation with Windows Operating System Products. *See* Richards Dir. ¶

91. Such full interoperability—*i.e.*, seamless, bi-directional interoperability—is essential to enable programs to work together effectively. Ledbetter Dir. ¶ 66.

666. The failure of Microsoft's Remedy to define "interoperate" leaves open the question of whether Microsoft must disclose all information necessary to ensure that the Windows PC operating system has the same level of interoperation with non-Microsoft servers as it does with Microsoft servers. Ledbetter Dir. ¶ 66. It also leaves open the question of whether Microsoft may disclose only some bare minimum information necessary for only basic or degraded interoperability or communication. Pearson Dir. ¶ 67.

667. In contrast, the States' Remedy expressly and properly defines "Interoperate" in accordance with industry usage of the term and ensures that sufficient disclosure will be available to third parties to allow for full and effective interoperability. *See supra* Section X.B.2.b ("The States' Remedy expressly and appropriately defines the term 'Interoperate'").

2. Microsoft's Remedy Does Not Require the Disclosure of All of the Windows APIs Used by Microsoft's Own Middleware

668. Microsoft's Remedy purports to require Microsoft to disclose "the APIs and related Documentation that are used by Microsoft Middleware to interoperate with a Windows Operating System Product." Microsoft's Remedy III.D. However, it then defines "Microsoft Middleware" so narrowly that it excludes important categories of middleware, such as Office and the latest version of the Windows Media Player. As a result, the important Windows APIs used by this middleware escape the disclosure requirements of Microsoft's Remedy, and—even though Microsoft uses these APIs for its own middleware—it has no obligation to provide them to third-party middleware developers.

669. Microsoft's Remedy III.D requires Microsoft to disclose "the APIs and related Documentation that are used by Microsoft Middleware to interoperate with a Windows Operating System Product."

670. Microsoft's Remedy VI.J defines "Microsoft Middleware" as follows:

> *J. "Microsoft Middleware" means software code that*
>
> > *1. Microsoft distributes separately from a Windows Operating System Product to update that Windows Operating System Product;*
> >
> > *2. is Trademarked or is marketed by Microsoft as a major version of any Microsoft Middleware Product defined in section VI.K.1; and*
> >
> > *3. provides the same or substantially similar functionality as a Microsoft Middleware Product.*
>
> *Microsoft Middleware shall include at least the software code that controls most or all of the user interface elements of that Microsoft Middleware.*
>
> *Software code described as part of, and distributed separately to update, a Microsoft Middleware Product shall not be deemed Microsoft Middleware unless identified as a new major version of that Microsoft Middleware Product. A major version shall be identified by a whole number or by a number with just a single digit to the right of the decimal point.*

671. This definition of "Microsoft Middleware" excludes several important categories of Microsoft middleware, and therefore Microsoft's Remedy III.D would not require disclosure of the APIs used by such middleware to interoperate with Windows Operating System Products. Appel Dir. ¶ 70; McGeady Dir. ¶ 42. The result is that software developers would not have access to APIs exposed by the Windows Operating System Product that are not used by the specific Microsoft products that satisfy the restrictive definition of "Microsoft Middleware." Appel Dir. ¶ 71.

a. The APIs Used by the Latest Version of the Windows Media Player are Not Required to be Disclosed

672. The District Court recognized that multimedia players may constitute middleware. *Microsoft*, 84 F. Supp. 2d at 30, Finding No. 78. Microsoft's Windows Media Player exposes APIs that are used by other software products and is defined as a "Microsoft Middleware Product" under Microsoft's Remedy. Microsoft's Remedy VI.J.K; Poole Dir. ¶ 78; Tr. 6175:16-6176:6 (Poole).

673. However, software code does not meet the definition of "Microsoft Middleware" under Microsoft's Remedy unless it is, *inter alia*, "distribute[d] separately from a Windows Operating System Product to update that Windows Operating System Product." Microsoft's Remedy VI.J.1. If software code does not meet the definition of "Microsoft Middleware," the APIs that it uses to interoperate with Windows Operating System Products are *not* required to be disclosed under Microsoft's Remedy. Microsoft's Remedy III.D; Tr. 5221:1-5222:17 (Jones).

674. The latest version of Microsoft's media player software is Windows Media Player 8.0, also known as Windows Media Player for Windows XP. Poole Dir. ¶ 9; Richards Dir. ¶ 87; Tr. 6113:7-15 (Poole). Windows Media Player 8.0 is not distributed separately from the Windows Operating System Product. Richards Dir. ¶ 87; Schwartz Dir. ¶ 167; Tr. 5198:3-10 (Jones). Thus, Windows Media Player 8.0 does not satisfy the definition of "Microsoft Middleware," and the APIs that it uses to interoperate with the Windows Operating System Product are not be required to be disclosed under Microsoft's Remedy. Microsoft's Remedy III.D; Richards Dir. ¶ 87; Schwartz Dir. ¶ 167; *see* Tr. 5198:3-10, 5214:3-5215:6, 5221:10-5222:4 (Jones).

675. Microsoft Vice President Will Poole conceded that Microsoft was not required to disclose the interfaces between the current version of Windows and the current version of the

Windows Media Player, but stated that Microsoft planned to disclose the interfaces between prior versions of both products. Poole Dir. ¶ 75; Tr. 6112:1-6113:15 (Poole). Although Mr. Poole stated that Microsoft will separately distribute the next version of the Windows Media Player, he also acknowledged that such a decision is in the hands of Microsoft. Poole Dir. ¶ 76; Tr. 6124:1-6125:5 (Poole). Because Microsoft can choose whether or not to distribute the Windows Media Player separately, it can, under Microsoft's Remedy, avoid disclosing the APIs exposed between Windows and the Windows Media Player.

b. The APIs Used by Windows Messenger are Not Required to be Disclosed

676. Microsoft's instant messaging software, Windows Messenger, is defined as a "Microsoft Middleware Product" in Microsoft's Remedy. Microsoft's Remedy VI.K. Microsoft Vice President Chris Jones testified that Windows Messenger is not distributed separately from Windows XP. Tr. 5222:5-17 (Jones). Therefore, it does not meet the definition of "Microsoft Middleware," and the APIs that it uses to interoperate with the Windows Operating System Product would not be required to be disclosed under Microsoft's Remedy. Microsoft's Remedy III.D; Tr. 5222:5-17 (Jones).

c. The APIs Used by the Common Language Runtime are Likely Not Required to be Disclosed

677. The .NET framework is Microsoft's new platform for software development. Schwartz Dir. ¶ 73; Tr. 4183:12-23 (Borduin); Allchin Dir. ¶ 67; PX 123 at 5-6; PX 1300. It is specifically designed to serve as a platform for software, including Web services, that will run on Windows today. Allchin Dir. ¶ 67; *see also* Schwartz Dir. ¶¶ 73-4; PX 1308 at 6 (Microsoft has announced that it is transitioning popular Windows products into Web services, including Office). The Common Language Runtime ("CLR") component of the .NET framework is functionally comparable to the Java Runtime Environment ("JRE"). Appel Dir. ¶ 74; Tr.

5966:19-5967:9 (Madnick). Both the CLR and JRE are middleware platforms that support other software applications, and both middleware platforms have similar functionalities. Appel Dir. ¶ 74; Schwartz Dir. ¶ 76 & fig. 2; Tr. 4183:12-23 (Borduin). Unlike the JRE, however, the CLR is a Microsoft product that was not developed to be ported to other operating systems and that only runs on Windows. Appel Dir. ¶ 74; Schwartz Dir. ¶ 77 & fig. 3; Tr. 4184:15-17 (Borduin); Tr. 6564:23-6565:1 (Allchin). Microsoft has not decided whether to make the CLR available on other platforms. Tr. 6569:5-24 (Allchin).

678. The CLR does not meet the definition of "Microsoft Middleware" set forth in Microsoft's Remedy. Tr. 5968:20-22 (Madnick); Microsoft's Remedy VI.J; Appel Dir. ¶ 76; Green Dir. ¶ 159. Microsoft Vice President Christopher Jones testified that it was "unclear" whether the CLR "provides the same or similar functionality as a Microsoft Middleware Product," as is required to meet the definition of "Microsoft Middleware." Tr. 5219:8-5220:15 (Jones); *accord* Appel Dir. ¶ 76. Thus, the APIs used by the CLR to interoperate with Windows Operating System Products would not be required to be disclosed under Microsoft's Remedy. Microsoft's Remedy III.D; Appel Dir. ¶ 76; *see also* Green Dir. ¶¶ 130-31. And because the CLR is Microsoft's newest technology, the APIs that it uses to interoperate with Windows are Microsoft's latest, state-of-the-art APIs. Green Dir. ¶ 159. Furthermore, according to Bill Gates, the .NET initiative will affect "every piece of application code that gets written." PX 123 at 7; Schwartz Dir. ¶ 73. Thus, failure to disclose these particular APIs would place vendors of competing middleware (such as the Java platform) at a significant disadvantage. Green Dir. ¶ 159.

d. The APIs Used by Microsoft Office are Not Required to be Disclosed

679. Another important middleware that is not included within the definition of "Microsoft Middleware" is Microsoft's Office business productivity software, which includes Word, Excel, Outlook, and Power Point. Appel Dir. ¶¶ 81, 85; McGeady Dir. ¶ 42. Microsoft Office is one of the most important middleware platforms in the current business world, exposing APIs that allow other software to invoke the functionality of Office. Appel Dir. ¶ 81. Software developers can create business applications that run atop Office and make use of Office's ability to manipulate and present documents, forms, spreadsheets, and databases. *Id.* ¶ 83. For example, Microsoft witness Scott Borduin testified that his company, Autodesk, Inc., has developed and markets a sophisticated software product that calls upon interfaces exposed by Microsoft Excel in order to use Excel as a calculational engine. Tr. 4193:20-4194:18 (Borduin).

680. Office does not meet the definition of "Microsoft Middleware" in Microsoft's Remedy. Tr. 5218:21-25 (Jones); Appel Dir. ¶ 85; McGeady Dir. ¶ 42; *see* Microsoft's Remedy VI.J. Office does not satisfy the requirement of definition VI.J.1, namely that it is software code that "Microsoft distributes separately from a Windows Operating System Product to update that Windows Operating System Product." Specifically, Office "is not designed to update a Microsoft Windows operating system product." Tr. 5218:21-25 (Jones).

681. Because Office does not meet the definition of "Microsoft Middleware," the APIs that it uses to interoperate with Windows Operating System Products are not required to be disclosed under Microsoft's Remedy. Microsoft's Remedy III.D; Tr. 5218:21-5219:7 (Jones); Appel Dir. ¶ 85; McGeady Dir. ¶ 42. Thus, an ISV who wants to create competing business productivity software to run on Windows will not necessarily have access to the APIs that are exposed by Windows and used by Microsoft Office. Appel Dir. ¶¶ 85-86.

682. In contrast, the States' Remedy requires the disclosure of all APIs used by Microsoft Middleware Products to interoperate with Microsoft Platform Software, thus ensuring that competing developers have access to this information needed to develop interoperable software products. *See supra* Section X.B.1.b ("States Remedy 4.a.ii requires the disclosure of interfaces between Microsoft Middleware Products and Microsoft Platform Software").

3. Microsoft's Remedy Allows Future APIs to Remain Undisclosed

683. Microsoft's Remedy leaves it to Microsoft's discretion whether to disclose APIs that it adds to Windows in the future. Microsoft could avoid disclosing future APIs in a number of different ways.

684. *First*, with respect to software code that meets the definition of "Microsoft Middleware" under its Remedy VI.J, Microsoft can decide which of the Windows Operating System Product APIs are used by that software code. Appel Dir. ¶ 71. Under Microsoft's Remedy III.D, only APIs used by "Microsoft Middleware" must be disclosed. Appel Dir. ¶ 71. Microsoft is not required to disclose to third parties APIs that are exposed by the Windows Operating System Product but that are *not* used by software that meets the definition of "Microsoft Middleware." *Id.* Thus, Microsoft could avoid the requirement to disclose particular APIs simply by ensuring that software defined as "Microsoft Middleware" does not use those APIs. *Id.*

685. *Second*, Microsoft could develop and market new middleware in a manner such that the new middleware does not meet the definition of "Microsoft Middleware." Under that definition, software is considered to be "Microsoft Middleware" only if it (1) is "distribute[d] separately from a Windows Operating System Product to update that Windows Operating System Product," Microsoft's Remedy VI.J.1, (2) is "Trademarked or is marketed by Microsoft as a major version of any Microsoft Middleware Product defined in section VI.K.1," Microsoft's

Remedy VI.J.2, *and* (3) "provides the same or substantially similar functionality as a Microsoft Middleware Product." Microsoft's Remedy VI.J.3.

686. It is within Microsoft's discretion whether to trademark any middleware that it develops in the future or to market it as "major version" of a Microsoft Middleware Product. Tr. 5220:16-5221:9 (Jones); Ledbetter Dir. ¶¶ 153-54. If Microsoft develops a new middleware but decides not to trademark it or not to market it as a major version of a "Microsoft Middleware Product," that new middleware would not meet the definition of "Microsoft Middleware," and the APIs that it uses to interoperate with Windows would not need to disclosed under Microsoft's Remedy III.D. Tr. 5221:10-5222:4 (Jones); Ledbetter Dir. ¶¶ 153-54.

687. Even if Microsoft did seek trademark protection for its new middleware, the new middleware would not meet the definition of "Microsoft Middleware" if Microsoft simply decided not to distribute it separately from the Windows Operating System Product. Tr. 5221:10-5222:4 (Jones); Tiemann Dir. ¶ 178. Such a distribution decision by Microsoft would not be unprecedented—Microsoft today does not separately distribute its Windows Media Player 8.0. Tr. 5198:3-10 (Jones); Richards Dir. ¶ 87; Schwartz Dir. ¶ 167. And again, if the new middleware does not satisfy the definition of "Microsoft Middleware," the APIs that it uses to interoperate with the Windows Operating System Product are not required to be disclosed to third parties. Tr. 5218:21-5222:17 (Jones); Richards ¶ 87; Ledbetter Dir. ¶¶ 152-55.

688. Microsoft's Remedy expressly provides that "[t]he software code that comprises a Windows Operating System Product shall be determined by Microsoft *in its sole discretion*." Microsoft's Remedy VI.U (emphasis added). Thus, Microsoft could decide to bundle any new functionality it develops into its Windows Operating System Product, rather than to include it within separately distributed middleware. Richards Dir. ¶ 88; Pearson Dir. ¶ 66. If Microsoft

exercises its sole discretion to bundle the new functionality into its Windows Operating System Product, it would have no obligation to disclose the APIs used by that new functionality under its Remedy. *See* Microsoft's Remedy III.D; Richards Dir. ¶ 88.

689. The States' Remedy addresses these shortcomings by providing for broad disclosure and limiting Microsoft's control over what information may be legitimately withheld. For example, APIs must be disclosed whether they are used by Microsoft applications (States' Remedy 4.a.i), Microsoft Middleware Products (States' Remedy 4.a.ii) or Microsoft software on another computer (States' Remedy 4.a.iii). *See supra* Section X.B.1 ("States Remedy 4 Requires Broad Disclosure of Interfaces"). Microsoft cannot avoid the disclosure obligations by relocating APIs to different software "layers." Moreover, the definition of Microsoft Middleware Product is broadly defined to encompass a range of current functionality (States' Remedy 22.x.i) and contemplates future middleware developments (States' Remedy 22.x.ii). Tr. 2992:15-2993:4 (Appel). Finally, unlike Microsoft's Remedy, the States' Remedy does not allow Microsoft to decide what constitutes the Windows Operating System Product. States' Remedy 22.rr.

4. Microsoft's Remedy Does Not Require the Disclosure of APIs Exposed by Middleware

690. Nothing in Microsoft's Remedy requires Microsoft to disclose the APIs exposed by its middleware. Appel Dir. ¶ 65; Tr. 5212: 7-11 (Jones); *see* Microsoft's Remedy III.D, III.E. Disclosing middleware interfaces is important because there are a number of significant interfaces that are exposed by Microsoft's middleware rather than by its operating system. Appel Dir. ¶ 66.

691. For example, Microsoft's Internet Explorer exposes numerous interfaces that are used by other software, including an API that is used by the Java middleware platform to run on

the PC. Green Dir. ¶ 149; Tr. 5211:16-21 (Jones). Some Java server-based applications use an "applet tag" to invoke the Java Runtime Environment ("JRE") on the desktop, and to instruct the JRE where to place or display its output on a web page. Green Dir. ¶ 149. Although Microsoft's Internet Explorer provides an API to enable a JRE to access the underlying operating system functionality needed to execute the applet tag, Microsoft does not document this API. *Id.* Microsoft's own version of Java can and does make use of this API, but the compliant version of Java offered by Sun and other companies cannot do so without undertaking the cumbersome process of reverse-engineering the API. Green Dir. ¶ 149; Tr. 330:6-333:7 (Green). Although Sun has successfully reverse-engineered this API, the fact that it is undocumented means that Microsoft can change the API in any way and at any time, thereby interfering with the performance of the Sun JRE on the PC. Green Dir. ¶ 149; Tr. 364:14-366:18 (Green). Nothing in Microsoft's Remedy would require Microsoft to disclose or document this API, or any other API exposed by Internet Explorer. *See* Green Dir. ¶¶ 150, 155; Appel Dir. ¶¶ 65-66; Tr. 366:19-370:14 (Green); Tr. 5212:7-11 (Jones).

692. Internet Explorer also includes a "Media Bar" that allows the Windows Media Player to launch within Internet Explorer when media content is encountered while browsing the Internet. Richards Dir. ¶ 79. Once again, Microsoft has not published the APIs exposed by Internet Explorer, or the related technical information, that would allow a rival middleware developer to replace the Media Bar with an equivalent, competing bar, or even to replace Windows Media Player with another media player within Internet Explorer. *Id.* Microsoft concedes that it does not permit third-party developers to replace the IE media bar or to replace the media playback technology within the media bar. Averett Dir. ¶ 40. Microsoft justifies this lack of disclosure by arguing that the IE Media bar is "an integrated feature of IE6 that provides

user value." *Id.* RealNetworks points out that the better solution would be to provide the requisite disclosure so that RealNetworks could offer a competing, and perhaps more comprehensive, solution for consumers. Richards Dir. ¶ 84.

693. As with Internet Explorer, the APIs exposed by Windows Media Player do not need to be disclosed under Microsoft's Remedy. Tr. 6173:11-6181:11 (Poole); Tr. 5211:22-5212:11 (Jones). Microsoft Vice President Will Poole confirmed that not only is Microsoft under no obligation to expose the APIs exposed by the Windows Media Player under Microsoft's Remedy, but that Microsoft could choose whether to locate a particular API in Windows or Windows Media Player—and thus could choose whether to incur a disclosure obligation.

694. Microsoft Office is also a middleware that exposes APIs that are called upon by third-party software products. Appel Dir. ¶¶ 81-87; *see* Tr. 4193:20-4194:18 (Borduin). Under Microsoft's Remedy, Microsoft is not required to disclose the APIs that Office makes available to applications. Appel Dir. ¶ 85; Tr. 5212:7-11 (Jones). If these APIs are not disclosed, third-party developers cannot develop software that interoperates with the APIs exposed by Office. Appel Dir. ¶ 85.

695. It is particularly important to require disclosure of the interfaces that are provided to applications by Microsoft middleware, such as Internet Explorer and Windows Media Player, that is bundled into the Windows Operating System Product. Appel Dir. ¶¶ 66-67. This is important because software is infinitely malleable, and functionality can be moved from one software component to another in the discretion of the developer. *Id.* ¶ 67. Thus, Microsoft could choose to move its most significant interfaces from the operating system level to the middleware level, thereby avoiding any obligation to disclose these interfaces under Microsoft's Remedy. *Id.*; Green Dir. ¶ 155; Tr. 6177:13-6178:6 (Poole).

696. The result would be that interfaces needed by applications to interoperate with what Microsoft (in its sole discretion) defines to be the "Windows Operating System Product" would not necessarily be available to third-party software developers—simply because those interfaces are now located in middleware that is bundled into the Windows Operating System Product rather than in the operating system code itself. *See* Appel Dir. ¶ 67; Tr. 6177:13-6178:6 (Poole); Pearson Dir. ¶ 66. This would also allow Microsoft to provide different, and potentially more advantageous, functionality to its own applications via interfaces that are located in middleware code and that are not required to be disclosed to third-party developers. *See* Appel Dir. ¶ 67; Green Dir. ¶ 155; Pearson Dir. ¶ 66.

697. The States' Remedies 4.a.i and 4.a.ii address these shortcomings by requiring the disclosure of APIs exposed to other Microsoft software by all Microsoft Platform Software, including Microsoft Middleware Products. Thus, unlike Microsoft's Remedy, the States' Remedy requires disclosure of these important categories of APIs, such as the APIs used by software applications to interoperate with Office, the CLR, Windows Media Player, and Internet Explorer. *See supra* Section X.B.1 ("States' Remedy 4 Requires Broad Disclosure of Interfaces").

5. The Protocol Disclosure Obligation in Microsoft's Remedy Is Too Narrow

698. There are various levels of interoperability in computer networks, ranging from only marginal degrees of interoperability, in which functions may be lost or performance slowed, to seamless, or full, interoperability. Ledbetter Dir. ¶ 66.

699. Microsoft's expert witness, Professor Madnick, testified that "interoperability is a matter of degrees." Tr. 5773:22-5774:2 (Madnick). Mr. Short similarly testified that "I might

argue that it's very hard to get to the full interoperability, but I would agree, yes, that there's a continuum." Tr. 5477:14-21 (Short).

700. Full interoperability—*i.e.*, seamless bi-directional interoperability—is essential to enable programs to work together effectively. Ledbetter Dir. ¶ 66. The disclosure under Microsoft's Remedy III.E is inadequate to achieve this desired level of full interoperability because: (a) important client-server protocols are excluded; (b) server-to-non-PC device interoperation is excluded; and (c) server-to-server interoperation is excluded.

a. Microsoft's Remedy Does Not Require Disclosure of Important Client-Server Protocols

701. Microsoft's Remedy III.E requires only the disclosure of communications protocols that are "used to interoperate, or communicate, natively (*i.e.*, without the addition of software code to the client operating system product) with a Microsoft server operating system product." Microsoft's Remedy III.E.

702. But desktop clients rarely communicate "natively" with servers. As Mr. Tiemann testified, "[t]here are relatively few instances that I can think of in which the desktop operating system communicates directly with the server 'natively.'" Tiemann Dir. ¶ 184. Indeed, Microsoft Vice President Robert Short testified that "[t]here are five basic approaches to achieving interoperability between Windows client operating systems and non-Microsoft server operating systems" and only one of these five basic approached involves interoperating natively. Short Dir. ¶ 35. In other words, Microsoft Remedy III.E's narrow focus on "native" interoperability ignores—and exempts from disclosure—information needed for the other "basic approaches" to client-server interoperability common throughout the industry. *See id*.

703. The limited scope of Remedy III.E accordingly exempts from disclosure important categories of client-server communications protocols, such as certain features of Microsoft Exchange (the Microsoft server-side email software), and the TDS protocol.

704. For example, Microsoft Exchange (the Microsoft server-based email software) uses proprietary protocols to interoperate with Microsoft Outlook (the PC-based email software) with respect to certain functions. Tiemann Dir. ¶¶ 145-47. An example is the calendaring function that allows a user on the computer network to use email to schedule meetings with other users (such as co-workers). *Id.* at 184. Non-Microsoft email products cannot make use of this proprietary protocol, and thus they cannot make use of the calendaring function. McGeady Dir. ¶ 44; Tiemann Dir. ¶¶ 147-49, 184.

705. Under Microsoft's Remedy, this proprietary protocol would not be required to be disclosed because it is not used to interoperate, or communicate, *natively* with a Microsoft server operating system product. This is because Outlook is not "native" to Windows, *i.e.*, it is not bundled into the Windows Operating System Products. McGeady Dir. ¶ 45. Thus, although Outlook is Microsoft middleware, this protocol is not required to be disclosed. And therefore, competing email products cannot take advantage of this protocol. McGeady Dir. ¶ 45; *see* Tiemann Dir. ¶¶ 147-49, 184.; Tr. 1156:4-15 (Tiemann).

706. A second example is the Tabular Data Stream ("TDS") protocol. This protocol is used to communicate between Microsoft desktop PCs and Microsoft's SQL database servers. Tiemann Dir. ¶ 143. Again, because the TDS protocol does not operate "natively," it would also fall outside the disclosure obligation in Microsoft's Remedy III.E. Tr. 1151:1-9 (Tiemann).

707. It would appear that the restriction to "native" interoperation would exclude the interoperation between any "unbundled" middleware running on a PC and a server. Microsoft's

Remedy III.E defines "interoperate natively" as "without the addition of software code to the client operating system product." This indicates that if a piece of software, such as a browser, is added to the operating system, rather than distributed with the operating system, then the disclosure requirements would not apply to any protocols used by that middleware. Schwartz Dir. ¶ 165.

708. Even with regard to the protocols that must be disclosed, Microsoft's Remedy III.E only requires the disclosure of the client side of client-server protocols. However, seamless interoperability also requires the disclosure of server-side protocols. Pearson Dir. ¶ 70.

709. In any event, Microsoft has the ability to take currently "native" protocols and extend or reengineer them so that they do not interoperate natively, and thereby avoid the disclosure obligations under Remedy III.E. Tr. 996:3-999:17, 1144:22-1146:10 (Tiemann).

b. Microsoft's Remedy does not address server-to-server interoperability

710. Microsoft's Remedy III.E does not even purport to address the issue of server-to-server interoperability, which is absolutely crucial to proper interoperation within a network—today's networks involve multiple servers that must work and interoperate together to provide data and services to clients. *See* Tiemann Dir. ¶ 183; Pearson Dir. ¶ 68 ("Microsoft's Remedy does not require the disclosure of any information to facilitate interoperability between and among Microsoft servers and non-Microsoft servers."); Richards Dir. ¶¶ 96-97 (Remedy III.E does not extend to server-server interoperation).

711. Server-to-server interoperability is essential to the success of Web services that are often accessed by users through PCs. For example, even the simple act of viewing digital media on the PC requires the use of server-to-server protocols. Digital media systems that provide the media content to the PC involve large networks of interconnected servers that

constantly communicate and balance the flow of data. Many Websites store media content on a media server, a separate computer from the Web server that maintains the Website. Thus, when consumers access media content when browsing on such Websites, the Web servers may actually interoperate with other servers, the media servers, in order to provide media content to the consumers' PCs. And, in cases in which media content is password protected (*e.g.,* if it is offered through a subscription service), the media server or Web server may need to interoperate with yet another server, a security server, to check that the consumer is authorized to view or listen to the media content requested. Richards Dir. ¶¶ 96-97.

712. Another example of a Web-based service that relies on a network of servers is SBC's Unified Messaging Service ("UMS"). Pearson Dir. ¶ 68. UMS is a service that provides consumers the ability to access email, faxes, and voicemail from PCs, PDAs, wireless phones, *etc.* Pearson Dir. ¶ 20. For UMS to work effectively, it relies on a network of servers, each of which must be able to communicate with the others to exchange information within the network. Many networks have at least some servers running Microsoft operating systems, and those servers are likely to store at least some of the critical information necessary for UMS to function (*e.g.,* email or instant messaging servers). Pearson Dir. ¶ 68; *see id.* ¶ 85.

713. In sum, by excluding server-to-server interoperation, Microsoft's Remedy III.E simply ignores the expanding world of Web services, where, for example, songs are streamed from media servers to Web servers to PCs, and voicemails travel from server to server to a consumer's PC. *See* Richards Dir. ¶¶ 96-98; Pearson Dir. ¶ 68.

c. Microsoft's Remedy does not require the disclosure of protocols used to interoperate with non-PC devices

714. Microsoft's Remedy III.E is limited to the interoperation between PCs and servers. Thus, it does not require disclosure of any information to enable interoperation between

non-PC devices (such as cell phones or hand-helds) and PCs or servers. Schwartz Dir. ¶ 163-64; Richards Dir. ¶ 98; Pearson Dir. ¶ 69; Borthwick Dir. ¶ 104.

715. For example, Microsoft's Remedy III.E exempts from disclosure the protocols necessary to synchronize Microsoft's Windows CE handheld Operating System with a desktop PC. McGeady Dir. ¶ 46. Once again, these protocols are not "implemented in a Windows Operating System Product installed on a client computer" and do not "interoperate, or communicate, natively *i.e.*, without the addition of software code to the client operating system product) with a Microsoft server operating system product." Microsoft's Remedy III.E. Therefore, Microsoft would not be required to disclose these protocols, and it could make available functionalities to its Windows CE product that it does not make to competitor Palm. Mace Dir. ¶ 82; *see* McGeady Dir. ¶ 46.

716. Microsoft's Remedy III.E is also limited to interoperation with server *operating systems.* This means that applications and middleware that run on servers—and the protocols that they use—are excluded from Microsoft's disclosure obligations. This limitation also serves to ensure that Remedy III.E does not apply to Microsoft's .NET Web services initiative because Web services are likely to be, or at least could certainly be designed to be, applications and middleware that run on server operating systems. Schwartz Dir. ¶ 166.

717. Finally, given that both Microsoft and non-Microsoft witnesses agree that non-PC devices, such as handheld devices, will play a large role in the development of Web services, the exclusion of such devices further ensures that the protocols used by .NET would fall outside the disclosure obligations in Microsoft's Remedy. *See* Allchin Dir. ¶¶ 49, 65; Richards Dir. ¶ 98; Mace Dir. ¶ 16.

d. The comprehensive disclosure provision in the States' Remedy encompasses the categories of interoperability contemplated by web services

718. In contrast to Microsoft's Remedy III.E, States' Remedy 4.a.iii expressly requires Microsoft to disclose and document the protocols necessary to ensure interoperation between various types of software and multiple devices, including PCs, servers, handhelds, and set-top boxes. In this way, States' Remedy 4.a.iii mandates disclosure of protocols used in the multitude of interactions that are at the heart of a Web services. *See supra* Section X.B.1.c ("States' Remedy 4.a.iii requires the disclosure of interfaces between Microsoft software on one device and Microsoft Platform Software on another device").

6. Microsoft's Remedy Fails to Require Disclosure of Technical Information Needed To Make Use of Interfaces

719. Although Microsoft's Remedy requires Microsoft to disclose certain (but not all) APIs and communications protocols exposed by Windows Operating Systems Products, it does not require disclosure of the significant amount of other technical information that is necessary to make use of those APIs and protocols, *i.e.*, to achieve proper functionality and interoperability between the Windows Operating System Product and software that runs on it. Appel Dir. ¶ 58.

720. As discussed above, software developers need certain technical data to make effective use of an interface. *See supra* Section X.B.2.a ("States' Remedy 4 provides the disclosure of the information needed to ensure effective interoperation"). Microsoft's Remedy, and the relevant definitions, do not require Microsoft to disclose this additional technical information that is necessary for software developers to create programs that effectively use the disclosed APIs and protocols. Appel Dir. ¶ 60; McGeady Dir. ¶ 41.

721. Microsoft's Remedy III.D obliges Microsoft to disclose:

> *the APIs and related Documentation that are used by Microsoft Middleware to interoperate with a Windows Operating System Product. For purposes of this*

> *Remedy III.D, the term APIs means the interfaces, including any associated callback interfaces, that Microsoft Middleware running on a Windows Operating System Product uses to call upon that Windows Operating System Product in order to obtain any services from that Windows Operating System Product.*

Microsoft's Remedy III.D. The definition of "API" in Microsoft's Remedy, however, does not specify what information needs to be provided as part of an API disclosure—it simply refers the reader back to Remedy III.D: "'API' means application programming interface, including any interface that Microsoft is obligated to disclose pursuant to III.D." Microsoft's Remedy VI.A; Tr. 5797:22-5798:10 (Madnick); Appel Dir. ¶ 60.

722. Microsoft's Remedy III.D requires the disclosure not only of APIs, but also of "related Documentation." The definition of "Documentation" provides:

> "*Documentation" means all information regarding the identification and means of using APIs that a person of ordinary skill in the art requires to make effective use of those APIs. Such information shall be of the sort and to the level of specificity, precision and detail that Microsoft customarily provides for APIs it documents in the Microsoft Developer Network ("MSDN").*

Microsoft's Remedy VI.E. This definition does not specify precisely what types of technical information Microsoft must disclose in order to allow third party developers to make use of Microsoft's APIs. Appel Dir. ¶ 60; *see* Tr. 5799:14-5800:11 (Madnick). Indeed, this definition does not require Microsoft to disclose any additional technical information beyond what it already voluntarily publishes on its MSDN website. Tr. 5799:14-5800:11 (Madnick). In other words, it does not require Microsoft to disclose any degree of technical specificity about its APIs beyond what it already discloses today. Appel Dir. ¶ 60.

723. The information provided on the MSDN website does not ensure that ISVs will be able to make effective use of Microsoft interfaces. *First*, the information provided by Microsoft through MSDN is not always sufficient to allow developers to make use of Microsoft's APIs. Tr. 1451:22-1453:20 (McGeady); Tr. 732:11-736:4 (Richards); Richards Dir. ¶ 65 n.11

(RealNetworks has not signed up for Microsoft's premium support service because the service only extends to the information available on MSDN and not the information withheld and made available only to Microsoft's internal developers.). This is particularly true for innovative software and unanticipated uses of the APIs. Tr. 1451:22-1453:20 (McGeady). And some information is not disclosed on MSDN at all, such as file formats, synchronization protocols, and authentication protocols. *Id.* This is because MSDN information generally focuses on disclosure of APIs needed to write desktop applications, but the trend in software development is toward distributed network computing, in which other types of information are needed to create interoperable desktop middleware products and applications—information such as file formats and data structures. Green Dir. ¶ 161.

724. *Second*, nothing in Microsoft's Remedy prohibits Microsoft from disclosing *more* information to its own internal software developers than it discloses to third parties through MSDN. Appel Dir. ¶ 60. This is a valid concern because there is evidence that Microsoft developers have enjoyed access to undocumented Windows interfaces and functionality that have not been disclosed to third-party developers. *See* Averett Dir. ¶¶ 25-27, 32-33, 45-46.

725. *Finally*, by defining the information to be disclosed solely by reference to what "Microsoft customarily provides for APIs it documents in the" MSDN, Microsoft's Remedy III.D creates ambiguity and uncertainty as to exactly what information must be disclosed. *See* Appel Dir. ¶ 60; Tr. 5799:14-5800:11 (Madnick). For example, it is unclear whether important information such as file formats and registry settings would need to be disclosed. Richards Dir. ¶ 90; Mace Dir. ¶ 81. This ambiguity is illustrated by the testimony of Microsoft's computer science expert Dr. Madnick. He opined that the parameters of an API are the type of information that an ISV needs to make use of a Microsoft API. Tr. 5797:22-5800:11 (Madnick). But when

asked whether Microsoft's Remedy required Microsoft to disclose API parameters to ISVs, Professor Madnick responded that he needed to review the MSDN website to confirm whether that is the kind of information that is provided by Microsoft. Tr. 5799:14-5800:11 (Madnick).

726. Unlike Microsoft's Remedy, the States' Remedy *expressly* requires Microsoft to disclose the technical details needed by software developers to make effective use of the interfaces that are disclosed by Microsoft, and thus enables effective interoperation with Microsoft Platform Software. *See supra* Section X.B.2.a ("States' Remedy 4 provides the disclosure of the information needed to ensure effective interoperation").

7. Microsoft's Remedy Does Not Authorize Review of Source Code, Which Can be Necessary to Enable Interoperation

727. As discussed above, it is sometimes necessary for software developers to review the source code of platform software in order to make effective use of its APIs. This is especially true when the interface is poorly engineered or inadequately documented, or when the third party software is innovative. *See supra* Section X.B.2.d ("The States' Remedy 4.c allows developers to review the source code for Microsoft Platform Software if necessary to enable interoperation"). Microsoft's Remedy has no provision that would allow third parties (other than the Technical Committee) to review Microsoft source code. Tr. 5753:5-5754:20 (Madnick); Appel Dir. ¶ 96. Even if a Microsoft API were poorly documented and an ISV needed clarification of the API specification, the ISV would not have any right to review the Microsoft source code under Microsoft's Remedy. Tr. 5754:2-20 (Madnick). This can be a significant hindrance to the development of software that must interoperate with Microsoft platform software such as Windows. Appel Dir. ¶ 96. As Microsoft witness Scott Borduin testified, when APIs are poorly engineered, reviewing the source code is sometimes necessary to develop a software product and get it to market. Tr. 4201:7-4202:5 (Borduin). In contrast to Microsoft's

Remedy, the States' Remedy permits third parties reasonable access to Microsoft source code for the purpose of enabling their products to interoperate with Microsoft Platform Software. *See supra* Section X.B.2.d ("The States' Remedy 4.c allows developers to review the source code for Microsoft Platform Software if necessary to enable interoperation").

8. The Timing of Disclosures Under Microsoft's Remedy Is Unacceptably Late and Gives Microsoft Developers An Unfair Advantage

728. Under Microsoft's Remedy, the timing of the disclosures of APIs and Communications Protocols unfairly advantages Microsoft's software developers at the expense of third-party developers. Green Dir. ¶¶ 164-67; Richards Dir. ¶¶ 92-95. Microsoft's developers will be able to work with new interfaces for months, perhaps even over a year, before those interfaces are made available to third-parties, and even then the third-parties may not have sufficient time to work with the interfaces in order meet deadlines for creating and shipping their commercial products. Green Dir. ¶¶ 166-67; Richards Dir. ¶¶ 92-94.

729. Microsoft's Remedies III.D and III.E establish the timing of disclosures of APIs and Communications Protocols, respectively, for Windows Operating System Products. As a threshold matter, both remedy provisions create an initial period of delay before *any* disclosure obligations become effective. Under Remedy III.E, Microsoft need not make any disclosures of Communications Protocols until "nine months after the submission of this proposed Final Judgment to the Court." Under Remedy III.D, Microsoft need not make any disclosures of APIs until "the earlier of the release of Service Pack 1 for Windows XP or 12 months after the submission of this Final Judgment to the Court." Service Pack 1 will not be released until later this year. Tr. 5163:19-24 (Jones).

730. These initial disclosure delays allow Microsoft's developers a significant head start in both developing and marketing new features of its software products. Richards Dir. ¶ 92.

In fast moving markets, it is important to have early access to information. *Id.* These features can make the difference in winning product reviews and convincing developers and customers to use technology. *Id.* And nothing in Remedy III.D or III.E prohibits Microsoft's developers from using these APIs and protocols during the initial delay period.

731. In addition to these initial delays, Microsoft's Remedy creates a scheme under which new APIs are made available to Microsoft's developers long before they are disclosed to third parties. Green Dir. ¶ 167. Remedy III.E sets forth *no* timeframes for the ongoing disclosure of Communications Protocols after the initial nine-month delay. Pearson Dir. ¶ 72. Remedy III.D sets forth the timing for the disclosures of "APIs and related Documentation that are used by Microsoft Middleware to interoperate with a Windows Operating System Product." It provides:

> *In the case of a new major version of Microsoft Middleware, the disclosures required by this Remedy III.D shall occur no later than the last* major beta test *release of that Microsoft Middleware. In the case of a new version of a Windows Operating System Product, the obligations imposed by this Remedy III.D shall occur in a* Timely Manner.

Microsoft's Remedy III.D (emphasis added). Microsoft's Remedy defines "Timely Manner" as "the time Microsoft first releases a *beta test* version of a Windows Operating System Product that is made available via an MSDN subscription offering or of which 150,000 or more beta copies are distributed." Microsoft's Remedy VI.R (emphasis added).

732. The terms "beta test" and "major beta tests" are not defined in Microsoft's Remedy. In the software industry, a "beta" test is understood to mean a test of a new software program, such as an operating system, prior to its release. Green Dir. ¶ 165; Tr. 5222:18-5223:3 (Jones). A beta test occurs after one or more earlier tests, known as "alpha" tests. Green Dir. ¶ 165; *see* Tr. 5223:10-16 (Jones). In the software industry, a beta test generally is not conducted

until late in the development cycle, when the developer has created a fully functioning software product. Green Dir. ¶ 165; Mace Dir. ¶ 84. The beta test typically represents the date by which most development work on the product has taken place, and the beta test release is used to promote the software broadly to consumers and developers. Richards Dir. ¶¶ 93-94.

733. Microsoft has no firm rules for when beta tests occur, or how many beta tests will be conducted on a particular software product. Tr. 5226:11-13, 5227:3-5 (Jones). Because the timing of API disclosures is dependent on the timing of beta tests, Microsoft has complete control over when newly-developed APIs will be disclosed to third parties. Green Dir. ¶ 166; Kertzman Dir. ¶ 69; Schwartz Dir. ¶ 175. Microsoft also has complete control over whether to conduct its beta testing through MSDN, and whether to distribute the beta test release to 150,000 testers—and thus Microsoft can control whether the definition of "Timely Manner" is ever satisfied. *See* Microsoft's Remedy VI.R; Tiemann Dir. ¶ 180; Ledbetter Dir. ¶ 167; Mace Dir. ¶ 84.

734. Disclosure of APIs at the time of beta testing is simply too late for third party software developers. *First*, the timing may be too late for commercial developers to meet development and shipping deadlines. Richards Dir. ¶ 93. It is critical for middleware developers that their software is fully developed and compatible when a new version of Windows is launched and shipped by PC manufacturers. *Id.* Upgrading to a new version of Windows or purchasing a new PC that includes a new version of Windows is often when consumers make choices about the middleware they will use. *Id.* If Microsoft can wait until the beta test, a date by which most development of the operating system has typically taken place, there may not be sufficient time for competing developers to create compatible middleware that takes full advantage of the functionality of the new operating system (and is thus competitive with

Microsoft's middleware). Green Dir. ¶ 166; Richards Dir. ¶¶ 92-93 (delay in disclosure gives Microsoft developers a huge running start in both developing and marketing new features); Schwartz Dir. ¶ 136 (timely disclosure is crucial for software developers given the short product cycles in the software industry).

735. *Second*, delaying disclosure of APIs until beta testing gives Microsoft's software developers a significant competitive advantage. Green Dir. ¶ 166; Mace ¶ 84. Under Microsoft's Remedy, Microsoft software developers will have access to new Microsoft APIs as soon as they are developed, while third parties must wait until a large scale beta test release. Green Dir. ¶ 167. In the case of a Windows Operating System Product, by the time a large scale beta test is conducted, Microsoft's own developers will have had access to the APIs in the new Windows Operating System Product for as long as 18 months before they are disclosed to third-party software developers. Green Dir. ¶ 166; Ledbetter Dir. ¶ 168. The result will be that Microsoft will be able to release new applications and middleware at the same time as the new Windows Operating System Product is released, without competition from third party developers who have been unable to develop and market their competing software products by that time. Green Dir. ¶ 167.

736. This disclosure regime, which provides access to Microsoft developers far in advance of third party ISVs, is simply a continuation Microsoft's current practices. *See* Averett Dir. ¶¶ 25-27, 32-33, 45-46. For example, Microsoft does not dispute that new media-related Windows functionality is often made available to Microsoft middleware developers months or years before it is made available to third-party middleware developers. Microsoft argues that this is because new functionality may have teething troubles. *See* Averett Dir. ¶¶ 25-26. But this

is at odds with the fact that Microsoft is comfortable enough to make functionality available to consumers. *Id*.

737. In contrast to the timeframes for disclosure proposed by Microsoft, the deadlines set forth in the States' Remedy would allow third-party developers to gain access to new Microsoft interfaces at the same time as Microsoft's own developers. This timing provision allows fair competition between third-party applications and middleware and Microsoft software by, for example, requiring both third party and Microsoft developers to receive new Windows APIs at the same time—thus allowing concurrent development of software that can interoperate with the new Windows APIs. *See supra* Section X.B.2.c ("Disclosure under States' Remedy 4 is provided in a timely manner").

9. The Disclosures Provided By Microsoft's Remedy Apply Only to a Far Too Limited Purpose

738. The disclosure provisions of Microsoft's Remedy restrict the ability of third parties to use the information that Microsoft provides. Remedy III.D provides for the disclosure of "APIs and related Documentation" to third parties "for the sole purpose of interoperating with a Windows Operating System Product." Remedy III.E provides for the disclosure of Communications Protocols to third parties "for the sole purpose of interoperating or communicating with a Windows Operating System Product."

739. These restrictions would prohibit developers from creating platform software intended not to interoperate with Microsoft platform software, but rather to compete with it. Appel Dir. ¶¶ 88-90. For example, if a software developer wanted to develop a non-Microsoft operating system, the developer would reasonably want its operating system to support at least some of the same applications and middleware that run on the Microsoft operating system. Appel Dir. ¶ 90. The cost and burden of porting applications deters developers from rewriting

their applications to run on the new operating system. *Id.*; *Microsoft*, 84 F. Supp. 2d at 18, Finding No. 30. Thus, the developer of the new operating system may want to create interfaces that will support preexisting applications that have been developed for other operating systems (in particular Windows, which is the dominant PC operating system product). Appel Dir. ¶ 90. In order to do so, the developer would need access to the APIs that the Microsoft operating system uses to interact with applications and middleware. *Id.* Microsoft's Remedy, however, would prohibit the third-party developer from using Microsoft's API disclosures for this purpose. Microsoft's Remedy III.D; Appel Dir. ¶¶ 88-90, 92.

740. Similarly, if the Microsoft operating system or other Microsoft platform software communicates with a client (or server) through a communications protocol, a non-Microsoft operating system (or software product) would need to communicate with the same client (or server) using the same protocol. Appel Dir. ¶ 91. In such situations, the developer would seek access to those protocols not "for the sole purpose of interoperating with a Windows Operating System Product," but rather in order to provide an alternative to a Windows Operating System Product. Appel Dir. ¶ 91. Again, this use of the protocol disclosure would be prohibited by Microsoft's Remedy. *Id.* ¶ 92.

741. In contrast, the disclosure requirements provided by States' Remedy 4 do not contain any similar limitation concerning the purpose for which the disclosed information would be used. States' Remedy 4; Appel Dir. ¶ 92. In fact, States' Remedy 4.a clearly states that the purpose of the disclosures includes "enabling non-Microsoft Platform Software to Interoperate with Microsoft Platform Software and/or Applications for Microsoft platform Software." Appel Dir. ¶ 92. Thus, the States' Remedy would expressly allow the disclosures by Microsoft to be

used to create operating systems and middleware products that compete with Microsoft products such as Windows. *See* Appel Dir. ¶¶ 88-92.

10. Microsoft's Remedy Provides an Overly Broad and Technically Unjustified Security Exemption That Could Significantly Restrict Technical Disclosure by Microsoft

742. Microsoft's Remedy III.J.1.a creates an exemption from the disclosure requirements imposed under the other provisions of Microsoft's Remedy, ostensibly based on Microsoft's need for maintaining security. Appel Dir. ¶ 116; McGeady Dir. ¶ 56; Borthwick Dir. ¶ 105; Tr. 6450:4-17 (Allchin). Microsoft's Remedy III.J.1.a provides:

> *No provision of this Final judgment shall:*
>
> *1. Require Microsoft to document, disclose or license to third parties: (a) portions of APIs or Documentation or portions or layers of Communications Protocols the disclosure of which would compromise the security of a particular installation or group of installations of anti-piracy, anti-virus, software licensing, digital rights management, encryption or authentication systems, including without limitation, keys, authorization tokens or enforcement criteria; . . .*

743. Although III.J.1.a appears on its face to serve a legitimate purpose, it in fact creates an exemption to Microsoft's disclosure requirements that is both technically unnecessary for legitimate computer security needs and overly broad in creating exceptions to Microsoft's disclosure obligations. Appel Dir. ¶ 116; McGeady Dir. ¶ 56; Pearson Dir. ¶ 71.

744. State's witnesses Dr. Andrew Appel and Steven McGeady both testified at length about Microsoft's Remedy III.J.1.a Appel Dir. ¶¶ 115-28; McGeady Dir. ¶¶ 56-78. Both Dr. Appel and Mr. McGeady have extensive backgrounds in the area of computer security. Dr. Appel has been a computer science professor at Princeton University for over fifteen years. Appel Dir. ¶ 12. During that time, computer security has been one of his particular areas of interest and expertise, and he has authored numerous publications on that subject. Appel Dir.

¶ 115. Steve McGeady is a former Vice President of Intel Corporation who has been involved in sophisticated software development initiatives involving computer security and authentication technologies. McGeady Dir. ¶ 15. For example, Mr. McGeady has been a member of the National Science and Technology Board's Committee on Information Systems Trustworthiness, and he headed a multi-year effort to develop a technology to allow secure transmissions of medical information across the Internet. McGeady Dir. ¶¶ 15-16. Both Dr. Appel and Mr. McGeady agree that Microsoft's Remedy III.J.1.a is not technically necessary to preserve computer security and overly broad in creating exceptions to Microsoft's disclosure obligations. Appel Dir. ¶¶ 115-28; McGeady Dir. ¶¶ 56-78.

a. The disclosure exemption of III.J.1.a is not technically necessary

745. There is no technical justification for the broad security exemption of Microsoft's Remedy III.J.1.a. The security of properly designed software should not be jeopardized by the disclosure of APIs and other technical information. Appel Dir. ¶ 117; McGeady Dir. ¶¶ 70-71. This idea of providing security by keeping APIs and communication protocols secret is often described as "security through obscurity," and it is considered to be a well-known fallacy of security in the field of computer science and in the computer industry. Appel Dir. ¶ 119; McGeady Dir. ¶ 70; *see also* Tr. 6150:3-12 (Poole) (partial or full disclosure of how a security system works does not compromise the system).

746. Software often must interact with an operating system in secure ways. Appel Dir. ¶ 118. This security is achieved through the implementation of a set of APIs and communication protocols, sometimes in combination with authentication keys or tokens. *Id.* The APIs and communication protocols provide the security algorithm, which describes the method that must be followed when communicating secure information. *Id.* These APIs and technical information

describe only the operation of the security system and the methods that must be followed to communicate or store information securely. McGeady Dir. ¶ 72. It is possible, for example, for Microsoft to disclose the APIs used to encrypt data without compromising the security of the encryption. Tr. 6476:10-18 (Allchin).

747. For any specific use of a security system, an individual user must supply a unique authentication key or token that provides the information necessary to verify that an individual has the proper authority for secure access. Appel Dir. ¶ 118. The key contains a small piece of digital information that is used as input into the security algorithm to scramble the information in a unique way. *Id*. The key, and the digital information contained therein, are not publicly disclosed. *Id.* If the secrecy of the key is compromised, the key is simply deactivated and replaced. Appel Dir. ¶ 118; McGeady Dir. ¶ 72. Microsoft itself views such cryptographic keys as the information that must be preserved to maintain security—when Microsoft discloses its source code to OEMs, universities, and other third parties, only the portion of the code involving cryptographic security is withheld. Tr. 4639:15-22 (Gates).

748. Remedy III.J.1.a, however, would allow Microsoft to withhold from disclosure information beyond cryptographic keys and the locations of those keys. Tr. 6459:17-20 (Allchin). Microsoft would have discretion to withhold numerous APIs and protocols that are necessary to the creation of compatible software. McGeady Dir. ¶ 69.

749. This "security through obscurity" espoused by Microsoft's Remedy needlessly causes interoperability issues for software attempting to communicate securely. Appel Dir. ¶ 121. It also does not provide effective security. *Id.* If the security of this environment depends upon keeping the APIs and communications protocols secret, this security is compromised—indeed, lost—if the secret information ever becomes publicly available through, for example,

reverse-engineering, hacking, or internal leaks. Appel Dir. ¶ 121. Further, a great deal of time is spent designing the security APIs and communication protocols for a security algorithm, and they cannot be easily rewritten when their secrecy is lost. *Id.* Security that resides in an individual key or token does not threaten the security of the algorithm if disclosed. *Id.* The loss of an individual key does not require the underlying code for the security algorithm to be changed. *Id.*

750. The best and most prevalent method for achieving secure communication is by allowing public disclosure and review of the APIs and communication protocols underlying a security algorithm while keeping private the authentication keys created by those security algorithms. Appel Dir. ¶ 122; McGeady Dir. ¶ 74. It is widely accepted that public review of security algorithms leads to better security, because scientists and practitioners have an opportunity to analyze the algorithm or protocol and comment on its weaknesses. Appel Dir. ¶ 122. Disclosing security algorithms to public review allows security experts, such as the National Institute of Science and Technology's Security Technology Group, the Federal Bureau of Investigation National Infrastructure Protection Center (FBI NIPC), the Federal Computer Incident Response Center (FedCIRC), the Computer Emergency Response Team (CERT), the Internet Security Alliance (ISA), independent software security consultants, and academics, to examine the algorithms, interfaces and protocols, thereby exposing weaknesses and suggesting potential fixes. McGeady Dir. ¶ 75. This method of peer review allows the algorithms and protocols to be improved, resulting in a more secure system. *Id.*

751. There are many examples of effective and widely-used security standards that have been publicly disclosed. *See* Appel Dir. ¶ 122; McGeady Dir. ¶ 74. Secure Sockets Layer (SSL) and Kerberos are widely adopted industry security standards that are publicly disclosed.

Appel Dir. ¶ 122. And although the Kerberos specifications are in the public domain, the authorization tokens generated by a Kerberos implementation remain secret. Tr. 6462:2-6 (Allchin). The United States Government's DES, Triple-DES, AES, and SkipJack encryption standards are publicly available at the National Institute of Science and Technology website. McGeady Dir. ¶ 74. The publicly-available information for these standards includes the encryption algorithms, modes of operation, digital signatures, secure hashing, key management, message authentication, entity authentication, and password usage and generation. *Id.* In addition, open security protocols exist for computer operating systems, such as the Kerberos exchange key system, the Linux encryption crypt program, the Pretty Good Privacy (PGP) program, and Intel's Common Data Security Architecture (CDSA). *Id*. Because of the open review of these security systems, they are generally considered in the software industry to be more secure than Microsoft's security system. *Id.*

752. Public disclosure of APIs and communications protocols allows for interoperability between software employing the same security scheme. Appel Dir. ¶ 123. Nondisclosure of the APIs and protocols creates interoperability problems for individuals attempting to interact with Microsoft code through non-Microsoft software. *Id.* Despite the fact that users may properly obtain a security key, the key becomes useless if software developers cannot write their programs to process the key to interoperate correctly with the Microsoft code in the manner required by the security algorithm. *Id.*

753. Conversely, the nondisclosure of APIs does not automatically make them secure. Appel Dir. ¶ 124. As a technical matter, anyone who purchases a copy of the Microsoft operating system can painstakingly "reverse engineer" it to see its inner workings. *Id.* This is true whether or not such reverse engineering happens to be legal in the state or country where it

occurs. *Id.* If the security secrets are discovered, either by a software hacker or through other means, the security of tens or hundreds of millions of computer systems is compromised. *Id.* Indeed, there are software tools available to hackers that allow them to find secret interfaces within Windows. Tr. 6476:19-6477:4 (Allchin). This is how a hacker, in 2001, was able to reverse engineer Microsoft's secret DRM mechanism and locate undisclosed APIs, thereby discovering the location of cryptographic keys. Appel Dir. ¶ 124; Tr. 6476:19-6477:23 (Allchin). The hacker then published an analysis of his accomplishment on the Internet under a pseudonym. Appel Dir. ¶ 124. Indeed, by December 2001, a hacker had discovered a major security hole in Windows XP that allowed remote users to take control of other people's PCs and caused Microsoft to undertake a major effort to improve the security of its operating system products. Tr. 6443:9-6444:15, 6446:4-18, 6474:19-6475:9 (Allchin). There are also many other examples of such secret, non-peer-reviewed security algorithms that were deployed and later found to have serious weaknesses, such as the encoding algorithm for DVD media (which were discovered by a hacker and published) and the Contents Scramble System, or "CSS." Tr. 6478:8-24; Appel Dir. ¶ 122.

b. The disclosure exemption of III.J.1.a is overly broad

754. Microsoft's Remedy III.J.1.a is overly broad and would allow non-disclosure of APIs and other technical information in many instances that do not further any legitimate security purposes. Appel Dir. ¶ 126.

755. Over the last several years, software developers have begun to include far greater security, authentication, and encryption capabilities in their systems and software. McGeady Dir. ¶ 68. In addition, certain industries, in particular the entertainment and content industries, have become increasingly concerned about the protection of their ownership rights to digital content, as this content is being increasingly delivered over and to a variety of computer

networks and platforms. *Id.* The implication of this increased concern about information security is that there are few interfaces or communications protocols that do not now or will not in the future contain parts of technologies enumerated in III.J.1.a. *Id.*

756. To exempt from disclosure all software products containing the technologies enumerated in III.J.1.a would have far reaching consequences. McGeady Dir. ¶ 69. Microsoft would have the discretion to withhold numerous interfaces and protocols that would be critical to creation of compatible software. *Id.* Or Microsoft could elect to withhold portions of security protocols such that the remaining disclosure is insufficient to ensure interoperability. Pearson Dir. ¶ 71.

757. For example, Microsoft Word contains APIs that allow a user to encrypt word files. McGeady Dir. ¶ 69; *see* Tr. 6475:20-21 (Allchin). Under III.J.1.a, Microsoft could refuse to disclose these APIs, and a program designed to read Word files would not be able to do so, even though the user possessed the correct password. McGeady Dir. ¶ 69. Another example is that a desktop computer using a non-Microsoft operating system may want to share files with a PC using Windows. *Id.* To do so, the files are shared using the Windows NT File System Lan Manager (NTFS/LM) protocol, and allowing access to these files requires authentication of the accessing user's identity. *Id.* Under III.J.1.a, Microsoft could withhold these network file system interfaces because they involve encryption, authentication and security. *Id.* The result is that users on non-Windows systems with entirely legitimate needs and purposes for accessing these Windows-resident files would not be able to access them, or would be forced to access them in a much less secure way. *Id.*

758. As another example, III.J.1.a would allow Microsoft to avoid disclosure if Microsoft (apparently in its sole discretion) considered the disclosure to compromise the security

of digital rights management ("DRM") systems. Appel Dir. ¶ 126. Some new media formats have DRM content protection mechanisms that prevent the playing of media by unlicensed devices (such as media players). *Id.* Thus, III.J.1.a could be interpreted by Microsoft to allow it not to disclose APIs relating to its Windows Media Player. *Id.*

759. In fact, Microsoft has already done so. *See* Richards Dir. ¶¶ 75-78. Microsoft has repeatedly denied RealNetworks access to the Secure Audio Path ("SAP") technology that Microsoft includes in its Windows operating system. Richards Dir. ¶ 75. SAP is an operating system functionality that prevents unauthorized access to media files as they travel from digital media middleware through the operating system to the sound card and hardware audio device, so that, for example, hackers cannot access the content while it passes through the operating system. *Id.* RealNetworks and other ISVs are interested in access to this security feature because it protects audio files from piracy, and Microsoft makes this functionality available to its own Windows Media Player. *Id.* The ability to provide comprehensive security to content providers, such as record companies and movie studios, is an important factor in choosing a media format and related middleware that enables creation, delivery, playback, and security for the selected format. Richards Dir. ¶ 77.

760. Microsoft has argued that it currently makes SAP available pursuant to its Windows Media Format SDK license, but this license restricts the application of SAP technology to files in Windows Media formats, which can be played by ISVs' applications only on Windows platforms. Richards Dir. ¶ 78. Such disclosure is thus of no use to competing digital media middleware developers. *Id.* Access to SAP is clearly not disclosed for the purposes of developing competing middleware platforms and, in fact, is currently disclosed in a way that impairs the competitiveness of multimedia middleware that competes with Microsoft's digital

media middleware. *Id.* Access to SAP requires the use of the entire spectrum of Windows Media APIs and related Microsoft formats, protocol, metadata rules, *etc.*, thereby closing the door on competing middleware. *Id.* For example, the only way to use Microsoft's SAP operating system functionality is to use Microsoft's proprietary media formats, Microsoft's proprietary DRM software, Microsoft's digital media APIs, and Microsoft's Windows Media server technology. *Id.* These are all areas in which RealNetworks provides competing products and a competing set of APIs upon which ISVs can develop applications and services that work on both Windows and non-Windows platforms. *Id.* Thus, Microsoft has "disclosed" this Windows operating system functionality only to the extent an ISV limits the availability of content to Windows Media APIs and the Windows platform. *Id.*

761. Although Microsoft has purportedly decided to make SAP available on a stand-alone basis in August of 2002, Averett Dir. ¶ 33, it has been part of Windows since the launch of Windows Me in 2000, and thus it has been available to Microsoft middleware developers, and in particular the developers of Microsoft's media middleware, for more than two years already. Richards Dir. ¶¶ 75-77; Tr. 6136:5-9 (Poole). Further, Microsoft's Will Poole acknowledged that while SAP may be required to be disclosed under Microsoft's Remedy, Microsoft was still in the process of deciding which other information regarding DRM technology it will withhold under Remedy III.J.1.a. Tr. 6144:18-25, 6150:13-6151:11 (Poole).

762. While the use of DRM is currently focused on media, Microsoft may in the future require DRM to interface with all components of its operating system. Appel Dir. ¶ 127. Because software components, applications, and middleware are all copyrighted "content," digital rights management might apply to any software component or to the use of any API. *Id.* Remedy III.J.1.a does not constrain Microsoft from broadly implementing DRM technology for

the underlying components of its operating system and would allow Microsoft effectively to keep a great deal of its APIs, documentation, and communications protocols undisclosed. *Id.* And, in fact, Microsoft is currently planning to invoke III.J.1.a in order to withhold disclosure of its APIs relating to DRM. Tr. 6454:12-22 (Allchin). This exception could prevent any use of the operating system APIs by non-Microsoft software for anything relating to copyrighted material. Appel Dir. ¶ 127.

763. More generally, Remedy III.J.1.a permits Microsoft to withhold the interfaces needed to allow non-Microsoft servers offering competing Web services to take advantage of security features of the Windows operating system that Microsoft Web services use. Remedy III.J.1(a) permits Microsoft to withhold the interfaces necessary for competing authentication/authorization software to interoperate with Windows. Without equal access to these security features, developers of competing web services could be forced to write to Microsoft's Web service platform. Borthwick Dir. ¶ 105.

764. Under III.J.1.a, it is within Microsoft's discretion whether to disclose *any* API or protocol—or whether to withhold them because Microsoft has decided that they would compromise security. Tr. 6465:19-6467:6 (Allchin). And if Microsoft makes a decision to withhold an API or protocol, it is not required to make any type of announcement—so that third parties will not even be advised of what information has been withheld from them. Tr. 6466:10-6467:6 (Allchin).

c. The States' Remedy adequately protects security without causing unnecessary interoperability problems

765. The States' Remedy does not contain a broad disclosure exemption like that created by III.J.1.a of Microsoft's Remedy. Appel Dir. ¶ 128. Rather, the States' Remedy

requires Microsoft to disclose the information necessary for interoperability while allowing Microsoft to ensure the secure transmission of information. *Id.*

766. Nothing in the States' Remedy would require Microsoft to divulge information that would result in the disclosure of cryptographic keys or the locations of keys that hackers could not find by other means. Appel Dir. ¶ 128; McGeady Dir. ¶ 73. At the same time, nothing in the States' Remedy would exempt Microsoft from disclosing interfaces that are needed for interoperation based on technically unjustified "security" issues. *Id.*

767. For example, there are instances in which disclosure of certain copy-protection algorithms may lead to unauthorized copying and use (piracy) of the Windows Operating System Product. McGeady Dir. ¶ 77. Windows XP contains an algorithm to decide whether it has been moved from the computer on which it was installed and licensed to a new computer. *Id.* If Microsoft was required to disclose this particular algorithm and its means of determining the uniqueness of a hardware platform, it may allow individuals to make multiple copies of XP to install on other PCs. *Id.* Nothing in the States' Remedy would require this type of information to be disclosed. McGeady Dir. ¶ 78. The States' Remedy only requires disclosure of interfaces and technical information used by certain categories of software to interoperate with other categories of software. *Id.*; States' Remedy 4.a. Internal licensing protection mechanisms would not fall into this category. McGeady Dir. ¶ 78. By its very nature, Microsoft's licensing software does not disclose interfaces that software developers would use. *Id.* Thus, Microsoft can withhold information required to protect the licensing of its own products, so long as it does not do so in a way that interferes with interoperability and interfacing. *Id.*

D. States' Remedy 4 Meets the Court of Appeals' Objectives for Relief

768. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the

defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

769. States' Remedy 4 will achieve the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by protecting nascent technologies that are potential platform threats from Microsoft's of practices that are the same or similar to the practices found anticompetitive by the Court of Appeals. Remedy 4 will achieve this effect by, for example, encompassing the interoperation among numerous pieces of software and devices with platform threat potential, including server operating systems, Web services, hand-held devices and set-top boxes, and ensuring that interoperability disclosures reach not only middleware as broadly defined, but also competing operating systems, such as Linux.

770. By mandating the disclosure of information about APIs and communication interfaces necessary to effective interoperability, Remedy 4 will also achieve the Court of Appeals' unfettering and prevention objectives by prohibiting the use of a practice—the withholding and/or selective disclosure of interoperability information—that will predictably have the same adverse effects on potential platform threats.

771. Moreover, by enabling the development of alternative middleware and operating systems that can support some of the functionalities of the Windows platform, Remedy 4 also unfetters the market and prevents a recurrence of practices likely to result in future monopolization by reducing directly the applications barrier to entry. The effect will be to restore that barrier to the level it would have been absent any unlawful conduct.

E. Microsoft's Criticisms of States' Remedy 4

1. States' Remedy 4 Will Not Allow the Copying of Microsoft Source Code

772. Microsoft has criticized Remedy 4.c (which allows access to source code at a secure facility) on the purported ground that it would allow Microsoft's competitors to copy its source code. Gates Dir. ¶¶ 307-10. These criticisms are without merit for a number of reasons. *See also supra* Section V.C ("States' Remedies Will Not Enable Cloning of Windows").

773. *First*, Bill Gates complains that when source code is reviewed in the software industry, the normal practice is to require licenses controlling the dissemination of the information. Gates Dir. ¶ 308. But nothing in States' Remedy 4.c would prevent Microsoft from requiring entrants to the secure facility from executing appropriate license agreements. DX 1530 at 112:7-113:23, 134:18-135:16 (Greene deposition). Indeed, the States' representative Thomas Greene testified that the phrase "reasonable access" in Remedy 4.c was intended to authorize normal commercial practices such as nondisclosure agreements. *Id.* This phrase is also intended to provide Microsoft with some recourse in the event that a third party attempts to access the source code for an improper purpose, such as software piracy. *Id.* at 134:22-135:16.

774. Moreover, States' Remedy 4.c limits the purposes for which a third party can seek access to the secure facility—primarily, "for the purpose of enabling their software to Interoperate effectively with Microsoft Platform Software." Remedy 4.c does not authorize Microsoft's competitors to review the source code for the purpose of creating competing software products. Appel Dir. ¶¶ 113-14. States' Remedy 15 specifically provides that nothing in the States' Remedy "shall require Microsoft to permit the use or sub-licensing of any Microsoft source code beyond that necessary to permit the exercise of such options or alternatives."

775. *Second*, even if a competitor wanted to try to copy the Microsoft source code, this would be an extremely difficult task. Appel Dir. ¶ 113. For example, the source code for Windows XP consists of tens of millions of lines of code. *Id.* Copying this source code would require the examiner to memorize all of these lines. *Id.* Even with many assistants, this would be a virtually impossible task given the size of the Windows source code. *Id.*

776. *Third*, although Bill Gates claims that "Microsoft generally seeks to limit access to its source code," Gates Dir. ¶ 307, Microsoft in fact already provides its source code to numerous third parties, including OEMs, ISVs, corporate customers, service providers, and research institutions. Appel Dir. ¶ 95 & n.7; Shapiro Dir. ¶ 151 & n.132. Indeed, as the District Court's Findings of Fact indicate, Microsoft is willing to share its source code with third parties—so long as those parties do not seek to compete with Microsoft. *See Microsoft*, 84 F. Supp. 2d at 41-42, Findings Nos. 127, 129. Mr. Gates argues withholding source code is necessary to prevent competitors from copying Microsoft's innovations, Gates Dir. ¶ 307, but the District Court found that Microsoft withheld IBM's access to the Windows source code *not* because IBM wanted to copy Windows, but because Microsoft wanted IBM to stop competing with Microsoft software products, including Office. *Microsoft*, 84 F. Supp. 2d at 42, Finding No. 129. In short, Microsoft knew that access to the Windows source code was valuable to IBM, and it used it as leverage to attempt to forestall competition by IBM.

777. *Fourth*, the manner in which software developers use source code makes it unlikely that copying will occur. As a technical matter, it is not necessary to examine the entire source code of a product to achieve interoperability with that product—it is generally sufficient to examine only the relevant portions of the source code that would be used by the interoperating product. Appel Dir. ¶ 112. The phrase "reasonable access" in the States' Remedy 4.c would

allow Microsoft to fulfill its obligation by making available to a particular third party only the portion of the source code that is needed by the third party. DX 1530 at 136:3-20 (Greene deposition). In fact, when Microsoft makes its source code available to OEMs, universities, and other third parties today, it routinely withholds portions of the code that involve cryptographic key security mechanisms. Tr. 4639:15-22 (Gates).

778. It can also be expected that software developers will review source code only as a last resort when API documentation is insufficient to allow them to create interoperable software. Both Dr. Appel and Mr. Borduin agree that software developers would prefer to work with well-documented APIs—if available to them—than to undertake the time-consuming, expensive, and sometimes problematic process of reviewing source code. Tr. 3192:10-25 (Appel); Tr. 4201:1-4202:5 (Borduin).

2. Microsoft Criticizes the States' Definition of "Timely Manner" Only Because It Will Prevent Microsoft From Continuing to Disadvantage Its Competitors

779. Bill Gates also criticized the States' definition of "Timely Manner." States' Remedy 22.pp. He testified that this definition would "make it very hard, if not impossible, for Microsoft to work with interested third parties early in the development of new APIs." Gates Dir. ¶ 319. He asserts that Microsoft developers would be in criminal contempt of the State's Remedy the minute they came up with an idea regarding functionality that they thought would be implemented in Windows. Tr. 4597:15-4602:17 (Gates). These criticisms do not address the reasons why the States' definition of "Timely Manner" is an appropriate and necessary remedy in this case, and they are based on a misreading of the "Timely Manner" definition.

780. The disclosure timing provisions of the States' Remedy are necessary to remedy specific conduct by Microsoft involving its preferential disclosure of interface information needed by third parties. For example, the District Court found that because of the importance of

"time-to-market" in the software industry, ISVs that develop software to run on Windows products seek to obtain beta releases and other technical information relating to Windows as early and as consistently as possible. *Microsoft*, 84 F. Supp. 2d at 93, Finding No. 338. Microsoft took advantage of this fact by entering dozens of "First Wave" agreements with ISVs in which the ISVs received preferential support from Microsoft—including early receipt of beta versions of Windows products and other technical information—in exchange for agreeing to use Internet Explorer as their default browser, to use Microsoft's "HTML Help," and to use the Microsoft version of the Java Virtual Machine as their default. *Id.* at 93, 108-09, Findings Nos. 339, 401; *see Microsoft*, 253 F.3d at 71-72.

781. Another example is Microsoft's withholding of technical information needed by rival Netscape. The District Court found that "Netscape needed certain technical information and assistance in order to complete its Windows 95 version of Navigator." *Microsoft*, 83 F. Supp. 2d at 33, Finding No. 90. The "technical information" Netscape required included "the so-called Remote Network Access ('RNA') API." *Id.* Microsoft's intentional delay in releasing this information, predicated on Netscape's refusal to forfeit its platform ambitions, "forced Netscape to postpone the release of its Windows 95 browser." *Microsoft*, 84 F. Supp. 2d at 30-33, Finding No. 91.

782. Microsoft continues to provide technical information on a selective basis to favored third-party developers. For example, Microsoft witness Brent Frei of Onyx Software Corporation testified that "Onyx needs to know well in advance of a new operating system release what functionalities Microsoft is planning to make available in the platform so that Onyx can consider whether and how to taken advantage of those functionalities in its products." Frei Dir. ¶ 20. Mr. Frei then complains that any requirement that Microsoft make simultaneous

disclosures to all ISVs might interfere with the "informal back-and-forth" with Microsoft through which Onyx receives advance information about new versions of Windows. *Id*. ¶¶ 20-22. Likewise, Microsoft witness Scott Borduin of Autodesk testified that as a Microsoft "early adopter" partner, his company received early access to the Microsoft .NET development platform that it could use to develop compatible products before the .NET platform was publicly released. Tr. 4139:15-4141:9, 4145:8-4146:8 (Borduin).

783. Mr. Gates' criticism also misreads the States' Remedy. Although he suggests that it would be an immediate violation for a developer to think of an idea regarding a functionality that he or she thinks is likely to be implemented, Tr. 4597:15-4602:17 (Gates), this is simply incorrect. Under the States' definition of "Timely Manner," the disclosure obligation is only triggered when the Windows developer discloses a new API *to* the Microsoft application developer. States' Remedy 22.pp. Under the plain language of the "Timely Manner" definition, disclosure is not required every time a Microsoft developer comes up with a new idea. States' Remedy 22.pp. Moreover, the disclosure obligation only extends to APIs, Technical Information and Communications interfaces that Microsoft actually "employs." *See* States' Remedy 4. Thus, no obligation arises prior to Microsoft *employing* the new interface or protocol; a mere idea or proposal, or even a discussion between two developers, *see* Gates Dir. ¶ 318, is simply too early in the process.

3. Microsoft Greatly Overstates the Requirement to Disclose Reference Implementations for Its Interfaces

784. Microsoft witnesses have criticized the States' definition of "Technical Information" for including the term "reference implementation." *See* Gates Dir. ¶¶ 302-03; Madnick Dir. ¶ 159-61. According to Mr. Gates, a "reference implementation means actual source code showing how to provide the functionality of a part of Windows or other Microsoft

software." Gates Dir. ¶ 302. Mr. Gates concludes that the inclusion of the term "reference implementation" means that "Microsoft apparently would be required to provide its competitors (and everyone else in the industry) with the actual source (*i.e.*, Microsoft's implementation) for Windows and other Microsoft software." *Id*. Mr. Gates' criticism is unfounded, and he vastly overstates the requirement to disclose reference implementations under the States' Remedy.

785. A reference implementation is a type of disclosure of information that is sometimes needed to explain to a software developer how an interface works. Appel Dir. ¶ 109. In many cases, this explanation can be provided through a narrative description and/or mathematical formula. *Id*. But sometimes it is difficult to explain a concept in a sufficiently precise way using English or mathematics. *Id.* In such a case, another way to explain what a function does is to provide simplified source code of equivalent functionality. *Id.* Such source code, called a "reference implementation," is not meant to be the same as the source code that is actually used in the real implementation. *Id.* In fact, a reference implementation can be a prototype, not the actual code of the software product. Tr. 5958:8-12 (Madnick). This is because the reference implementation is meant to be easy to understand for the human; in contrast, the real implementation is meant to be as efficient as possible. Appel Dir. ¶ 109. The two implementations may be quite different, and thus the disclosure of a reference implementation does not necessarily disclose the actual source code of the software product. *Id.* For this reason, the inclusion of the term "reference implementation" in the States' definition of "Technical Information" does not necessarily mean that Microsoft would be required to publish the actual source code of its operating system. *Id*.

786. Nor do the terms of the States' Remedy require Microsoft to provide a reference implementation for every interface that it discloses. *First*, Remedy 4.a only requires Microsoft

to disclose the "APIs, Technical Information and Communications Interfaces *that Microsoft employs* to enable" interoperation between specified categories of software, such as between Microsoft applications and Microsoft Platform Software. States' Remedy 4.a (emphasis added). Thus, if Microsoft does not itself make use of reference implementations for this purpose, then it would have no obligation to disclose a reference implementation under States' Remedy 4.a. *See id.*; Tr. 3183:7-3184:10 (Appel).

787. *Second*, the States' Remedy 22.nn defines "Technical Information" to mean "all information regarding the identification and means of using APIs and Communications Interfaces that competent software developers require to make their products running on any computer Interoperate effectively with Microsoft Platform Software or applications for Microsoft Platform Software running on a computer." "Reference implementations" are listed as one example of a type of "Technical Information" that might need to be disclosed. But competent software developers do not usually need reference implementations to enable their software products to interoperate with Microsoft software. *See* Appel ¶ 110. Most interfaces can be documented to adequate technical depth without the use of a reference implementation. *Id.* And in those cases, a reference implementation would not need to be provided under the States' definition of "Technical Information." *See* States' Remedy 22.nn.

788. On the other hand, if Microsoft's own developers are using a reference implementation to develop software that interoperates with, for example, Windows—*and* if the relevant interfaces cannot be adequately documented by means other than by reference implementations—then Microsoft would be required also to make reference implementations available to non-Microsoft developers under the States' Remedy. States' Remedy 4.a, 22.nn; Appel Dir. ¶ 110; Tr. 3183:7-3184:10 (Appel). This disclosure requirement is fair and

reasonable, and it is significantly different than requiring Microsoft to provide the Windows source code to the entire software industry, as Mr. Gates claims. Gates Dir. ¶ 302.

4. States' Remedy 4 Does Not Require the Disclosure of Interfaces Between Components of Middleware

789. States' Remedy 22.x.ii provides in part that the term Microsoft Middleware Product includes "Middleware distributed by Microsoft that . . . provides functionality similar to that provided by Middleware offered by a Microsoft competitor." Microsoft has argued that because the States' Remedy appears to define "Middleware" at a very "granular" level, this provision could render components of Windows or Internet Explorer or other middleware as Microsoft Middleware Products in their own right, thus requiring the disclosure of the interfaces exposed by such components under State's Remedy 4. Gates Dir. ¶¶ 165-66; Madnick Dir. ¶¶ 146-47; Bennett Dir. ¶¶ 30-36. For example, Bill Gates testified that under the State's definition, a sub-component of Excel could qualify as a Microsoft Middleware Product if a competitor offered Middleware that provided functionality similar to that provided by that particular sub-component. Tr. 4772:1-25 (Gates); *see* Gates Dir. ¶ 151.

790. However, as States' computer science expert Dr. Appel testified, the term "Microsoft Middleware Product" refers to complete middleware products, not fragments or components. Tr. 3121:3-3125:5 (Appel). This is consistent with the fact that the porting of a component is unlikely to enable software to run on other operating systems, a criterion under the States' definition of "Middleware" that reflects the Court of Appeals' conception of this term. States' Remedy 22.w; Tr. 2976:4-2979:21 (Appel); *Microsoft*, 253 F.3d at 53 ("'Middleware' refers to software products that expose their own APIs. . . . Ultimately, if developers could write applications relying exclusively on APIs exposed by middleware, their applications would run on any operating system on which the middleware was also present.").

791. Microsoft's argument is undermined further by the fact that the States' definition of "Middleware" provides an extensive list of examples—significantly, not one of these examples identifies a fragment or component of a product as "Middleware." States' Remedy 22.w. And in any event, the definition of "Microsoft Middleware Product" under the States' Remedy 22.x.ii.2 requires that it provide "functionality similar to that provided by Middleware offered by a Microsoft competitor," not, for example, "functionality that matches precisely the corresponding features provided by Middleware offered by a Microsoft competitor." In other words, the comparison that is made is against functionality provided by a competing product *as a whole*, not merely individual features or components of the competing middleware.

792. Thus, States' Remedy 4 does not require the disclosure of internal interfaces, *i.e.*, interfaces within components of products such as Windows or Internet Explorer. *See* Tr. 2985:1-11, 3224:15-3227:6, 3116:22-3117:25 (Appel). This is consistent with Professor Appel's testimony that under States' Remedy 4.c, Microsoft would have the discretion to require those reviewing Microsoft's source code to sign an agreement prohibiting use of purely internal interfaces. Tr. 3181:23-3183:1 (Appel). And it is also consistent with Professor Appel's testimony that Microsoft's obligation under States' Remedy 1 is to remove entire middleware products, *not* fragments of middleware. Tr. 3155:9-22 (Appel).

XI. States' Remedy 5—Knowing Interference

A. Purpose of States' Remedy 5

793. States' Remedy 5 prohibits Microsoft from knowingly interfering with or degrading the performance or compatibility of non-Microsoft Middleware when interoperating with Microsoft Platform Software, other than for good cause. If Microsoft takes such an action with good cause, it must provide notice to the affected developer(s) of the non-Microsoft software no less than 60 days in advance. This provision gives some protections to ISVs to enable their products to work well with Windows, both now and in the future. Shapiro Dir. ¶ 152.

794. An example of the type of conduct addressed by States' Remedy 5 was described by the District Court in discussing anticompetitive commingling or binding of Internet Explorer to Windows. As the District Court found, Microsoft intended that this "binding" of Internet Explorer to Windows "simultaneously complicate the experience of using Navigator with Windows 95." *Microsoft*, 84 F. Supp. 2d at 50, Finding No. 160. Indeed, Chris Jones and another Microsoft employee, Brad Chase, informed their superiors in the summer of 1995 that "[w]e will bind the shell to the Internet Explorer, so that running any other browser is a jolting experience." *Id.; see also* PX 2013, at 6. The Court of Appeals concluded that Microsoft had not shown that its binding of Internet Explorer to Windows served "a purpose other than protecting its operating system monopoly," and thus concluded that the binding violated section 2 of the Sherman Act. *Microsoft*, 253 F. 3d at 67.

795. Moreover, the need for Remedy 5 is confirmed by evidence presented during the remedy proceeding demonstrating that Microsoft has taken actions that it knew or reasonably should have known would interfere with or degrade the performance of non-Microsoft middleware. Two witnesses for the States—Dr. Carl Ledbetter of Novell and Mr. David

Richards of RealNetworks—provided specific examples of instances in which developers of non-Microsoft middleware would have benefited from the requirements of Remedy 5.

1. Microsoft's Proprietary Code in Windows NT 4.0 Interfered with the Performance of Non-Microsoft Server Operating Systems

796. Dr. Ledbetter from Novell testified to the interference in the performance of non-Microsoft server operating systems caused by Microsoft's Multiple UNC (Universal Naming Convention) Protocol ("MUP"). Ledbetter Dir. ¶¶ 121-43; *see also* PX 1661 to PX 1668 (Dr. Ledbetter's demonstratives on MUP); Tr. 1791:1–1795:20 (Ledbetter) (describing the demonstratives).

797. MUP is Microsoft proprietary code that facilitates communications between a desktop PC (or "client") in a network and servers in the network. Ledbetter Dir. ¶ 123. In essence, the MUP "acts as a traffic cop," directing requests for information or services from a client in the network to the Microsoft or non-Microsoft server designated by the network administrator to execute the particular request. *Id.*; *see also* Tr. 5625:12-18 (Short).

798. Microsoft revised the MUP code for Microsoft's release of Windows NT 4.0 on August 9, 1996. Within hours after network administrators installed that version of Windows NT on their networks, Novell servers "began to take far longer than usual to execute requests, and longer than Microsoft servers to execute corresponding requests." Ledbetter Dir. ¶ 127. Indeed, Dr. Ledbetter testified that basic client requests for services offered by Novell servers that "just a few days earlier had taken only a few seconds to execute were now catastrophically slow." *Id.*

799. Microsoft had not notified Novell of the revisions to the MUP code in Windows NT 4.0. After investigation, Novell discovered that the delays in network operations resulted from Microsoft's design of MUP. Ledbetter Dir. ¶¶ 128-29. In particular, Microsoft designed

MUP to query all servers, or "service providers," to determine which service provider the customer had designated to provide a particular service. Microsoft also designed MUP not to release service requests from client PCs to the network's designated service provider until *every* service provider, including Microsoft, had responded to MUP's query. Ledbetter Dir. ¶¶ 129-30; *see also* PX 1311 (Microsoft's documentation of this design feature of MUP); PX 1312 (Novell's documentation).

800. It was this design feature of MUP that created lengthy delays in networks that included Windows NT 4.0. When client PCs requested that services be performed by a Novell server or other non-Microsoft service provider on the network, Microsoft's service provider delayed its response to MUP's query. Without Microsoft's response, MUP could not route the client PC's request to the designated non-Microsoft service provider. Ledbetter Dir. ¶¶ 129-31.

801. Dr. Ledbetter further testified that prior to Microsoft's release of Windows NT 4.0 (and the MUP code at issue), Novell's servers were faster than Microsoft's servers. The delays caused by the MUP, however, made it appear to customers that Microsoft's servers could execute requests for services from client PCs much faster than Novell's servers. For nine months—nearly a full product cycle—and until Microsoft posted on its website a complicated fix to the MUP problem, many Novell customers in networks that included Windows NT 4.0 servers were unable to execute basic functions on the network in a timely manner. This led many customers to select Microsoft servers to perform certain network services. Ledbetter Dir. ¶¶ 139-41.

802. After initially blaming this degradation in functionality on Novell's NetWare server operating system, Microsoft conceded responsibility and eventually posted a "hot fix" patch on the company's website. Ledbetter Dir. ¶¶ 134, 136. As Dr. Ledbetter testified, a "hot

fix" is "a small module of code that had to be installed on every PC on the affected network as a patch," and is "usually only used for temporary emergencies." *Id.* ¶ 136. Asked to explain this nine-month delay, Microsoft Vice President Robert Short admitted that "[g]iven the number of bugs that we see and the number of different complaints, the best that I can say that maybe it was not properly prioritized or something like that." Tr. 5626:19-5627:8 (Short).

803. This "hot fix" was barely adequate, however, for several reasons. First, users had to install it on each individual PC in an affected network, an expensive and time-consuming process. Second, Microsoft did not inform its customers of the availability of the "hot fix". Rather, Microsoft's customers affected by the MUP problems had to "affirmatively seek out the patch on Microsoft's website." Third, the "hot fix" could not be downloaded without special instructions and a special key from Microsoft. Finally, the customers themselves had to install the "hot fix" on each individual PC in the network. Ledbetter Dir. ¶¶ 136-38.

804. Microsoft did not agree to distribute a solution to the MUP problem to every Microsoft Windows NT 4.0 customer until its release of its Windows NT Service Pack 4.0 on October 15, 1998, roughly twenty-six months—or two and a half full product cycles—after Novell identified the problem for Microsoft, and seventeen months after Microsoft issued its initial "hot-fix." Ledbetter Dir. ¶ 141.

805. The substance of Dr. Ledbetter's testimony on MUP is unrebutted by Microsoft. Mr. Short, for example, did not challenge Dr. Ledbetter's factual recitation, but took issue only with the "insinuation that Microsoft intentionally designed the MUP to interfere with the performance of NetWare," Short Dir. ¶ 99, or that "MUP was an incompatibility deliberately engineered by Microsoft." Short Dir. ¶ 101; *see also* Bennett Dir. ¶¶ 162-64.

806. Dr. Ledbetter testified that "[h]ad this proposal [Remedy 5] been in place, Microsoft would have had to notify Novell of the MUP problem." That advance notice of Microsoft's revisions to MUP would have enabled Novell "to try to fix the interoperability issues before they severely affected customers." Ledbetter Dir. ¶ 143.

807. Under Remedy 5, if Microsoft had "good cause" to revise MUP, and if it knew or had reason to know that the revisions to the code would interfere with the performance of non-Microsoft middleware (here, server operating systems), then Microsoft would be required to post notice or to "notify the other vendor of what's going to happen." Tr. 1791:1-1798:21 (Ledbetter). Armed with advance warning of Microsoft's action (and access to APIs, interfaces and technical information set forth in Remedy 4), developers of the affected middleware could, for example, "rewrite something and make it work in a different way." *Id*.

2. Windows XP Interferes with Performance of Non-Microsoft Middleware

808. Nor is MUP the only example of actions by Microsoft that interfered with the performance of non-Microsoft middleware. David Richards of RealNetworks testified, for example, to actions taken by Microsoft that interfered with the performance of RealJukebox, a popular music management software developed by RealNetworks. Richards Dir. ¶¶ 180-85. Mr. Richards testified that "when consumers try to use RealJukebox to record music onto a recordable audio compact disk ("CD"), Windows XP interferes with the process on three separate occasions, asking the user whether they would like to use Windows XP to perform that function instead." Richards Dir. ¶ 180.

809. When a user launches RealJukebox to record an audio CD, for example, Windows XP urges the user to use Windows XP to create the CD; the accompanying dialog box highlights Windows XP as the default choice to create the CD, and "does not even offer RealJukebox as an

option." Richards Dir. ¶¶ 181-82. However, Windows "is not capable of recording content the user has created in RealNetworks' formats onto audio CDs." Richards Dir. ¶ 184. And if "the user tries to use Windows XP to create the CD, Windows will, without informing the user, create a 'data' CD that will not play on audio CD players." *Id.*

810. If the user rejects Microsoft's default choice and creates an audio CD using RealJukebox, Windows XP displays two additional dialog boxes that, respectively, urge the user to switch to Windows XP (for recording of the CD) and Windows Media Player (for playback of the newly-recorded CD). Richards Dir. ¶ 185.

811. Microsoft has belatedly made available documentation that would enable new software products to avoid these dialog boxes. Richards Dir. ¶ 186; Tr. 751:11-752:9 (Richards). But "millions of RealJukeboxes already distributed to consumers will be affected by this new operating system 'feature.'" Richards Dir. ¶ 186. In addition, Microsoft did not provide the documentation until well after the launch of Windows XP; developers of non-Microsoft middleware accordingly "could not take advantage of the information in time for the XP launch." Richards Dir. ¶ 186.

812. Like Dr. Ledbetter, Mr. Richards testified that if Microsoft had notified RealNetworks of these aspects of Windows XP, the company "could have acted to minimize consumer disruption," either by persuading Microsoft to remove the dialog boxes or "by addressing the problem through technological means . . . ." Richards Dir. ¶ 187.

B. How States' Remedy 5 Achieves Its Intended Purpose

813. States' Remedy 5 provides:

> ***5. Notification of Knowing Interference with Performance.*** *Microsoft shall not take any action that it knows, or reasonably should know, will directly or indirectly interfere with or degrade the performance or compatibility of any non-Microsoft Middleware when Interoperating with any Microsoft Platform Software, other than for good cause. If Microsoft takes such action with good*

> *cause, it must provide notice (by, for example, posting a prominent notice on the MSDN website) to the affected ISV(s) of such non-Microsoft software as soon as Microsoft has such knowledge, but in no case less than 60 days in advance, informing the ISV(s) that Microsoft intends to take such action and stating Microsoft's reasons for taking the action.*

814. According to the plain terms of Remedy 5, Microsoft shall not (other than for good cause) take any action that it knows "or reasonably should know will directly or indirectly interfere with or degrade the performance or capability of non-Microsoft Middleware," when that middleware interoperates with Microsoft Platform Software. Shapiro Dir. ¶ 152; Richards Dir. ¶ 177.

815. States' Remedy 5 is carefully crafted to protect developers of non-Microsoft middleware from the degradation of their software without imposing any undue burdens on Microsoft. David Richards of RealNetworks testified, for example, that Remedy 5 is carefully restricted only to those instances where Microsoft knows, or should know, of an adverse effect on non-Microsoft middleware. Richards Dir. ¶ 179.

816. Even then, States' Remedy 5 bans outright only actions that Microsoft takes "other than for good cause," such as, for example, making "changes in its [Microsoft's] interfaces and protocols to damage its competitors' products." Kertzman Dir. ¶ 75. Indeed, Bill Gates testified that he would not object to a remedy that was designed to prevent Microsoft from modifying code for the sole purpose of degrading the performance of non-Microsoft software. Tr. 4649:14-21 (Gates). And Microsoft's expert Dr. Madnick agreed that, "as a general principle," Microsoft should not "interfere with or degrade non-Microsoft middleware for reasons that are anticompetitive or in bad faith." Tr. 6003:6-11 (Madnick).

817. If Microsoft has good cause to take the action at issue, however, no "dire consequences" attach to Microsoft's conduct. Richards Dir. ¶ 179. In those cases, Remedy 5

requires Microsoft only to provide at least 60 days advance notice of the pertinent action (and Microsoft's rationale for the action) "to the affected ISV(s) of such non-Microsoft software." *See also* Shapiro Dir. ¶ 153; Richards Dir. ¶ 179; Ledbetter Dir. ¶ 142; Kertzman Dir. ¶ 75. And this notice requirement is easily satisfied, for example, by posting a prominent notice on the Microsoft Developer Network ("MSDN") website.

818. As Dr. Shapiro testified, "[t]his provision does not prevent Microsoft from improving its software, even if such improvements necessarily interfere with the performance of non-Microsoft Middleware." Shapiro Dir. ¶ 153. But Remedy 5 affords a developer of affected non-Microsoft middleware "both the ability and incentive to modify its software to overcome any degradation in performance that Microsoft could not itself avoid." Shapiro Dir. ¶ 153; *see also* Tr. 1797:1-1798:21 (Ledbetter) (testifying that the notice requirement gives developers the opportunity to "rewrite something and make it work in a different way"); Kertzman Dir. ¶ 75 (noting that Remedy 5 provides affected ISVs the "opportunity to reengineer their products in enough time to avoid damages in the marketplace").

819. In short, "[t]he costs of the notification required by Provision #5 appear to be small, and the benefits to ISVs and to consumers potentially large." Shapiro Dir. ¶ 153.

C. Microsoft's Remedy Fails to Address Knowing Interference

820. The safeguards provided developers of non-Microsoft middleware by States' Remedy 5 are nowhere addressed in Microsoft's Remedy.

D. States' Remedy 5 Meets the Court of Appeals' Objectives for Relief

821. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

822. States' Remedy 5 will achieve the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by preventing the use of a practice, the purposeful degradation of the performance of competing software, that will predictably have the same adverse effects on potential platform threats as the conduct found anticompetitive.

E. Microsoft's Criticisms of States' Remedy 5

823. Microsoft's witnesses level a variety of misguided criticisms at States' Remedy 5. All suffer from exaggerations or misreadings of the remedy.

824. Mr. Gates first contends that Remedy 5 "would subject Microsoft to potential contempt liability for nearly any change to Windows or other 'Microsoft Platform Software,'" because "nearly any change to Windows could adversely affect some non-Microsoft Middleware running on Windows . . . ." Gates Dir. ¶ 329; *see also* Jones Dir. ¶¶ 111-12; Madnick Dir. ¶ 205; Elzinga Dir. ¶ 30.

825. But as Dr. Shapiro makes clear, "[t]his provision does not prevent Microsoft from improving its software, even if such improvements necessarily interfere with the performance of non-Microsoft Middleware." Shapiro Dir. ¶ 153. Other witnesses for the States are in accord. *See, e.g.*, Tr. 1791:1-1798:21 (Ledbetter) (noting that States' Remedy 5 allows Microsoft, for example, to change the operation of an interface "for architectural or performance reasons"); Kertzman Dir. ¶ 75 (States' Remedy 5 allows "Microsoft to make necessary changes" to interfaces and protocols). So long as Microsoft takes the challenged action for good cause, no liability attaches.

826. Mr. Gates also complains that the phrase "good cause" is "an undefined concept that would allow competitors to second guess nearly every Windows design decision." Gates Dir. ¶ 329; *see also* Jones Dir. ¶ 112; Madnick Dir. ¶ 205. But nothing in Remedy 5 prevents

Microsoft or the affected software developer from determining Microsoft's "good cause" by reference to industry custom and practice.

827. Microsoft's testimony before this Court demonstrates that Microsoft may, in fact, try to claim "good cause" for almost any action. Such testimony further establishes the need for States' Remedy 5. For example, Microsoft Vice-President Chris Jones testified that Microsoft would even have had good cause to bind Internet Explorer to Windows if the company's intention was to create "great new customer experiences," and if the resulting "jolting experience" was a by-product of that action. Tr. 5132:28-5233:8 (Jones). Even assuming *arguendo* that Mr. Jones' characterizations are correct, his testimony in fact supports the rationale for States' Remedy 5, which would in that instance allow Microsoft to affect non-Microsoft middleware "for good cause" but would also require that Microsoft post a notice of the degradation of performance resulting from the Microsoft changes.

828. Microsoft also criticizes Remedy 5's sixty-day notice requirement. Mr. Gates, for example, contends that the notice requirement means "that things like putting out security patches on a timely basis would no longer be allowed." Tr. 4665:12-18 (Gates); *see also* Madnick Dir. ¶ 206. But Mr. Gates again exaggerates the intended effect of the Remedy. Remedy 5 is "carefully restricted" to minimize the burdens on Microsoft, merely requiring that Microsoft provide developers with advance warning of actions that will affect their middleware. Richards Dir. ¶ 179. Moreover, Mr. Gates does not explain why security patch releases will interfere with or degrade the performance of Non-Microsoft Middleware. To the extent the Court decides this concern is real, it can modify the notice period for cases involving legitimate security updates to require only reasonable advance notice under the circumstances.

829. Finally, Dr. Bennett urges that Remedy 5 "would appear to require Microsoft to be aware of, acquire and test all 'non-Microsoft Middleware' products for compatibility with Microsoft Platform Software." Bennett Dir. ¶ 118. He argues that this interpretation of Remedy 5 "would impose an immense testing burden upon Microsoft." *Id.* ¶ 119. But Dr. Bennett exaggerates the implications of Remedy 5 for Microsoft, as Remedy 5 does not oblige Microsoft to be aware of every conceivable interference with every third party software product. Rather, it only applies to "knowing interference".

830. Indeed, Dr. Ledbetter testified that Remedy 5 does not increase Microsoft's testing burden. He observed that certain actions by Microsoft (such as changes to particular interfaces) might well have "an unanticipated effect, a surprise effect." Tr. 1791:1-1798:21 (Ledbetter). And Dr. Ledbetter made clear that there would be "no particular reason why" Microsoft should anticipate such effects "under the normal and customary and conventional testing mechanisms in the industry to comply with Remedy 5." *Id.* In sum, Dr. Bennett's opinion that Remedy 5 imposes extraordinary testing burdens on Microsoft is incorrect.

XII. States' Remedy 6—Ban on Exclusive Dealing

A. Purpose of States' Remedy 6

831. Microsoft violated the Sherman Act by, among other things, entering into exclusive agreements with various IAPs, ISVs and Apple to distribute Internet Explorer to the exclusion of Netscape's Navigator, and exclusive agreements with ISVs to set Microsoft's version of the Java Virtual Machine ("JVM") as the default rather than cross-platform versions of Java. By cutting these competing middleware products off from the most significant channels of distribution, Microsoft stifled the platform threats Navigator and Java would have posed had they achieved wider dissemination.

832. In 1995, IAPs provided one of the two most important avenues for the distribution of Internet browser software. *Microsoft*, 253 F.3d at 60. At the time, the most popular IAPs bundled the Navigator browser along with their own Internet-dial-up software. *Microsoft*, 84 F. Supp. 2d at 69, Finding No. 242. Once Microsoft perceived the threat that Navigator posed to its operating-system monopoly, it attempted to secure "exclusive arrangements" with a number of IAPs to limit Navigator's distribution. *Id.* at 70, Findings Nos. 242-44; *see also supra* Section II.D.1.c ("Agreements with IAPs").

833. The District Court described these "exclusive arrangements":

> Microsoft's first tactic was to develop and include with Windows an Internet sign-up program that made it simple for users to download access software from, and subscribe to, any IAP appearing on a list assembled by Microsoft. In exchange for their inclusion on this list, the leading IAPs agreed, at Microsoft's insistence, to distribute and promote Internet Explorer, to refrain from promoting non-Microsoft Web browsing software, and to ensure that they distributed non-Microsoft browsing software to only a limited percentage of their subscribers. Although the percentages varied by IAP, the most common figure was twenty-five percent.

Microsoft, 84 F. Supp. 2d at 70, Finding No. 244.

834. The most important of Microsoft's IAP deals was with AOL, which "accounted for a substantial portion of all existing Internet access subscriptions and . . . attracted a very large percentage of new IAP subscribers. . . ." *Microsoft*, 84 F. Supp. 2d at 77, Finding No. 272. Microsoft gave AOL a place on the Microsoft desktop, along with special rights to use the IE code, in exchange for AOL's agreement, among other things, to:

> exclusively promote, market and distribute, and have promoted, marketed and distributed, Internet Explorer on or for use by subscribers to the AOL Flagship Service.' Specifically, AOL agreed to ensure that in successive six-month periods, neither the number of copies of non-Microsoft Web browsing software it shipped (through any sub-channel, including GNN), nor the number of new subscribers accessing AOL (including GNN) with non-Microsoft Web browsing software, would exceed fifteen percent of the total number of copies of proprietary access software that AOL distributed through any channel (*i.e.*, through the Windows desktop or otherwise).

Id. at 81, Finding No. 289.

835. The District Court found:

> The Microsoft executives responsible for closing the deal with AOL recognized that AOL had agreed to distribute and promote Internet Explorer to the virtual exclusion of Navigator. Two days after Microsoft signed the agreement with AOL, Chase sent to Microsoft's executive staff a memorandum answering questions he thought the executives might have about the agreement. One such question was, "I find it hard to believe that AOL is using Internet Explorer as its browser. Are there exceptions?" Chase responded:
>
> "Yes the[re] are some but they are pretty remote. An AOL customer could choose to use Navigator and it will be available to be downloaded from the AOL site, though not in a prominent way. There are some circumstances with 3rd party distribution deals where AOL has some limited flexibility. On its GNN service, AOL can do what it wants. But for all intents and purposes it is true, AOL will be moving its 5M customers to a new client integrated with Internet Explorer 3 starting this summer/fall."

Microsoft, 84 F. Supp. 2d at 81, Finding No. 290. The Microsoft executives were correct—the deal with AOL "caused an enormous surge in Internet Explorer's usage share and a concomitant decline in Navigator's share." *Id.* at 77, Finding No. 272.

836. The Court of Appeals noted that exclusive contracts are commonplace in our economy, but that they present particular problems when entered into by a monopolist. *Microsoft*, 253 F.3d at 70. In this case, the Court of Appeals found that "[b]y ensuring that the 'majority' of all IAP subscribers are offered IE either as the default browser or as the only browser, Microsoft's deals with the IAPs clearly have a significant effect in preserving its monopoly. . . ." *Id.* at 71. The Court of Appeals held that Microsoft's exclusive agreements with IAPs harmed competition and violated § 2 of the Sherman Act. *Id.*

837. Microsoft also sought to prevent both Navigator and Java from redistribution with and use by ISVs' software. *See supra* Section II.D.1.d ("Dealings with ISVs and Apple"); Section II.D.2 ("Microsoft's Efforts to Thwart Java"). To this end, Microsoft signed the so-called "First Wave" agreements with a number of ISVs, which provided the ISVs with preferential technical support and other blandishments from Microsoft in exchange for the ISVs' agreement (1) to use IE as the default browser in any software they develop; (2) to use Microsoft's "HTML Help," which runs only on IE, in their applications; and (3) to make Microsoft's JVM the default in their applications that utilize Java. *Microsoft*, 253 F.3d at 71-72, 75.

838. The Court of Appeals found that Microsoft successfully reduced competition from both Navigator and Java in the First Wave agreements, which had a "substantial effect in further foreclosing rival browsers from the market," *Microsoft*, 253 F.3d at 72, and "foreclosed a substantial portion of the field for JVM distribution. . . ." *Id.* at 76. Microsoft offered no

procompetitive justifications for these provisions, and the Court of Appeals therefore held that Microsoft's exclusive dealing arrangements with the ISVs in the First Wave agreements violated § 2 of the Sherman Act. *Id.* at 72, 76.

839. Apple's Macintosh operating system also provided a potentially significant channel of distribution for Navigator, and so, leaving nothing to chance, Microsoft ultimately reached an exclusive deal with Apple to lock out Navigator as well. *See supra* Section II.D.1.d ("Dealings with ISVs and Apple"). Microsoft agreed to continue to release up-to-date versions of Mac Office for five years, and in exchange required Apple: (1) to bundle the most current version of IE with the Mac OS; (2) to make IE the default browser; (3) to not include Navigator in the "default installation" setting; (4) to refrain from positioning icons for non-Microsoft browsers on the Mac OS desktop; and (5) to encourage its own employees to use IE. *Microsoft*, 253 F.3d at 73.

840. As with Microsoft's agreements with the IAPs and the ISVs, the Court of Appeals found that "[t]he exclusive deal between Microsoft and Apple has a substantial effect upon the distribution of rival browsers." *Microsoft*, 253 F. 3d at 73. The Court of Appeals held that Microsoft's agreement with Apple "serve[d] to protect Microsoft's monopoly," and violated § 2 of the Sherman Act. *Id.* at 74.

841. Microsoft's willingness to engage in exclusive dealings to stave off potential threats to its operating-system monopoly persists to this day. For example, in 1999, Microsoft made a $3 billion investment in Telewest, a cable company. As part of the deal, Microsoft secured an agreement from Telewest to use Microsoft's interactive-television middleware exclusively. Kertzman Dir. ¶¶ 55, 59; Tr. 2164:20-2168:7 (Kertzman). The exclusive term in

this deal was ultimately dropped after a European Union investigation, but it demonstrates that exclusive deals are still very much a part of Microsoft's overall strategy. *Id.*

B. How States' Remedy 6 Achieves Its Intended Purpose

842. States' Remedy 6 contains an unconditional ban on Microsoft's entering into certain types of exclusive deals with third parties. Barksdale Dir. ¶ 119; Kertzman Dir. ¶ 58. The goal of Remedy 6 is to prevent Microsoft from stifling competition from future platform threats to its operating-system monopoly by broadly prohibiting the types of anticompetitive, exclusive agreements that it exacted from IAPs, ISVs, and Apple. The broad language of Remedy 6 should help to make it more easily and more effectively enforceable. Shapiro Dir. ¶ 167.

843. States' Remedy 6 provides:

> ***Ban on Exclusive Dealing.*** *Microsoft shall not enter into or enforce any Agreement in which another party agrees, or is offered or granted consideration, to:*
>
> *a. restrict its development, production, distribution, promotion or use of (including its freedom to set as a default), or payment for, any non-Microsoft product, service, feature or technology;*
>
> *b. restrict Microsoft redistributable code from use with non-Microsoft Platform Software;*
>
> *c. distribute, promote or use any Microsoft product, service, feature or technology exclusively or in a minimum percentage;*
>
> *d. interfere with or degrade the performance of any non-Microsoft product, service, feature or technology; or*
>
> *e. in the case of an agreement with an IAP or ICP, distribute, promote or use a Microsoft product, service, feature or technology in exchange for placement with respect to any aspect of a Microsoft Platform Product.*

844. Recognizing that Microsoft has shown great creativity in the inducements it has offered third parties in the past, States' Remedy 6 bans all forms of "consideration" that

Microsoft might conceivably offer in exchange for exclusive dealing. Remedy 6 prohibits cash payments, but it also disallows Microsoft from offering special placement on the Windows desktop, such as it offered AOL, *Microsoft*, 84 F. Supp. 2d at 77, Finding No. 272, "'preferential support, in the form of early . . . betas, other technical information, and the right to use certain Microsoft seals of approval,'" as it offered ISVs in the First Wave agreements, *Microsoft*, 253 F.3d at 72 (quoting *Microsoft*, 84 F. Supp. 2d at 93, Finding No. 339), and any other blandishments that Microsoft might offer a third party in exchange for an exclusive deal.

845. The ban on exclusive dealing in Remedy 6 is widely drawn. Richards Dir. ¶ 195. For example, in preventing Microsoft from restricting the distribution and promotion of non-Microsoft products, services, features, and technologies, section 6.a also takes into account that agreements making Microsoft software the "default" settings, such as those found in the IAP agreements, *Microsoft*, 84 F. Supp. 2d at 73, Finding No. 257, and in the First Wave agreements, *Microsoft*, 253 F.3d at 75, may have substantially the same effect as agreements to distribute Microsoft products exclusively, and therefore must be prohibited as well.

846. Remedy 6.b prevents Microsoft from restricting the rights of third parties to use Microsoft redistributable code with non-Microsoft platform software. Such tactics would effectively comprise a form of exclusive dealing, because an ISV that has incorporated Microsoft redistributable code into one of its software products for Windows likely would not have the incentive to rewrite the software for use on another platform without the code.

847. Remedy 6.c prohibits agreements requiring a party to distribute, promote, or use Microsoft products or services exclusively or in a minimum percentage. Section 6.c is a necessary counterpart to section 6.a—it takes into account the fact that an affirmative agreement to distribute, for example, IE with a minimum of 75% of an IAP's dial-up software, would have

the exact same effect as the agreements in which Microsoft required IAPs to keep their distribution of non-Microsoft browsers limited to 25%. *See Microsoft*, 84 F. Supp. 2d at 70, Finding No. 244.

848. Remedy 6.d prohibits Microsoft from providing consideration to a party to do what Microsoft would be prohibited from doing itself under States' Remedy 5, namely, interfering with or degrading the performance of a third party's product, service, feature, or technology.

849. Finally, as one Microsoft employee put it, "'It's very clear that [third parties] really really want [their products and services] to be in the Windows box.'" *Microsoft*, 84 F. Supp. 2d at 85, Finding No. 305. Remedy 6.e explicitly prevents Microsoft from using one of its greatest assets—space on the Windows desktop—as a bargaining chip in seeking exclusive deals from IAPs and ICPs.

C. Microsoft's Remedy Does Not Adequately Prohibit Microsoft from Entering Exclusive Deals

850. Microsoft has acknowledged that the remedy for its antitrust violations must prohibit exclusive dealing. Dr. Elzinga testified that Sections III.F and III.G of Microsoft's Remedy were designed to prohibit Microsoft from engaging in exclusive deals such as the Referral Server agreements with the IAPs, the First Wave agreements with ISVs, and its deal with Apple. Elzinga Dir. ¶ 126. The terms of Sections III.F and III.G, however, contain a number of significant exceptions that render the remedies wholly inadequate to prevent the type of illegal conduct to which they are addressed.

851. Section III.F.2 purports to prevent Microsoft from entering into agreements with ISVs in which Microsoft provides consideration in exchange for the "ISV's refraining from developing, using, distributing, or promoting any software that competes with Microsoft

Platform Software. . . ." Following this language, however, Section III.F.2 contains an exception with the capacity to swallow the rule. As long as Microsoft obtains a "bona fide contractual obligation" from an ISV, Microsoft is permitted to do precisely what the first part of Section III.F.2 says it cannot do—enter into a contract with that ISV that requires the ISV to use, distribute, or promote Microsoft software and to limit its use, distribution, or promotion of non-Microsoft software. Barksdale Dir. ¶¶ 113-14; Tr. 5254:5-5255:11 (Jones).

852. Further, the restrictions in Section III.F.2 only apply to agreements that relate to Windows Operating System Products, and not to other Microsoft software. This means that what Microsoft could not accomplish using inducements related to Windows, it could still accomplish using inducements related to Internet Explorer. Barksdale Dir. ¶ 115. Either way, the result is the same: Microsoft would be able to curtail or seriously limit the use, distribution, or promotion of non-Microsoft middleware that could pose a threat to the desktop operating system, just as it did with Navigator. Barksdale Dir. ¶ 115.

853. Similar to the "bona fide contractual obligation" carve-out in Section III.F.2, the first and most glaring problem with Section III.G is that it permits Microsoft to enter exclusive deals so long as they are styled as "joint ventures," "joint development arrangements," or "joint services arrangements." There are very few commercial deals that cannot be styled as some sort of joint undertaking. Richards Dir. ¶ 197. Although the exception applies only where both Microsoft and the other party contribute "significant developer or other resources," such a qualifier is ambiguous and, in any event, may not require a large commitment in absolute terms since many ISVs and ICPs are small entities. *Id.* "Other resources" could be virtually anything from software, to advertising, to promotional space in Windows XP. *Id.* The breadth of this exception is potentially enormous. *Id.*

854. In fact, under the joint ventures/joint development arrangements/joint services arrangements exceptions under Section III.G, Microsoft could engage in precisely the behavior that the District Court found, and the Court of Appeals affirmed, to be illegal. For example, Microsoft explicitly would be permitted to enter a "joint services arrangement" with an IAP in which Microsoft agreed to promote the IAP's Internet service in exchange for the IAP's agreeing to use, distribute, and promote IE to the exclusion of Navigator. Barksdale Dir. ¶ 116.

855. But there are other problems. Section III.G.1 permits Microsoft to enter into "fixed percentage" agreements if in good faith it obtains a representation that it is "commercially practicable" for the other party to provide equal or greater distribution, promotion, use or support for software that competes with Microsoft middleware or Windows. This means that, if Microsoft can obtain a representation as to a hypothetical possibility, it can strike a "fixed percentage" deal—that is, Section III.G.1 does not require the entity actually to devote greater resources to the non-Microsoft products, it only requires it to make such a representation for the deal to be blessed. Barksdale Dir. ¶ 117; Richards Dir. ¶ 196. Microsoft's position as the owner of the monopoly PC operating system obviously puts it in an incredibly strong negotiating position to obtain such representations, since without an agreement with Microsoft, the target company may be denied access to the vast majority of PC users. Richards Dir. ¶ 196.

856. Equally troubling, the prohibition on exclusive dealing in Section III.G "does not apply to any agreements in which Microsoft licenses intellectual property in from a third party." Richards Dir. ¶ 198. This is a very broad exception that by itself threatens to nullify the prohibition. *Id.* Many software deals involve the licensing of intellectual property as a matter of course. *Id.* This exception appears to legitimize any deal in which Microsoft licenses intellectual property from a third party, even if that intellectual property is a very small or

incidental part of the overall transaction. *Id.* And since there is no requirement that the license be one for commercial purposes, Microsoft need not even have plans to use such intellectual property. *Id.*

857. In sum, although Microsoft has presented Sections III.G and III.F as providing redress for Microsoft's illegal, exclusive dealings with IAPs, ISVs, and Apple, both provisions are fatally flawed because, due to the scope of the exceptions they contain, they would not in practice prevent the very conduct they are supposed to remedy.

D. States' Remedy 6 Meets the Court of Appeals' Objectives for Relief

858. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

859. States' Remedy 6 will achieve the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by preventing the continued use of a particular exclusionary practice, the use by Microsoft of exclusive arrangements to promote its middleware at the expense of a platform threat.

E. Microsoft's Criticisms of States' Remedy 6

860. In his testimony, Bill Gates claimed that States' Remedy 6 "would rewrite contracts already in place today, fundamentally changing settled business expectations, and would transfer Microsoft intellectual property to our competitors." Gates Dir. ¶ 337. Mr. Gates' conclusions, however, are based on extreme, unreasonable, and even nonsensical readings of the text of the remedy. Mr. Gates' criticisms of Remedy 6 largely evaporate when it is read rationally, in accordance with its language.

861. First, Mr. Gates claimed that Remedy 6.a would prohibit a number of routine business contracts. One of the examples Mr. Gates provided was that:

> a contract under which Microsoft provides funds to a third party to promote a Microsoft product would ordinarily state just that: advertising purchased with Microsoft's money must promote Microsoft products, not competing products. Yet such an agreement could violate Section 6.a because it would "restrict" the third party from promoting a non-Microsoft product.

Gates Dir. ¶ 339.

862. Mr. Gates' reading of States' Remedy 6.a ignores the actual language of 6.a. The fact that Microsoft might provide a company with money to promote a Microsoft product would in no way restrict that company's right or ability to promote non-Microsoft products using money other than that provided to it by Microsoft. Thus, contrary to Gates' assertions, such a routine promotional deal certainly would be permitted Remedy 6.a.

863. Commenting on Remedy 6.d, Mr. Gates claims that Microsoft does not in fact enter into contracts that are meant to "interfere with" or "degrade the performance of" non-Microsoft products. Gates Dir. ¶ 348. Of course, if Microsoft does not do so, then Remedy 6.d would never be triggered. Mr. Gates nevertheless criticizes Remedy 6.d because, he believes, it "could be read to prohibit Microsoft from encouraging use of unique Windows features on a theory that software written to those features will not work as well . . . on platforms that lack such features." *Id.* ¶ 349. This criticism is predicated on a reading that makes no sense—an ISV's decision to write an application to Windows could in no way be considered a "degradation" of that application simply because it will not also run on Linux. On cross-examination, Mr. Gates conceded that under a rational reading of Section 6.d, it "would actually be a livable provision." Tr. 4950:4-11 (Gates).

864. Mr. Gates also faults Remedy 6.e, which prohibits Microsoft from offering an IAP or ICP placement on a Microsoft Platform Product in exchange for that IAP or ICP's agreement to distribute, promote, or use a Microsoft product, service or feature. Gates' criticism of 6.e is that "[t]o make the placement [on a Microsoft Platform Product] work technically, however, it is usually the case that the third party would have to use at least some Microsoft technology." Gates Dir. ¶ 350. Again, this is a nonsensical reading of Section 6.e that ignores both the language and intent of the Remedy. While it is true that an IAP, for example, must "use" some Windows technology in order to place an icon on the Windows desktop, that is not the "use" that Microsoft would be requiring of the ISV "in exchange for" placement on the desktop. Remedy 6.e is clearly targeted at preventing the recurrence of exclusive agreements such as the one Microsoft exacted from AOL, in which AOL used IE in its software in exchange for placement on the Windows desktop.

XIII. States' Remedy 7—Ban on Contractual Tying

A. Purpose of States' Remedy 7

865. States' Remedy 7 prevents Microsoft from using its monopoly power to force OEMs and other Windows licensees to adopt Microsoft Middleware Products by contract. Such contractual coercion prevents the distribution of non-Microsoft middleware, because rival middleware vendors must convince OEMs and other Windows licensees to carry their product as well as the corresponding Microsoft middleware for which they have already paid. Indeed, as Dr. Shapiro testified, "such contractual tying by Microsoft can impede the adoption of non-Microsoft middleware." Shapiro Dir. ¶ 168.

866. The District Court previously determined that Microsoft's contractual and technological bundling of Internet Explorer with the Windows operating system resulted in a tying arrangement that was per se unlawful under section 1 of the Sherman Act. *Microsoft*, 253 F.3d at 84. The Court of Appeals vacated and remanded this determination, holding that "the rule of reason (rather than per se analysis) should govern the legality of tying arrangements involving platform software products." *Id.* And the plaintiffs did not pursue a rule of reason tying claim on remand.

867. But the findings of fact underlying the District Court's tying analysis are of continuing relevance here, particularly as "[t]he facts underlying the tying allegation substantially overlap" with the findings that relate to Microsoft's illegal maintenance of its operating system monopoly. *Microsoft*, 253 F.3d at 84. These findings included, in pertinent part, the determination that "Microsoft required licensees of Windows 95 and 98 also to license IE as a bundle at a single price." *Id.* (citing *Microsoft*, 84 F. Supp. 2d at 44, 49, Findings Nos. 137, 155, 158).

868. Microsoft continues today to force OEMs to license Microsoft middleware through contractual ties. David Richards of RealNetworks testified, for example, that Microsoft currently conditions the grant of a Windows license to an OEM on that OEM's agreement to bundle Microsoft's Windows Media Player ("WMP") with the Windows operating system. Richards Dir. ¶ 200.

869. Such contractual tying by Microsoft, of course, makes it more difficult for RealNetworks and other ISVs to convince OEMs to carry middleware products that compete with the "tied" Microsoft Middleware Products. States' Remedy 7 is designed to redress precisely this type of contractual coercion by Microsoft that ultimately hinders competing middleware developers in distributing their software.

870. This remedy also complements other remedies put forward by the States (including Remedies 1 and 2.c) that prohibit Microsoft from technologically bundling its middleware with Windows. Indeed, as David Richards testified, "[t]he contractual tying provision prohibits Microsoft from achieving via contract what the uncommingling remedy prohibits technologically." Richards Dir. ¶ 202.

B. How States' Remedy 7 Achieves Its Intended Purpose

871. States' Remedy 7 provides as follows:

> ***Ban on Contractual Tying.*** *Microsoft shall not condition the granting of a Windows Operating System Product license, or the terms (including without limitation price) or administration of such license (including any license granted pursuant to Section 1), on a licensee agreeing to license, promote, distribute, or provide an access point to, any Microsoft Middleware Product.*

872. In short, this provision prevents Microsoft from granting a Windows license on the condition that a licensee agree to license, promote or distribute any Microsoft Middleware Product. Shapiro Dir. ¶ 168.

873. States' Remedy 7 will accordingly "enhance middleware developers' ability to deal directly with OEMs" and other Windows licensees. Richards Dir. ¶ 199. This is so because this provision allows Windows licensees to independently decide which middleware products to incorporate in their customized versions of Windows. Put simply, Remedy 7 ensures that middleware developers will no longer have to convince Windows licensees of the need to distribute and promote a *second* equivalent middleware product: the Microsoft Middleware Product that Microsoft forces Windows licensees to purchase, *and* the competing non-Microsoft middleware that the OEMs and other licensees would prefer to promote and distribute.

874. States' Remedy 7 also complements States' Remedies 1 and 2.c, which ensure that Microsoft may no longer force Windows licensees and consumers to purchase versions of Windows that contain technologically bound Microsoft Middleware Products like Internet Explorer. Tr. 3663:23-3665:20 (Shapiro).

C. Microsoft's Remedy Fails to Address Contractual Tying

875. Microsoft's remedy does not contain a provision comparable to States' Remedy 7. Richards Dir. ¶ 203.

D. States' Remedy 7 Meets the Court of Appeals' Objectives For Relief

876. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

877. States' Remedy 7 provides OEMs and other Windows licensees with the freedom to choose, promote and distribute non-Microsoft middleware that may threaten Microsoft's monopoly. In particular, Remedy 7 ensures that Microsoft cannot achieve contractually what

Remedies 1 and 2.c prohibit technologically, *i.e.*, forcing Windows licensees to carry and promote Microsoft middleware and its APIs, thus maintaining the applications barrier to entry and hindering the ability of competing middleware developers to gain access to the OEM channel of distribution.

878. Remedy 7 thus achieves the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by, in conjunction with Remedies 1 and 2.c, stripping Microsoft of its ability to close core channels of distribution to third-party developers and thus suppress nascent platform threats.

E. Microsoft's Criticisms of States' Remedy 7

1. States' Remedy 7 Is Not an "Outright Ban" on All Tying Arrangements

879. Dr. Murphy contends that Remedy 7 is an "outright ban" on all efforts by Microsoft to enter into tying arrangements. Murphy Dir. ¶ 238. But the plain text of the remedy proves Dr. Murphy wrong.

880. By its terms, States' Remedy 7 is addressed to tying arrangements that involve "Microsoft Middleware Products," as defined in States' Remedy 22.x. Thus, as Dr. Shapiro testifies, this remedy "does not reach to applications, for example, or other software products that have no role in reducing the applications barrier to entry . . . ." Tr. 3661:5-18 (Shapiro). In short, Dr. Murphy's complaint that this remedy imposes an "outright ban" on all tying arrangements is unfounded. Murphy Dir. ¶ 238.

2. States' Remedy 7 Will Not "Harm" Microsoft

881. Mr. Gates contends that Remedy 7 "would entail all the harms and practical difficulties" as those alleged to result from Remedies 1 and 2.c. Gates Dir. ¶ 353. But those

remedies bar technological tying of certain middleware products and Windows. Remedy 7, in contrast, precludes only the execution of certain tying arrangements involving Microsoft Middleware Products. Tr. 3661:5-18 (Shapiro). The only "harm" to Microsoft is a cessation of its ability to use its monopoly power to force OEMs and other Windows licensees to promote and distribute those tied products. Nothing in the remedy bars Microsoft from marketing these Microsoft Middleware Products as stand-alone products.

3. The Phrase "Access Point" in Remedy 7 Can Be Defined

882. Mr. Gates also complains that the phrase "access point," which appears in Remedy 7, "has no commonly understood meaning in the industry." Gates Dir. ¶ 354. Even assuming Mr. Gates is correct, any concern is easily alleviated by defining the phrase. The States suggest the following definition: *"Access Point"* means *"any means by which an end user of a Windows Operating System Product may gain access to a Microsoft Middleware Product, including but not limited to a desktop icon or a slot in a Windows Start menu."*

XIV. States' Remedy 8—Ban on Adverse Actions for Supporting Competing Products

A. Purpose of States' Remedy 8

883. The Court of Appeals and the District Court catalogued a variety of conduct by Microsoft that was designed to reward those who acceded to Microsoft's anticompetitive aims and to punish those who did not. In particular, Microsoft has used its Windows monopoly to induce and/or threaten various third parties to take actions that ultimately help protect Windows from competition. Microsoft has taken actions that help to preserve, solidify and extend the applications barrier to entry that protects Windows from competition on the merits from other PC operating systems and other computing devices, such as handheld devices. Since the Findings of Fact were entered by the District Court, Microsoft has engaged in similar and additional retaliatory conduct directed towards companies that either develop or support software platforms that compete with the Windows platform.

884. States' Remedy 8 is designed to prevent Microsoft from taking actions that adversely affect various categories of third parties based on the fact that the third party takes or contemplates action to support or promote a non-Microsoft product or service. In short, the purpose of Remedy 8 is to halt Microsoft's past retaliatory behavior, and to prevent Microsoft from engaging in the same, similar or additional conduct in the future.

885. States' Remedy 8 is *not* designed to prevent Microsoft from taking legitimate pro-competitive actions that, if successful, might result in Microsoft making competitive gains at the expense of competitors. Rather, in order to invoke Remedy 8, a causal connection must exist between an adverse action taken by Microsoft and an action taken by a third party that supports or promotes a competing non-Microsoft product or service.

1. Actions Taken Against OEMs

886. The District Court found that in addition to enforcing licensing restrictions that raised OEMs' costs to support Netscape's Navigator browser, "Microsoft used incentives and threats in an effort to secure the cooperation of individual OEMs" in Microsoft's anticompetitive battle against Navigator. *Microsoft*, 84 F. Supp. 2d at 66-67, Finding No. 230.

887. "First, Microsoft rewarded with valuable consideration those large-volume OEMs that took steps to promote Internet Explorer," and in some cases reduced the royalty price for Windows for those OEMs that set IE as the default browser and/or displayed IE's logo and links to IE. *Microsoft*, 84 F. Supp. 2d at 67, Finding No. 231.

888. Second, Microsoft also "was willing to exchange valuable consideration for an OEM's commitment to curtail its distribution and promotion of Navigator." *Microsoft*, 84 F. Supp. 2d at 67, Finding No. 232. In particular, Microsoft rewarded Compaq's commitment to use and promote IE to the exclusion of Navigator, by guaranteeing that the price paid by Compaq for Windows was significantly lower than other OEMs. *Id.* at 67, Findings Nos. 232-34.

889. Third, Microsoft pressured and eventually retaliated against those OEMs that continued to promote and distribute Navigator. In particular, Microsoft made various threats to both Gateway and IBM relating to their use, promotion and support of Navigator. Gateway and IBM refused to promote IE exclusively. *Microsoft*, 84 F. Supp. 2d at 68, Findings Nos. 235-38. The District Court found that "[a]mong the five largest OEMs, Gateway and IBM, which in various ways have resisted Microsoft's efforts to enlist them in its efforts to preserve the applications barrier to entry, pay higher prices than Compaq, Dell, and Hewlett-Packard, which have pursued less contentious relationships with Microsoft." *Id.* at 27, Finding No. 64.

890. Fourth, Michael Tiemann, the Chief Technology Officer for Red Hat, Inc., testified at length as to the fear that OEMs have in talking to Red Hat about manufacturing PCs

with Red Hat's Linux operating systems preinstalled. Based on Mr. Tiemann's experiences and dealings with OEMs while at Red Hat, he believes that OEMs fear retaliation from Microsoft if they engage in significant promotional activities with Red Hat—the leading commercial developer of Linux operating systems. *See generally* Tiemann Dir. ¶¶ 47-74;[1] PX 223 at 5 (Reflecting Microsoft's belief that Compaq "should meet demand" for Linux, "but not help create demand").

891. In particular, although Red Hat has had some success in marketing server and embedded device operating systems to OEMs that wish to replace Unix operating systems, and although Linux based operating systems are growing in popularity, Red Hat has had almost no success in persuading OEMs to preinstall any Linux-based desktop operating system products that compete directly with Windows. Tiemann Dir. ¶ 56; Tr. 957:15-958:19, 959:5-961:10, 962:6-963:3, 1094:22-1095:22 (Tiemann). Mr. Tiemann believes that fear of retaliation from Microsoft has prevented Red Hat from doing deals with OEMs to preinstall Linux-based operating systems on desktop PCs. Tiemann Dir. ¶¶ 59, 62, 71, 74; Tr. 962:18-963:3 (Tiemann).

892. Fifth, Microsoft has treated OEMs unfavorably because they have supported technologies that compete with Microsoft. For example, Gateway received less favorable royalty rates and discounts than other OEMs because Gateway chose to develop its Gateway Connected Touchpad using Linux. Ashkin Dir. ¶ 60. Gateway also was removed by Microsoft from the list of approved vendors because, among other reasons, Gateway chose to develop its small business server appliance using Linux. Ashkin Dr. ¶¶ 61-62; Tr. 849:21-851:23, 908:3-908:22; 909:3-11 (Ashkin).

[1] Certain portions of paragraphs 60-64, 67, 72-73 were stricken on hearsay grounds.

2. Actions Taken Against ISVs

a. IBM

893. In addition to being an OEM that manufactures PC hardware, IBM also develops operating system software and applications software that competes with both Windows and other Microsoft software. In particular, IBM marketed OS/2 Warp as an operating system competitor to Windows, marketed Lotus Notes and Lotus SmartSuite together as office productivity software competing with Microsoft Office, and marketed World Book's electronic encyclopedia in competition with Microsoft's Encarta software. *Microsoft*, 84 F. Supp. 2d at 38-42, Findings Nos. 115, 120, 127.

894. Microsoft recognized that the OS/2 Warp operating system was a direct competitive threat to Windows and that Lotus Notes—cross-platform electronic mail and calendaring software that exposes APIs—represented a potential middleware threat. *Microsoft*, 84 F. Supp. 2d at 39-40, Finding No. 120. Microsoft pressured IBM to significantly reduce its support and promotion of competing software, and retaliated against IBM through altering terms and other consideration relating to (Windows when IBM refused to do so).

895. First, Microsoft offered to reduce IBM's Windows 95 royalty rate by $8 per-copy if IBM mentioned no other operating systems in IBM PC advertisements, adopted Windows 95 as the standard operating system for IBM employees, and ensured that Windows 95 was pre-installed on at least 50% of its PCs within two months after the release of Windows 95. *Microsoft*, 84 F. Supp. 2d at 39, Finding No. 118.

896. Second, Microsoft abruptly broke off license negotiations with IBM regarding Windows 95 only days after IBM announced it would pre-install SmartSuite, including the Lotus Notes middleware product, on its PCs. Although Microsoft claimed that this was due to an ongoing audit of past IBM royalty payments, in fact Microsoft had never linked the two issues

prior to the SmartSuite announcement and Microsoft subsequently offered to resolve the dispute if IBM would agree not to bundle SmartSuite on its PCs for a period of 6-12 months. Because IBM would not agree to these demands, IBM did not obtain a Windows 95 license until fifteen minutes before the official launch of Windows 95, which delay resulted in IBM losing out to competitors on sales of PCs. *Microsoft*, 84 F. Supp. 2d at 40-41, Findings Nos. 122-25. Even after the Windows 95 license was resolved, Microsoft continued to treat IBM less favorably than other OEMs and repeatedly told IBM that its relationship would not improve unless IBM refrained from competing with Microsoft software products, including middleware products. *Id.* at 41, Finding No. 126.

897. Third, because IBM continued to promote SmartSuite, Microsoft refused to provide IBM press releases with quotes endorsing any PC system that IBM shipped with SmartSuite. Microsoft later expanded this practice to cover any PC shipped with the World Book electronic encyclopedia. Microsoft provided such press releases to competing OEMs. "Microsoft's conspicuous silence with respect to IBM PCs sent the message to customers that IBM PCs did not support Windows as well as did PCs manufactured by other OEMs." *Microsoft*, 84 F. Supp. 2d at 42-43, Finding No. 127.

898. Fourth, Microsoft also denied IBM access to Microsoft "enabling programs" that were run for the benefit of OEMs, even though IBM met the objective criteria for admission to the programs. IBM's exclusion from the enabling programs further led customers to question whether Microsoft software worked well on IBM PCs. IBM learned through surveys it conducted that IBM lost between seven and ten large accounts, representing approximately $180 million in revenue, because customers questioned whether Windows would work as well on IBM

PCs as with PCs manufactured by competing OEMs. *Microsoft*, 84 F. Supp. 2d at 42, Finding No. 128.

899. Fifth, Microsoft offered various inducements to IBM in return for IBM installing Microsoft software in the place of competing software. These inducements included early access to the Windows source code (which OEMs want to ensure hardware compatibility with Windows), and permission for IBM to self-certify as being compliant with certain Microsoft hardware requirements (which allows an OEM to reach the market much more quickly). These benefits were made available to OEMs that competed with IBM. *Microsoft*, 84 F. Supp. 2d at 42, Finding No. 129.

900. Sixth, the retaliatory actions taken by Microsoft against IBM, as a result of IBM's promotion and use of non-Microsoft software, "also manifested itself in the royalty price that IBM paid for Windows." *Microsoft*, 84 F. Supp. 2d at 42-43, Finding No. 130. "IBM paid significantly more for Windows than other major OEMs . . . that were more compliant with Microsoft's wishes." *Id.*

901. Last, Microsoft reduced the number of OEM account managers assigned to handle the IBM account relationship from three to one. This reduction in support further impaired IBM's ability to test, manufacture, and ship PCs in a timely manner against competing OEMs. *Microsoft*, 84 F. Supp. 2d at 43, Finding No. 131.

b. Apple Computer

902. Like IBM, Apple Computer is both a computer hardware manufacturer (the Macintosh or "Mac" line of computers) and a software developer (including the popular multimedia QuickTime software). *Microsoft*, 253 F.3d at 72. Microsoft used threats and inducements—aimed at both Apple's hardware and software businesses—to try to persuade Apple to take actions that furthered Microsoft's goals of preventing various middleware threats

from eroding the applications barrier to entry. These actions provide further proof of the wide range of actions that Microsoft is prepared to take to stem any competitive threat to the Windows operating system monopoly.

903. First, Microsoft has enormous leverage over Apple as a result of Microsoft's ownership of the popular suite of business productivity applications marketed as Microsoft Office. In particular, the District Court found that ninety percent (90%) of Mac users who use a suite of office productivity software use Microsoft Office. Moreover, at the time that Microsoft was waging its battles against Navigator, Apple's business was in steep decline such that if Microsoft had pulled support for the Mac version of Office, a great number of ISVs, customers, developers and investors would have interpreted such an action "'as Apple's death notice.'" *Microsoft*, 253 F.3d at 73 (quoting 84 F. Supp. 2d at 94, Finding No. 344). Microsoft is well aware of the leverage that Office affords it over Apple. *Id.* (quoting 84 F. Supp. 2d at 95, 97, Findings Nos. 347, 354).

904. Although Apple was already shipping Internet Explorer with its Mac computers, Microsoft was determined to induce Apple to make IE the default browser instead of Navigator and to feature IE more prominently than Navigator. In order to accomplish this goal, executives at the highest levels of Microsoft, including Bill Gates himself, threatened to cancel the Mac version of Microsoft's Office unless Apple gave IE preferential treatment and promotion. *Microsoft*, 253 F.3d 73 (quoting 84 F. Supp. 2d at 95, Findings Nos. 347, 349).

905. These threats were successful. Within a month of a phone call from Mr. Gates to the CEO of Apple threatening to cancel Mac Office, Apple and Microsoft reached an agreement pursuant to which Apple agreed (1) to bundle IE as the default browser on all Mac computers, (2) not to install Navigator on the computer hard drive when consumers perform the default

installation, which is the type of installation must users select, (3) not to position icons for non-Microsoft browsing software on the desktops of Mac computers, (4) not to encourage users to substitute a competing browser for IE, and (5) to encourage Apple employees to use IE. *Microsoft*, 253 F.3d at 73 (citing 84 F. Supp. 2d at 95-96, Findings Nos. 350-52). In return, Microsoft agreed to continue releasing up-to-date version of Mac Office for five years. *Id.*

906. Even after the this agreement was reached between Microsoft and Apple, Microsoft executives continued to speak in terms of using the threat of pulling support for Mac Office to hold Apple to its commitment to support IE "everywhere." *Microsoft*, 84 F. Supp. 2d at 97, Finding No. 354.

907. The Court of Appeals upheld the District Court's conclusion that Microsoft's agreement with Apple violated Section 2 of the Sherman Act. The Court of Appeals affirmed the District Court's conclusion that Microsoft's actions towards Apple helped to maintain the applications barrier to entry and that Microsoft offered no procompetitive justification for its exclusive arrangement with Apple. *Microsoft*, 253 F.3d at 74.

908. QuickTime is Apple's multimedia software that competes with Microsoft's Windows Media Player, both from a consumer usage standpoint and from an applications platform standpoint. Tr. 6068:21-6070:12 (Poole). Versions of QuickTime run on both Windows and the Mac operating systems. "Because QuickTime is cross-platform middleware, Microsoft perceives it as a potential threat to the applications barrier to entry." *Microsoft*, 84 F. Supp. 2d at 36, Finding No. 104.

909. Beginning in the spring of 1997 and continuing into the summer of 1998, Microsoft tried to induce Apple not to develop a version of QuickTime for Windows 95 that presented APIs to developers that competed with Windows' APIs. In return, Microsoft provided

that it would not enter the multimedia authoring business and would instead assist Apple in developing and selling tools for developers writing multimedia content. The result of this arrangement would have been the end of Apple offering platform level APIs that competed with Windows. *Microsoft*, 84 F. Supp. 2d at 36, Finding No. 105.

910. In addition to these inducements, Microsoft also threatened Apple with adverse consequences if it did not accede to Microsoft's wishes. In particular, Microsoft made clear that, if Apple did not cease developing platform level APIs, Microsoft would enter the multimedia authoring business to ensure that ISVs writing multimedia software for Windows would continue to write to the Windows APIs and not Apple's APIs. Microsoft further informed Apple that if Microsoft entered the authoring tools business, "the technologies provided in those tools might very well be inconsistent with those provided by Apple's tools." *Microsoft*, 84 F. Supp. 2d at 36-37, Finding No. 106. Microsoft further warned Apple that if Microsoft entered the authoring tools business, "its investment would not be constrained by the fact that authoring software generated only modest revenue." *Id.*

911. In subsequent meetings between Microsoft and Apple executives in the summer of 1998, Microsoft offered further inducements to Apple in an effort to get Apple to abandon its development of platform level multimedia applications for Windows. Apple rejected all of these offers and threats. *Microsoft*, 84 F. Supp. 2d at 37, Findings Nos. 108-09.

c. RealNetworks

912. In 1997, Microsoft executives viewed RealNetworks' multimedia software as a competitive technology that could develop into part of a middleware layer that could, in turn, become broad and widespread enough to weaken the applications barrier to entry. *Microsoft*, 84 F. Supp. 2d at 37-38, Finding No. 111. The same is true today. Tr. 6066:3-9 (Poole); Richards Dir. ¶¶ 4, 54.

913. Because Microsoft viewed RealNetworks multimedia software as a threat to Windows, Microsoft executives attempted to negotiate a deal with RealNetworks that Microsoft hoped would result in RealNetworks ceasing development of cross-platform middleware. The parties eventually entered into an agreement that Microsoft thought accomplished its anticompetitive purpose. However, RealNetworks thought differently and continued developing platform multimedia software. Microsoft's intentions towards RealNetworks in 1997, however, were clear, as Microsoft was willing to invest a large amount of cash and other resources into securing a halt in the development of software that potentially could erode the applications barrier to entry. *Microsoft*, 84 F. Supp. 2d at 38, Findings Nos. 113-14; Richards Dir. ¶¶ 59-62.

914. The 1997 agreement between RealNetworks and Microsoft did, however, assist Microsoft in its efforts to thwart Java. As part of this agreement, "Microsoft conditioned its agreement to distribute RealNetworks' media player with Internet Explorer on RealNetworks' agreement to exert its best efforts to ensure that its player use Windows-specific technology, rather than any analogous interfaces that Sun or Netscape might develop, to display multimedia content." *Microsoft*, 84 F. Supp. 2d at 109, Finding No. 403. The result of this agreement was to "limit[] the extent to which [RealNetworks'] software would include Java technologies that complied with Sun's standards." *Id.*

915. Since that time, Microsoft has taken actions designed to undermine RealNetworks' ability to develop, distribute and promote its cross-platform middleware such that it can become part of a middleware layer that could weaken the applications barrier to entry. In particular, Microsoft has made numerous delayed or incomplete disclosures of technical information that has delayed and/or hindered RealNetworks' ability to offer important multimedia functionality to consumers. Richards Dir. ¶¶ 65-84. And, through provisions in

Microsoft's OEM license agreements, including provisions relating to implementation of OEM free system resource requirements, and restrictions on auto launching competing software, Microsoft has hindered OEMs ability to negotiate deals with ISVs like RealNetworks. Richards Dir. ¶¶ 113-28; *see also* Ashkin Dir. ¶¶ 33-34. RealNetworks also has encountered difficulties negotiating deals with OEMs that require OEMs to set RealNetworks' multimedia software as the default media player software instead of Windows Media Player. Richards Dir. ¶¶ 129-49. In some cases, Microsoft has gone so far as to override consumers' and OEMs' choice of RealNetworks' software as the default multimedia playback software. Richards Dir. ¶¶ 150-57.

d. Palm

916. Palm is the leading developer of operating systems for handheld computing devices, including personal digital assistants (PDAs) and cell phones. Today, handheld devices increasingly compete with Windows PCs, both in terms of sales to consumers and in terms of persuading software developers to write applications for the competing platforms. This competition is expected to increase in the future as continued improvements in handheld technology allow handheld devices to perform even more functions typically performed on PCs today. Mace Dir. ¶¶ 8-18.

917. In addition to competing directly with Intel-compatible PCs, handheld devices running the Palm operating system impact competition in the PC operating system market in a number of other ways. First, the evolution of the Palm software development platform—which has more applications written to it than any other software platform aside from Windows—impacts the applications barrier to entry that currently faces manufacturers of competing Intel-compatible PC operating systems. In particular, if ISVs increasingly choose to write applications for the Palm OS instead of Windows, there are less applications written to Windows that would further reinforce and heighten the applications barrier to entry.

918. Second, to the extent that ISVs write applications to the Palm OS instead of Windows, it increases the likelihood that the Palm OS one day could be ported to run on an Intel-compatible PC, thereby providing additional competition to Windows. Third, the evolution of non-Microsoft handheld devices like Palm devices improve the functionality and attractiveness of PCs running operating systems that compete with Windows because Palm handheld devices synchronize with and interoperate with numerous non-Windows PCs. Last, handheld devices will be critical to the evolution of Web services software, which because they may be written to a platform other than Windows and accessed by non-Windows operating systems, offer the potential to weaken the applications barrier to entry. Schwartz Dir. ¶¶ 30, 36-40; Mace Dir. ¶¶ 16-17; Pearson Dir. ¶¶ 34-46. *See also supra* Section III.D.4 ("Handheld Devices").

919. Microsoft has, since the liability trial, taken a number of actions that suggest that Microsoft is prepared and able to retaliate directly against an ISV such as Palm because it offers and supports both a competing software platform and products that compete directly with Windows.

920. In particular, Microsoft has denied Palm access to the Visual Studio Integration Program ("VSIP"), which is a program that enables companies to integrate their own software development tools into Visual Studio. Visual Studio is the standard software development tool used by ISVs to create software applications that run on Windows. Mace Dir. ¶ 38.

921. Palm has sought entry into the VSIP for over two years. Palm's access into this program would benefit software developers and consumers because it would allow ISVs who write applications for Windows to more easily develop their applications to also run on handheld devices that run Palm operating systems. It also would enhance competition between Windows PCs and Palm handheld devices because access to the VSIP would help to erode the applications

barrier to entry that the Palm operating system faces in its competition with Windows PCs. Mace Dir. ¶¶ 39-40

922. Microsoft has publicly stated that the VSIP is open to any company. Moreover, when Palm first approached Microsoft about entry into the program, Microsoft never suggested that Palm did not qualify for admission into the program, and indeed Microsoft employees encouraged Palm to join. Mace Dir. ¶¶ 41-43.

923. Subsequently, however, when Palm followed up and attempted to gain entry into the VSIP, Microsoft offered delays, excuses and eventually admitted that it simply would not grant Palm access to the program because it offered a competing platform. Mace Dir. ¶¶ 42-54. Indeed, just prior to the remedy trial in this matter, Microsoft made clear to Palm that it would not be provided access to the VSIP. Tr. 1934:5-14, 1943:5-19 (Mace).

924. This denial of access harms both developers and consumers, and helps Microsoft maintain the applications barrier to entry that insulates its Windows monopoly from competition from competing operating systems like the Palm OS. Indeed, if Palm were provided access to the VSIP, ISVs could more easily convert their Windows applications to run on the Palm OS. Mace Dir. ¶¶ 38-40.

3. Actions Taken Against IHVs

a. Intel

925. Intel is primarily a manufacturer of microprocessor chips that are sold to OEMs, that in turn manufacture computers that run Windows. Because Windows operating systems are found on the overwhelming majority of PCs sold in the United States, "Intel's executives knew full well that Intel would have difficulty selling PC microprocessors if Microsoft stopped cooperating in making them compatible with Windows and if Microsoft stated to OEMs that it did not support Intel's chips." *Microsoft*, 84 F. Supp. 2d at 35-36, Finding No. 102.

926. Intel also develops software at the Intel Architecture Labs ("IAL"). Intel primarily has developed software that helps to maximize the functionality and thus the demand for Intel microprocessors. *Microsoft*, 84 F. Supp. 2d at 34, Findings Nos. 94-95. When these software development efforts led Intel to develop cross-platform APIs or support competing middleware, Microsoft did not hesitate to use its leverage over Intel's microprocessor business to thwart any competitive threat posed by its software development.

927. First, in 1995, Intel was, in cooperation with Sun and Netscape, developing a high-performance Windows-compatible JVM that was both cross-platform and compliant with Sun's Java standards. *Microsoft*, 253 F.3d at 77 (citing *Microsoft*, 84 F. Supp. 2d at 107, Finding No. 396). Microsoft viewed Intel's JVM development efforts as a threat to Microsoft, and Microsoft senior executives communicated displeasure and eventually threats to Intel regarding its support of Sun and Netscape.

928. In August 1995, Bill Gates informed Intel executives that "Intel's cooperation with Sun and Netscape to develop a Java runtime environment for systems running on Intel's microprocessors was one of the issues threatening to undermine cooperation between Intel and Microsoft." *Microsoft*, 84 F. Supp. 2d at 107, Finding No. 396. Just three months later, "'Microsoft's Paul Maritz told a senior Intel executive that Intel's [adaptation of its multimedia software to comply with] Sun's Java standards was as inimical to Microsoft as Microsoft's support for non-Intel microprocessors would be to Intel.'" *Microsoft*, 253 F.3d at 77 (quoting *Microsoft*, 84 F. Supp. 2d at 109-10, Finding of Fact No. 405). Subsequently, Microsoft executives approached Intel in April 1996 and "urged that Intel not take any steps toward allowing Netscape to ship this JVM with Navigator." *Microsoft*, 84 F. Supp. 2d at 107, Finding No. 396. Finally, "Microsoft threatened Intel that if it did not stop aiding Sun on the multimedia

front, then Microsoft would refuse to distribute Intel technologies bundled with Windows." *Microsoft*, 253 F.3d at 77 (citing *Microsoft*, 84 F. Supp. 2d at 109, Finding No. 404).

929. Second, Microsoft used various threats and inducements to get Intel to cease the development of multimedia software, known as Native Signal Processing Software ("NSP"), that Microsoft viewed as a potential threat to Windows. NSP exposed its own APIs and was developed to run on non-Microsoft operating systems. As such, it "bore the potential to weaken the barrier protecting Microsoft's monopoly power." *Microsoft*, 84 F. Supp. 2d at 34, Finding No. 97.

930. Again, high level executives from Microsoft communicated to Intel their displeasure with Intel's development of software that exposed APIs competing with Windows' APIs. In the spring and summer of 1995, Microsoft executives, including Bill Gates, met with Intel executives about NSP. Mr. Gates personally tried to dissuade Intel's CEO Andy Grove from shipping NSP and tried to convince Mr. Grove to reduce the number of people working on NSP. *Microsoft*, 84 F. Supp. 2d at 35, Finding No. 100. Microsoft further tried to persuade Intel to cease development and promotion of NSP interfaces by promising to accelerate work to incorporate the functions of NSP directly into Windows. "At the same time, Microsoft pressured the major OEMs to not install NSP software on their PCs until the software ceased to expose APIs." *Id.* at 35, Finding No. 101.

931. Recognizing the pressure that Microsoft could place on OEMs, Intel agreed to stop promoting NSP in the summer of 1995. But Microsoft did not stop there. In August 1995, Mr. Gates told Mr. Grove in a personal meeting that "he had a fundamental problem with Intel using revenues from its microprocessor business to fund the development and distribution of free platform-level software." *Microsoft*, 84 F. Supp. 2d at 35, Finding No. 102. Indeed, Mr. Gates

made clear that Intel "could not count on Microsoft to support Intel's next generation of microprocessors as long as Intel was developing platform-level software that competed with Windows." *Id.* "Faced with Gates' threat, Intel agreed to stop developing platform-level interfaces that might draw support away from interfaces exposed by Windows." *Id.* at 36, Finding No. 102.

932. Microsoft's efforts bore fruit. Based on the District Court's Findings of Fact and Conclusions of Law, the Court of Appeals affirmed that Microsoft's threats against Intel regarding its support of Java were exclusionary, had no procompetitive justification, and thus violated Section 2 of the Sherman Act. *Microsoft*, 253 F.3d at 77-78.

b. AMD

933. AMD is another major manufacturer of microprocessors used by OEMs that ship computers with Windows operating systems, and is Intel's main competitor. In February 1997, AMD solicited support from Microsoft for certain multimedia technology, called "3DX." Microsoft's James Allchin asked Mr. Gates whether Microsoft should support 3DX, even though Intel would oppose it. Mr. Gates responded: "'If Intel has a real problem with us supporting this then they will have to stop supporting Java Multimedia the way they are. I would gladly give up supporting this if they would back off from their work on JAVA which is terrible for Intel.'" *Microsoft*, 84 F. Supp. 2d at 110, Finding No. 406.

934. AMD appeared more recently in this litigation when its then-CEO, Howard Sanders, testified in support of Microsoft during the remedy proceeding. Although Mr. Sanders offered written direct testimony discussing the supposed harms of fragmenting the Windows platform, on cross-examination Mr. Sanders conceded that in fact he knew nothing about the States' Remedy or Microsoft's Remedy at the time he agreed to testify for Microsoft and had not reviewed either remedy prior to testifying. Tr. 3758:24-3759:4 (Sanders). More importantly, for

purposes of assessing the utility of and need for Remedy 8, AMD was awaiting approval for its next generation of microprocessor at the time Bill Gates personally contacted Mr. Sanders and asked him to testify in the remedy proceedings. Tr. 3760:7-3761:11 (Sanders). After agreeing to testify for Microsoft during this phone call with Mr. Gates, Mr. Sanders asked whether Microsoft would announce its public support for AMD's latest microprocessor. Tr. 3761:4-20 (Sanders). A short time after Mr. Sanders agreed to testify, Microsoft agreed to announce its support for AMD's technology. Tr. 3810:14-3812:20 (Sanders).

B. How States' Remedy 8 Achieves Its Intended Purpose

935. States' Remedy 8 prevents Microsoft from taking or threatening to take any action that directly or indirectly adversely affects any IAP, ICP, IHV, ISV, OEM or Third-Party Licensee based directly or indirectly, in whole or in part, on actual or contemplated action by that IAP, ICP, IHV, ISV, OEM or Third-Party Licensee to (a) use, support or promote any non-Microsoft product, service, feature or technology, or (b) take advantage of any of the options or alternatives provided for under the Court's Final Judgment. Specific examples of the types of consideration given or withheld are included in the provision because they highlight some of the conduct engaged in by Microsoft (*e.g.*, withholding consideration such as licensing terms, discounts, technical, marketing and sales support, and technical information from OEMs; withholding of enabling programs from Intel; withholding integration programs and developer tools from Palm).

936. In light of the broad range of retaliatory and discriminatory conduct in which Microsoft has engaged—both directly against competitors and indirectly against competitors through actions taken against third parties who use, promote and distribute products of competitors—a broad anti-retaliation remedy is necessary. Ashkin Dir. ¶ 138 (Remedy 8 encompasses various types of retaliation that can be used against OEMs, specifically withholding

or delaying the release of technical information); McGeady Dir. ¶¶ 86-90 (Remedy 8 covers both retaliation and *threats of future retaliation*, such as those made by Microsoft against Intel regarding future use of Intel technologies; Remedy 8 covers both adverse actions taken against Intel and those against OEMs who would support Intel); Barksdale Dir. ¶¶ 93, 105-106 (Remedy 8 is necessary to address Microsoft's threats to OEMs to terminate Windows' licenses and withhold financial considerations); Mace Dir. ¶ 98 (Remedy 8 prevents Microsoft from denying third parties access to technology integration programs, such as the VSIP, if the denial is done as a result of a third party's support of a competing platform); Borthwick Dir. ¶ 61 (Remedy 8 provides a comprehensive ban on retaliation against OEMs who work with and purchase customized versions of Windows from Third-Party Licensees); Shapiro Dir. ¶ 163 (Remedy 8 prevents Microsoft from exercising monopoly power to discourage other industry participants from supporting non-Microsoft products and services); Kertzman Dir. ¶¶ 61-65 (Remedy 8 would prevent Microsoft from retaliating against cable and satellite companies who adopt Java standards or Liberate's middleware technology).

937. If a third party believes that Microsoft has taken adverse actions against it, or against other parties with an effect on the original third party, and if the adverse action is taken as a result of actions taken by the third party to support products or services that compete with Microsoft's offerings, then the third party can submit a complaint to obtain relief from the retaliatory behavior.

C. Microsoft's Remedy Fails To Address Microsoft's Ability To Retaliate Against Third Parties that Use, Promote or Distribute Competing Software

938. Microsoft's Remedy provides significantly less protection than does the States' Remedy against Microsoft's retaliation or discriminatory conduct. Two provisions of Microsoft's Remedy, III.A and III.F, address the issue of retaliation. However, a review of these

provisions reveals significant shortcomings that would allow Microsoft to engage in conduct designed to threaten and/or retaliate against entities that support competing software or services, including the type of conduct that the Court of Appeals held to be unlawful. *See supra* Section IV.A.2.h ("Threatening withholding Mac Office to obtain exclusive agreement from Apple"); Section IV.A.2.j ("Threats against Intel for its work with Sun to develop enhanced Java Virtual Machine").

939. First, neither III.A nor III.F of Microsoft's Remedy addresses *threats* of retaliation. In light of the significant leverage that Microsoft has over various third parties, like OEMs or IHVs/ISVs like Intel, the mere threat of retaliation can accomplish anticompetitive aims. McGeady Dir. ¶¶ 87-89; Ashkin Dir. ¶ 142; Barksdale Dir. ¶ 101; Tiemann Dir. ¶ 80.

940. Second, neither III.A nor III.F addresses actions taken indirectly against various third parties. These remedies appear only to address retaliation taken directly against a party that itself poses a competitive threat to Microsoft. States' Remedy 8 makes clear that what Microsoft cannot accomplish directly, it also cannot accomplish indirectly. McGeady Dir. ¶¶ 87-90.

941. Third, III.A and III.F only address retaliation or discrimination against an OEM for promoting, distributing or preinstalling certain categories of software as limited by Microsoft's definitions of Microsoft Platform Software, Microsoft Middleware and Non-Microsoft Middleware. Ashkin Dir. ¶ 134. In light of these limitations on these definitions, significant categories of software remain unprotected against Microsoft discrimination. Mace Dir. ¶¶ 85-86 (handheld operating systems).

942. For example, Microsoft retaliated against IBM because of its support for competing software products that fall outside of these definitions, including the SmartSuite office productivity software. To the extent that Microsoft can gain market share for its own

software products and services by discriminating against OEMs that promote competing software products or services that run only on or primarily on Windows, the applications barrier to entry facing competing operating system developers is reinforced. Similarly, any retaliation against ISVs or IHVs for promoting software that does not meet the narrow definition of Microsoft Platform Software also will go unremedied. Kertzman Dir. ¶¶ 64-65.

943. Fourth, III.A, concerning retaliation against OEMs, contains an exception that allows Microsoft to provide consideration to any OEM with respect to any Microsoft product or service where the consideration is commensurate with the absolute level or amount of support of that OEM's development, distribution, promotion, or licensing of that Microsoft product or service. Borthwick Dir. ¶ 41. Thus, while the first part of III.A appears to prevent Microsoft from withholding certain consideration in retaliation for actions taken by an OEM, a later exception allows Microsoft to compensate those OEMs who provide greater support for Microsoft products and services (*i.e.*, discriminate in favor of Microsoft). Barksdale Dir. ¶¶ 95-96, 98-99; Tr. 907:5-15 (Ashkin).

944. In other words, the exception to III.A, which allows Microsoft to discriminate in providing consideration to OEMs based on the level of their support of a category of Microsoft products and services (which arguably includes whether a Microsoft product is the exclusive product of that type promoted or distributed, or the default product set by the OEM), permits Microsoft to accomplish the same result as that prohibited by the anti-OEM retaliation provision. Tr. 907:5-15 (Ashkin).

945. Fifth, ICPs, IAPs and Third-Party Licensees are not included within III.A and III.F as parties against whom Microsoft may not retaliate. For example, under these sections

Microsoft could retaliate against ICPs or IAPs for their support, use or distribution of a competing browser, media player or other software product or service.

946. Sixth, III.A only prohibits retaliation by Microsoft against OEMs that consist of (1) altering existing commercial relations with the OEM, or (2) withholding newly introduced forms of non-monetary consideration, which in turn is limited by the definition of "Consideration" set forth in Microsoft's Remedy. Other avenues of retaliation or other forms of consideration, such as withholding technical information or access to integration programs such as the VSIP, are expressly not covered. Ashkin Dir. ¶ 138.

D. States' Remedy 8 Meets the Court of Appeals' Objectives for Relief

947. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

948. States' Remedy 8 will achieve the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by preventing the continued use of a particular exclusionary practice, the use by Microsoft of threats and retaliation in response to the support of competing middleware and other platform threats.

E. Microsoft's Criticisms of States' Remedy 8

949. Microsoft's witnesses provide very little testimony in opposition to States' Remedy 8. Only one Microsoft employee, Bill Gates, and one Microsoft expert, Professor Kenneth Elzinga, even mention Remedy 8 in their testimony. Gates Dir. ¶¶ 355-366; Elzinga Dir. ¶ 118. The concerns raised by their testimony reflect a misunderstanding of the scope of

Remedy 8, and in any event may be discarded because they fail to consider all of the retaliatory conduct performed by Microsoft in the past.

1. Hyperbolic and Mistaken Criticisms

950. Mr. Gates testifies that he reads States' Remedy 8 as potentially banning Microsoft from engaging in any competitive activity in any product category. Gates Dir. ¶ 355. He then highlights three areas of particular concern that he believes are implicated by Remedy 8: (a) Microsoft acts promoting Microsoft software; (b) Microsoft joint ventures and cooperative relationships; and (c) transfers of Microsoft intellectual property. *Id*. ¶¶ 357-366.

951. First, with respect to "acts promoting Microsoft software," Gates testified that "Microsoft would be subject to legal risk anytime it entered into any contract relating to the development or promotion of any Microsoft product—even if that contract was silent as to non-Microsoft products." Gates Dir. ¶ 357. Gates then testified to various forms of consideration that it does not provide to entities that do *not* distribute Microsoft products, and in particular singles out OEMs who distribute Palm handheld devices as entities that do not receive the same support as OEMs that distribute Pocket PC. *Id*. ¶¶ 358-361.

952. Mr. Gates' interpretation of Remedy 8 is not reasonable. Simply taking action that is "adverse" to a company that supports a competing product does not, standing alone, constitute a violation of Remedy 8. A violation only occurs if that adverse action is "based directly or indirectly" on that company's decision to support non-Microsoft products. Therefore, Microsoft is free to provide greater support to an OEM who licenses its technologies compared to an OEM who does not; provided that Microsoft's lack of support is not intended to punish that company for its decision. Tr. 2524:11-2528:5 (Mace).

953. Second, Mr. Gates raised issues with respect to Microsoft's ability to enter into joint ventures or other cooperative relationships with third parties in the computer industry.

Gates Dir. ¶ 362. Professor Elzinga also raised concerns about joint ventures. Elzinga Dir. ¶ 118. These criticisms again are premised upon a mistaken reading of Remedy 8.

954. In particular, Remedy 8 does not prevent Microsoft from entering into joint ventures or other cooperative alliances. Microsoft simply cannot take competitive actions that adversely affect certain third parties *based* on the fact that the third party supports competing products or services. So long as Microsoft's decision to enter into a joint venture or other relationship is premised upon affirmatively marketing or advancing its own products, and not based on punishing or retaliating against another entity that supports competing products, Remedy 8 is not implicated.

955. Third, Mr. Gates alleged that Remedy 8 would significantly impair Microsoft's intellectual property rights because it would (1) prohibit Microsoft from limiting the use of Microsoft trademarks and logos to companies that build products using Microsoft technology, and (2) prohibit Microsoft from instituting a patent enforcement action against a competitor that infringed Microsoft's patents. Gates Dir. ¶¶ 363-366. For example, Mr. Gates testified that Remedy 8 prohibits Microsoft from denying an OEM's request to display Microsoft logos or trademarks—even if that OEM is not using *any* Microsoft software. *Id*. ¶¶ 364-365. These criticisms again reflect an untenable reading of States' Remedy 8.

956. If Microsoft denies the use of its trademarks and logos to entities that distribute competing products, and *not* Microsoft products, then Microsoft's decision obviously is based on the fact that the third party has no relationship with Microsoft—not as retaliation for promoting competing products. No violation of Remedy 8 could possibly arise under these circumstances.

957. Similarly, a patent enforcement action initiated by Microsoft against a competitor would not be an act of retaliation based on that competitor's support for a competing technology.

By definition, it would be an adverse action taken by Microsoft because a competitor was misappropriating *Microsoft's technologies.* In sum, Mr. Gates' far-fetched criticisms provide no basis to reject implementation of Remedy 8.

XV. States' Remedy 9—Ban on Retaliation for Participation in Litigation

A. Purpose of States' Remedy 9

958. As noted in detail above, the Court of Appeals and the District Court found that Microsoft engaged in a wide variety of discriminatory and/or retaliatory conduct against various third parties who presented threats to Microsoft's Windows monopoly and/or other software products. *See supra* Section XIV ("States' Remedy 8-Ban on Adverse Actions for Supporting Competing Products"). Since the findings of the District Court, Microsoft has engaged in similar retaliatory conduct directed towards companies who either develop or support software platforms that compete with the Windows platform. *Id.*

959. Specifically germane to States' Remedy 9, Anthony Fama from Gateway testified in the remedy proceedings that on numerous occasions after the liability trial, Microsoft made negative references to Gateway's participation in the liability phase of the case. Fama Dir. ¶¶ 143-144. In particular, Mr. Fama testified that during Gateway's negotiations with Microsoft at the end of 1999, Richard Fade, the senior Microsoft executive in charge of negotiations with OEMs, made reference to the liability phase of the case and the District Court's Findings of Fact (which included findings that Gateway had received less favorable Windows licensing terms than other OEMs who were more cooperative with Microsoft). *Id.* ¶ 145. Mr. Fade refused to discuss with Gateway the relative terms of OEM licensing agreements and told Gateway that he did not want to see any of his comments passed on to the Department of Justice or the Court. *Id.* ¶ 145; *see* PX 1240A. Mr. Fama perceived Mr. Fade's comments to be a threat of retaliation, and that Microsoft was unhappy about Gateway's participation in the litigation. *Id.* ¶ 146; *see* PX 1240A.

960. Given Microsoft's propensity to take action against those who threaten its business interests, as well as the means readily available to Microsoft to do so, Remedy 9 is

designed to prevent Microsoft from taking actions that adversely affect third parties based on the fact that the party participated in any aspect or phase of this litigation. Barksdale Dir. ¶ 107. Such protections are necessary, both to ensure that third parties are not discouraged from participating, where appropriate, in any future proceedings in this matter, but also to more generally promote the policies of antitrust enforcement.

961. Like States' Remedy 8, Remedy 9 is *not* designed to prevent Microsoft from taking legitimate competitive actions that, if successful, might result in Microsoft making competitive gains at the expense of competitors. Rather, in order to invoke Remedy 9, a third party must demonstrate a causal connection between an adverse action taken by Microsoft and the third party's participation in this litigation.

B. How States' Remedy 9 Achieves Its Intended Purpose

962. Remedy 9 prevents Microsoft from taking or threatening to take any action adversely affecting any individual or entity that participated in the litigation initially styled as *State of New York, et al. v. Microsoft Corp*., Civil Action No. 98-1233, or *United States v. Microsoft Corp.*, Civil Action No. 98-1232, based on that party's participation in any phase or aspect of that litigation.

963. In light of the broad range of retaliatory and discriminatory conduct engaged in by Microsoft—both directly against competitors and indirectly against competitors through actions taken against third parties who use, promote and distribute the products of those competitors—a broad anti-retaliation remedy is necessary. Remedy 9 accordingly proscribes actions that indirectly harm individuals and entities, as well as actions taken in part (as opposed to solely) as a result of participation in the litigation.

C. Microsoft's Remedy Fails To Address Microsoft's Ability To Retaliate Against Third Parties for Participating in the Litigation

964. Microsoft's Remedy provides no protection against Microsoft retaliating against individuals or entities that participated in this litigation. Indeed, Microsoft's Remedy fails entirely to address this subject.

D. State's Remedy 9 Meets the Court of Appeals' Objectives for Relief

965. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

966. States' Remedy 9 prohibits retaliation against those who participate in the current process of identifying, attaching liability to, and remedying Microsoft's anticompetitive conduct. Remedy 9 demonstrates that third parties may participate in such a process without suffering adverse effects at the hands of Microsoft. If Microsoft were permitted to retaliate against such participants, those parties, and potential future participants, will be less likely to participate in this and future proceedings. Thus, Remedy 9 will help to prevent a recurrence of monopolization in the future by avoiding the creation of an environment where involvement in such proceedings brings adverse consequences.

E. Microsoft's Criticisms of States' Remedy 9

967. During the remedy proceedings, Microsoft offered only the faintest of opposition to States' Remedy 9. Only one Microsoft witness, Bill Gates, even referenced the proposal in direct testimony. Gates Dir. ¶¶ 367-68.

968. Mr. Gates' criticism of Remedy 9 is not substantive, as he does not assert that Microsoft should be permitted to retaliate against individuals or entities that participated in this

litigation. Rather, like a number of Microsoft responses to other provisions in the States' Remedy, Mr. Gates first states that Microsoft would never engage in the conduct proscribed by the remedy, and then expresses concern that competitors would bring frivolous claims that Microsoft was engaging in the proscribed conduct. Gates Dir. ¶¶ 367-68.

969. In light of the fact that it is *Microsoft*, not Microsoft's competitors, that has been found to have engaged in unlawful conduct—and in particular discriminatory and retaliatory behavior designed to thwart competitors—Mr. Gates' concerns must be rejected. To the extent that Microsoft is concerned about third parties bringing frivolous claims of retaliation in violation of States' Remedy 9, the enforcement procedures set forth in the Final Judgment will quickly dispense with such claims.

XVI. States' Remedy 10—Respect for User Choice

A. Purpose of States' Remedy 10

970. States' Remedy 10 provides OEMs and Third-Party Licensees with the ability to designate rival middleware products as the default middleware running on a Windows PC. It seeks to rein in Microsoft's control over what middleware obtains default status on Windows, recognizing that Microsoft can and has used its control over default settings to advantage its own middleware and to limit the effective distribution and use of rival middleware. In light of the fact that Microsoft has in some instances engineered its operating system to override the choice of end users who have selected non-Microsoft middleware as the default middleware, the remedy also seeks to ensure that Microsoft honors the choices of those who prefer non-Microsoft middleware as their default software.

971. Default software is launched automatically by Windows to perform a particular function (*e.g.*, browse the Internet, play a particular type of media file) without the end user having to choose each time the circumstance arises. Ashkin Dir. ¶ 145. For example, the default media player for a particular media format is that player which is automatically invoked when a user clicks on a file in that format. Although several media players may exist on a user's computer that are capable of playing a particular format, the user will only use the default media player unless he or she intentionally tells the computer to launch another media player. *Id.* ¶ 145. Many end users rarely change their default setting, and most find it easiest to simply use whatever middleware is already set as the default when they turn on their computers. Richards Dir. ¶ 130; Tr. 775:11-19 (Richards). Accordingly, default status can significantly affect consumer usage of middleware.

972. Default status is also important to ISVs that write applications to run on top of middleware. ISVs typically write to the most popular middleware—*i.e.*, that with the greatest

usage. Because default status affects the popularity of a middleware product, it also influences which middleware attracts the most applications from developers. Default status creates network effects similar to those observed with respect to software generally. Richards Dir. ¶ 130; *see also id.* ¶ 15 & Fig. 1. For example, the selection of a digital media player as the default player for popular media formats is important in driving media player usage statistics and market share data. These usage statistics may then influence ISVs who write applications to the multimedia middleware, which also influences the media format decisions of ICPs who digitize popular media to be accessed on the Internet. Richards Dir. ¶¶ 15, 150 & Fig. 1.

1. Microsoft Prohibits OEMs from Changing Middleware Default Settings Through Licensing Restrictions

973. One method by which Microsoft has attempted to manipulate default status is through OEM licensing restrictions. Microsoft has restricted OEMs from choosing which programs are considered defaults in its Windows licensing agreements and generally prohibits OEMs from changing default settings in Windows. Ashkin Dir. ¶ 146. Accordingly, rival middleware developers have had less incentive to contract with OEMs for the pre-installation of their middleware. Richards Dir. ¶ 132.

974. These licensing restrictions, and the remedies for them, are discussed *supra* in Sections VII.F ("Purpose of States' Remedy 2.c") and VII.G ("How States' Remedy 2.c Achieves Its Intended Purpose").

2. Examples Where Windows Overrides the Default Choices of End-Users

975. Another method by which Microsoft influences default status is through the design of Windows. Microsoft can influence what middleware platforms consumers actually use both by overriding the default choices consumers make and by withholding from third parties the registry information that would allow other middleware to be set as the default. Indeed,

Microsoft has intentionally so-engineered its operating system. *Microsoft*, 253 F.3d at 65; Richards Dir. ¶¶ 150-57. Consumers, accordingly, have used Microsoft's middleware to perform certain functions, even when they expressed a preference and selected other middleware as the default to perform that function.

976. As the District Court found, Microsoft programmed Windows 98 to override the default browser selected by end-users as part of its strategy to defeat Navigator:

> The second way in which Microsoft's engineers implemented Allchin's strategy was to make Windows 98 override the user's choice of default browser in certain circumstances. As shipped to users, Windows 98 has Internet Explorer configured as the default browser. While Windows 98 does provide the user with the ability to choose a different default browser, it does not treat this choice as the "default browser" within the ordinary meaning of the term. Specifically, when a user chooses a browser other than Internet Explorer as the default, Windows 98 nevertheless requires the user to employ Internet Explorer in numerous situations that, from the user's perspective, are entirely unexpected. As a consequence, users who choose a browser other than Internet Explorer as their default face considerable uncertainty and confusion in the ordinary course of using Windows 98.

Microsoft, 84 F. Supp. 2d at 52, Finding No. 171.

977. Moreover, as the District Court observed, Microsoft's intentional engineering of Windows to only use Internet Explorer as the default disinclined OEMs and end-users to use Navigator. As the Court wrote:

> Microsoft's refusal to respect the user's choice of default browser fulfilled Brad Chase's 1995 promise to make the use of any browser other than Internet Explorer on Windows "a jolting experience." By increasing the likelihood that using Navigator on Windows 98 would have unpleasant consequences for users, Microsoft further diminished the inclination of OEMs to pre-install Navigator onto Windows. The decision to override the user's selection of non-Microsoft software as the default browser also directly disinclined Windows 98 consumers to use Navigator as their default browser, and it harmed those Windows 98 consumers who nevertheless used Navigator. In particular, Microsoft exposed those using Navigator on Windows 98 to security and privacy risks that are specific to Internet Explorer and to ActiveX controls.

Microsoft, 84 F. Supp. 2d at 52-53, Finding No. 172.

978. The Court of Appeals confirmed that "the override reduces rivals' usage share and protects Microsoft's monopoly," and therefore it was "anticompetitive." *Microsoft*, 253 F.3d at 65. But because the Court of Appeals also found that Plaintiffs had failed to present evidence to rebut Microsoft's assertion that it was necessary to design Windows to override user preferences in "a few out of the nearly 30 means of accessing the Internet," generally concerning ActiveX controls and Windows Help, it did not attach liability to that particular conduct. *Id.* at 67.

979. Microsoft has continued to design Windows to override consumers' choices to use non-Microsoft middleware in certain instances. For example, Windows XP overrides a user's choice of RealNetworks' media software as the default media player and directs the user to Windows Media Player in a number of circumstances. Richards Dir. ¶¶ 150-157. Through these default overrides, Microsoft increases usage of Windows Media Player, thereby increasing the incentive for ISVs to write to Window Media APIs, and ICPs to adopt Windows Media formats.

980. Perhaps the most significant example involves the latest version of Microsoft's dominant browser, Internet Explorer 6.0 ("IE 6.0"). IE 6.0, which is incorporated in Windows XP, includes a default media bar (the "IE Media Bar") in which a version of Windows Media Player ("WMP") is embedded as the default media player. Richards Dir. ¶ 79 & Figs. 13, 14 and 15; Averett Dir. ¶ 41. The IE Media Bar has been touted by Microsoft as one of the most attractive new features of IE 6.0. Tr. 6394:6-6395:9 (Averett); PX 2403; PX 2404.

981. If a Windows XP user attempts to play digital content on a Web site, a very popular way of accessing the latest digital media content, the user is presented with a dialog box that gives the user the option to play the content while in Internet Explorer. If the user clicks "Yes," or simply hits the "Enter" key, thereby allowing the IE Media Bar to play a media file,

then the embedded WMP in the Media Bar is automatically set as the default player for files in that format, notwithstanding a user's choice of a competing player as the default player for such files. Richards Dir. ¶ 154; Tr. 6395:10-6399:6, 6402:16-20 (Averett).

982. This resetting of the default media player is not made clear to the end user by the dialog box that appears. Nowhere is the user told that he or she is selecting a new default media player; rather this is done by the "Remember my preference" box which is automatically checked. See Tr. 6401:11-16 (Averett). In other words, the IE Media Bar is designed, in the browser context, to displace a non-Microsoft default media player without disclosure to the user. Moreover, the user is not informed that if he or she clicks "No" then the default player will launch and play the file. Richards Dir. ¶ 154 & Figure 19. Microsoft's Linda Averett conceded that it would not be technologically difficult to design IE to respect a user's default choice of media player, Tr. 6406:24-6407:23 (Averett), but Microsoft has decided instead to override this choice.

983. RealNetworks invested considerable resources to develop a solution to this "default grabbing" by the IE Media Bar. RealNetworks was eventually able to create a solution which protects the formats that a user has set the RealOne Player to play. This solution required use of significant engineering resources and it does not protect other versions of RealNetworks' software which are used by millions of consumers around the world. In addition, Microsoft is still in a position to change its operating system (via an update or patch delivered by Windows Update) to undo RealNetworks' solution, thereby starting the cycle all over again. Richards Dir. ¶ 155.

984. Furthermore, Microsoft's Remedy does not address this issue. The default provision in Microsoft's Remedy, III.H.2, purportedly provides OEMs and end users with

flexibility to designate non-Microsoft middleware products in place of Microsoft middleware products. Richards Dir. ¶ 138. However, the flexibility in Microsoft's Remedy only extends to instances where Microsoft middleware would otherwise be launched in a "top-level window" and display either "all of the user interface elements" or its "Trademark." Richards Dir. ¶ 141. The IE Media Bar launches within IE, Averett Dir. ¶ 41, rather than in a separate window, and does not display all of the user interface elements of WMP, Richards Dir. ¶ 142. It is thus not subject to Remedy III.H.2.

985. Because of the potentially critical importance of default settings to the growth and usage of middleware, and because of Microsoft's history of overriding default settings, a remedy seeking to provide reasonable opportunities for non-Microsoft middleware to compete must limit Microsoft's ability to manipulate the default settings in Windows. States' Remedy 10 helps ensure that Microsoft does not override OEM, third-party license or consumer choices and thus impede the distribution and use of rival middleware. Shapiro Dir. ¶ 166.

B. How States' Remedy 10 Achieves Its Intended Purpose

986. States' Remedy 10 requires Microsoft to respect the choice of an end user, OEM or Third-Party Licensee to set non-Microsoft middleware as their default software. To accomplish this, Remedy 10 contains two basic prohibitions.

987. First, Remedy 10 prohibits Microsoft from setting its middleware software as the default unless Microsoft (1) allows OEMs and Third-Party Licensees to change the default to a non-Microsoft middleware product, and (2) allows OEMs, Third-Party Licensees or non-Microsoft middleware to prompt end users to change the default to non-Microsoft middleware, so long as the prompt is presented as a neutrally-worded choice.

988. Second, Remedy 10 prohibits Microsoft from unilaterally changing the default designations set by an OEM, Third-Party Licensee or end user. In other words, Microsoft cannot

design Windows to automatically change default designations made by OEMs, Third-Party Licensees or end users to Microsoft middleware or otherwise pressure end users to do so. Microsoft can only alter the default setting made by an end user if Microsoft prompts the end user with a neutrally-worded choice. Remedy 10 prohibits Microsoft from asking an end user to switch defaults in a biased way, such as by including in the prompt a caution against using non-Microsoft middleware. Barksdale Dir. ¶ 90. In short, Microsoft cannot trick, cajole or harass end users into switching their default setting back to Microsoft middleware. Barksdale Dir. ¶ 89.

989. Because it removes Microsoft's ability to use default designations to promote Microsoft's Web services, Remedy 10 also protects the position of non-Microsoft middleware, such as a competing browser, that is used to access non-Microsoft Web services. Schwartz Dir. ¶ 160.

990. Finally, Remedy 10 is beneficial because it allows OEMs and Third-Party Licensees to provide consumers with the choice of products that they desire. Ashkin Dir. ¶ 147.

C. Microsoft's Remedy Does Not Prohibit Microsoft's Manipulation of Default Settings

991. Microsoft's Remedy III.H.2 allows OEMs and end users to designate Non-Microsoft middleware products to be invoked in the place of Microsoft middleware products. Unlike Remedy 10, however, Microsoft's Remedy contains a number of significant qualifications that allow Microsoft to thwart the effective distribution of rival middleware. Microsoft's Remedy also permits Microsoft to harass end users to alter default designations to favor Microsoft's middleware. Accordingly, Microsoft's remedy fails to achieve the goals accomplished by Remedy 10.

992. Microsoft's Remedy III.H.2 provides that end users, OEMs and non-Microsoft middleware may "designate a non-Microsoft Middleware Product to be invoked in place of that

Microsoft Middleware Product (or vice versa) in any case where the Windows Operating System Product would otherwise launch the Microsoft Middleware Product in a separate Top-Level Window and display either (i) all of the user interface elements or (ii) the Trademark of the Microsoft Middleware Product." These qualifications significantly limit the apparent choice permitted under Remedy III.H.2 and ultimately allow Microsoft to dictate if, and when, a rival middleware product may be set as the default.

993. First, Remedy III.H.2 only protects rival middleware if Microsoft has already developed a competing middleware product. This limitation allows Microsoft to thwart innovative middleware from achieving default status because the remedy only applies where Windows would otherwise launch a competing Microsoft product. Richards Dir. ¶ 141. This unjustified exception disadvantages innovative middleware developers and reduces the threat they pose to Microsoft's operating system monopoly. *Id.* In fact, this exception actually protects Microsoft from innovation by others because it hinders competing middleware from gaining an advantage in the market before Microsoft has even developed a competing product. *Id.*

994. Second, Remedy III.H.2 allows Microsoft to override or otherwise thwart the automatic launching of rival middleware so long as Microsoft does not launch its middleware product instead within a top-level window and display either all of the elements of its user interface or a Microsoft middleware product trademark. Microsoft can easily design Windows to take advantage of this exception. Ashkin Dir. ¶ 149. Moreover, this exception rewards Microsoft for further integrating its middleware into its the operating system. *Id.* Because the application of this exception is completely under Microsoft's control, OEMs will not be able to set a rival product as a default if Microsoft does not wish them to.

995. Indeed, as noted above, Windows XP invokes Microsoft middleware to override the default selection of competing middleware in a manner that triggers the exception set forth in Remedy III.H.2. Many Web sites contain streaming media files (such as video clips). If a user attempts to play a file while browsing using Internet Explorer, Windows will override the default media player and play the file using Windows Media Player technology without informing the end user of this override. Richards Dir. ¶¶ 153-54; Ashkin Dir. ¶ 150. Window Media Player neither opens a top-level window, nor displays all of the elements of its user interface in this instance. Richards Dir. ¶ 142; Ashkin Dir. ¶ 150.

996. Third, the default provision in Remedy III.H.2 protects only "Non-Microsoft Middleware Products," which as defined must have had one million copies distributed during the previous year. Thus, brand new products are not protected, no matter how successful, until at least one year after a successful launch and distribution. Richards Dir. ¶ 139. Further, this requirement may apply to a new version of an existing product, no matter how previously successful. As Mr. Richards testified, "This appears to mean that new products like the RealOne Player could not be set as the default by OEMs until after one million copies are distributed," *id.* despite the success of RealNetwork's media players since the mid-1990s. *Id.* ¶ 32.

997. Fourth, Section III.H.2.b of Microsoft's Remedy contains a technical exclusion which Microsoft can use to override a user's choice of middleware and instead launch Microsoft middleware. In this case, Microsoft may invoke its middleware—despite the default set by a user or OEM—if the "designated non-Microsoft Middleware Product fails to implement a reasonable technical requirement (*e.g.*, a requirement to be able to host a particular ActiveX control) . . . ." The determination of what constitutes a "technical requirement" is in the first instance within Microsoft's discretion. Thus, this provision "provides Microsoft with unfettered

discretion to overrule a user's decision to use a non-Microsoft Middleware Product because Microsoft reserves to itself the ability to define and control the technical requirements that must be met." Appel Dir. ¶ 139; *see also* Richards Dir. ¶¶ 144-45.

998. Microsoft can easily use this technical requirements exception to launch its own middleware. For example, many applications run perfectly well on middleware that hosts only a subset of ActiveX controls. Yet Microsoft could specify thousands of "technical requirements" that non-Microsoft Middleware Products could not implement, even though "[a] third party who packages a combination of Microsoft and non-Microsoft components may only need to meet a small subset of the thousands of technical requirements in order for the entire package to function properly." Appel Dir. ¶ 140. Microsoft could use the fact that the non-Microsoft Middleware Product does not support all of these technical requirements to override the user's choice of non-Microsoft middleware in favor of its own Microsoft Middleware Product. *Id.*

999. In fact, Remedy III.H.2.b is unnecessary even when applications require technical features not supplied by a particular middleware product. Windows already sends diagnostic messages to the user when a middleware product does not support functionality invoked by the user. Microsoft can continue providing these messages to users if the non-Microsoft middleware that is set as the default does not meet a particular technical requirement. The user then can decide the best course of action, including designating Microsoft middleware as the default.

1000. As Dr. Appel testified, "[W]hen I run Internet Explorer to browse web pages, I do so with ActiveX disabled (to protect myself from viruses), and occasionally I get the message, 'Your current security settings prohibit running ActiveX controls on this page. As a result, the page may not display correctly.' I may also get the message, 'An error occurred inside a plug-in contained on this page.' That is, the problem is identified, explained to the user, and prevented

from causing harm." Appel Dir. ¶ 142. Through diagnostic messages, Microsoft gives users the choice to decide for example, which ActiveX controls should be enabled, without overriding the default non-Microsoft middleware. However, Section III.H.2.b would allow Microsoft to override a non-Microsoft middleware product simply because it does not support a single ActiveX control. Appel Dir. ¶¶ 141-42.

1001. Microsoft's Remedy is so riddled with significant exceptions that it does not prevent Microsoft from effectively overriding choices made by OEMs, Third-Party Licensees and consumers to set rival middleware as their default software. Unlike Remedy 10, Microsoft's Remedy does not provide the necessary protections that will allow non-Microsoft middleware to effectively enjoy default status if so chosen.

D. States' Remedy 10 Meets the Court of Appeals' Objectives for Relief

1002. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

1003. States' Remedy 10 will achieve the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by restricting a practice, the overriding of default choices, that will predictably have the same adverse effects on potential platform threats as the conduct found anticompetitive.

E. Microsoft's Criticisms of State's Remedy 10

1004. Microsoft's primary argument against Remedy 10 is that it will require Microsoft to extensively reengineer Windows. Gates Dir. ¶ 371. Microsoft's witnesses testified that the concept of "Default Middleware" does not exist in Windows, and so no mechanism currently

exists to meet the requirements of Remedy 10. Gates Dir. ¶¶ 371-75; Jones Dir. ¶¶ 123-24; Bennett Dir. ¶ 122. Moreover, Microsoft's witnesses also testified that Microsoft would not even know how to reengineer Windows to institute the concept of "default middleware" so that every way in which Windows launches Microsoft's middleware can be made available for rival middleware to "plug-in." Gates Dir. ¶ 378.

1005. Microsoft's engineering criticisms turn on a fundamental misreading of Remedy 10. Microsoft has assumed that Remedy 10 requires Microsoft to make all "middleware" replaceable as a default. Therefore, it has essentially read Remedy 10 as comparable to Remedy 1, and has simply raised the same criticisms directed at Remedy 1. *See generally supra* Section VI.E ("Criticisms of States' Remedy 1"). In fact, Dr. Bennett, one of Microsoft's experts, testified on cross-examination that the criticisms of Remedy 10 rely upon reading the remedy to have the same unbinding requirements as Remedy 1, therefore resulting in the same perceived "defects." Tr. 7119:4-7120:16 (Bennett).

1006. Remedy 10, however, is only triggered if Microsoft affirmatively sets its own middleware as the default for performing some functionality. Mr. Gates testified that Windows "maintains a little database in the 'Windows Registry' that includes assignments of particular programs to particular file types" Gates Dir. ¶ 373, and that this is very identifiable in terms of determining where the Windows operating system has established default settings. *Id.*; Tr. 4919:24-4920:5 (Gates); Tr. 4919:14-18 (Gates) ("Yes, I can identify that."). Mr. Gates also testified that Microsoft could engineer Windows to allow end users a choice in situations where default middleware may be established. Tr. 4919:19-4921:1 (Gates). Because Remedy 10 only applies to instances where a "default" is established, (and does not apply in instances where

Microsoft does not designate its own middleware as the default, as suggested by Microsoft's witnesses), Remedy 10 is technically feasible.

1007. Microsoft further claims that States' Remedy 10 requires Microsoft to embrace "least common denominator" functionality in the case of functionality provided by default middleware, so that rival middleware can implement every function of Windows. Gates Dir. ¶ 379; *see also* Bennett Dir. ¶ 122. This criticism misconstrues the import of Remedy 10. Remedy 10 does not require Microsoft to design Windows so that Microsoft middleware only supports the same functionality as non-Microsoft middleware. Remedy 10 merely requires Microsoft to allow OEMs, Third Party Licensees, and end users to set competing middleware as the default—it does not require or guarantee that non-Microsoft middleware support all functionality supported by Microsoft middleware. OEMs, Third-Party Licensees and consumers (*i.e.*, the market) will decide whether it is beneficial to make a rival middleware product the default if that rival middleware cannot support the functions that Microsoft's middleware can support. If Microsoft's middleware is superior from a functionality standpoint, the market presumably will freely select it as the default middleware.

XVII. States' Remedy 11—Ban on Agreements Limiting Competition

A. Purpose of States' Remedy 11

1008. As the District Court's liability findings demonstrate, Microsoft's first response upon identifying a platform threat to its operating-system monopoly is often to attempt to persuade the company to alter its business plan so as not to compete with Microsoft's Windows operating system or middleware products. Microsoft has repeatedly attempted to exact such agreements not to compete from upstarts such as Netscape and RealNetworks, as well as from larger, established technology companies such as Intel and Apple. States' Remedy 11 seeks to prohibit similar conduct in the future by barring Microsoft from offering or providing consideration to companies that develop platform software in exchange for their agreement not to compete with Microsoft's platform software.

1. Microsoft's Attempt to Dissuade Netscape from Developing Navigator as a Platform

1009. After Microsoft recognized the potential platform threat posed by Navigator, Microsoft's first move was to attempt to "persuade Netscape to structure its business such that the company would not distribute platform-level browsing software for Windows." *Microsoft*, 84 F. Supp. 2d at 30, Finding No. 79; *see supra* Section II.D.1 ("Microsoft's Efforts to Thwart Navigator"). Had Netscape agreed to Microsoft's proposal, Microsoft would have been the only company developing a platform-level browser on the Windows operating system. *Id.* If successful, the deal "would have eliminated the prospect that non-Microsoft browsing software could weaken the applications barrier to entry." *Id.*

1010. In the summer of 1995, at Bill Gates' request, a group of Microsoft executives set about convincing Navigator not to develop a platform-level browser for Windows 95. *Microsoft*,

84 F. Supp. 2d at 31, Finding No. 80. The District Court explained the rationale for Microsoft's decision:

> [I]f [Microsoft] could prevent this version of Navigator from presenting alternatives to the Internet-related APIs in Windows 95, the technologies branded as Navigator would cease to present an alternative platform to developers. Even if non-Windows versions of Navigator exposed Internet-related APIs, applications written to those APIs would not run on the platform Microsoft executives expected to enjoy the largest installed base, *i.e.*, Windows 95. So, as long as the version of Navigator written for Windows 95 relied on Microsoft's Internet-related APIs instead of exposing its own, developing for Navigator would not mean developing cross-platform. Developers of network-centric applications thus would not be drawn to Navigator's APIs in substantial numbers.

Id.

1011. Microsoft held a meeting at its headquarters in June 1995, with James Barksdale, the CEO of Netscape. *Microsoft*, 84 F. Supp. 2d at 31, Finding No. 81. At the meeting, Microsoft executives proposed that Netscape design the version of Navigator for Windows 95 to rely on the APIs in Windows 95 that provided Internet functionality, and differentiate its product through the inclusion of "'value-added' software components." *Id.* "The Microsoft executives left unsaid the fact that value-added software, by definition, does not present a significant platform for applications development." *Id.* Barksdale indicated that Windows 3.1 and Windows 95 would be the primary targets for the new version of Navigator, but neither accepted nor rejected Microsoft's proposal that Netscape rely on the Windows Internet APIs rather than developing its own. *Id.* at 31, Findings Nos. 81-82.

1012. Later that month, Microsoft executives accepted an invitation to attend a "brainstorming session" at Netscape's headquarters. *Microsoft*, 84 F. Supp. 2d at 31, Finding No. 82. Each of the parties had its own agenda—Netscape wanted to ask Microsoft for access to certain technical information that it needed to make Navigator run on Windows 95, and

Microsoft wanted to press its case for Netscape to rely on Windows 95 Internet APIs rather than exposing its own platform-level APIs in Navigator. *Id.*

1013. At the meeting, the Microsoft executives asked the Netscape executives whether they intended to adopt and rely upon the Windows 95 Internet APIs or develop their own APIs. *Microsoft*, 84 F. Supp. 2d at 31, Finding No. 83. If Netscape did not have ambitions to have Navigator expose its own APIs, Microsoft was willing both to assist Netscape in developing Internet applications that relied on Microsoft's technologies and to leave to Netscape the Mac OS, UNIX, and Microsoft 16-bit operating system browser markets. *Id.* Microsoft informed Netscape, however, that it was developing its own platform-level browser for Windows 95, and that if Netscape also built a browser for Windows 95 using non-Microsoft technologies, Microsoft "would view Netscape as a competitor, not a partner." *Id.* at 31-32, Finding No. 83.

1014. Barksdale then asked Microsoft for the technical information that Netscape needed if its product was to run on Windows 95. Microsoft's executives offered Netscape a chance to enter into a "special relationship" with Microsoft. If Navigator accepted the special relationship, it would be treated as a "preferred ISV" and receive privileged access to the technical information that it needed; and if it did not accept the relationship, it would not receive the same level of access. *Microsoft*, 84 F. Supp. 2d at 32, Finding No. 84.

1015. Barksdale had two questions: "First, where would the line between platform (Microsoft's exclusive domain) and applications (where Netscape would continue to function) be situated? Second, who would get to decide where the line would lie?" *Microsoft*, 84 F. Supp. 2d at 32, Finding No. 85. The District Court explained the significance of these issues:

> [T]he attractiveness of a special relationship with Microsoft depended a great deal on how much room would remain for Netscape to innovate and seek profit. The Microsoft representatives replied that Microsoft would incorporate most of the functionality of the current Netscape browser into the Windows 95 platform,

> perhaps leaving room for Netscape to distribute a user-interface shell. Where Netscape would have the most scope to innovate would be in the development of software 'solutions,' which are applications (mainly server-based) focused on meeting the needs of specific types of commercial users. Since such applications are already minutely calibrated to the needs of their users, they do not present platforms for the development of more specific applications. Although the representatives from Microsoft assured Barksdale that the line between platform and solutions was fixed by a collaborative decision-making process between Microsoft and its ISV partners, those representatives had already indicated that the space Netscape would be allowed to occupy between the user and Microsoft's platform domain was a very narrow one.

Id.

1016. Ultimately, Gates decided that Netscape was not going to accept the offer of the "special relationship" on Microsoft's terms, and ordered that negotiations be discontinued. *Microsoft*, 84 F. Supp. 2d at 33, Finding No. 87. Had Netscape accepted Microsoft's offer and agreed not to compete, however, Netscape would have "forfeited any prospect of presenting a comprehensive platform for the development of network-centric applications." *Id.* at 33, Finding No. 88. As a result, "Microsoft quickly would have gained such control over the extensions and standards that network-centric applications (including Web sites) employ as to make it all but impossible for any future browser rival to lure appreciable developer interest away from Microsoft's platform." *Id.* at 33, Finding No. 89.

2. Microsoft's Attempt to Dissuade Intel from Developing Platform Software

1017. At the same time Microsoft was attempting to convince Netscape not to make its browser a development platform, it was also trying to convince Intel not to develop its own advanced multimedia APIs. *Microsoft*, 84 F. Supp. 2d at 34, Finding No. 94. Because Intel's "Native Signal Processing" ("NSP") software provided a platform for software development that was independent of Windows, it "bore the potential to weaken the barrier protecting Microsoft's

monopoly power." *Id.* at 34, Finding No. 97. Unlike with Netscape, however, Microsoft was successful in convincing Intel to limit its competitive efforts. *Id.* at 35, Finding No. 101.

1018. The District Court explained specifically how Intel's NSP software threatened Microsoft's monopoly:

> First of all, the software threatened to offer ISVs and device manufacturers an alternative to waiting for Windows to provide system-level support for products that would take advantage of advances in hardware technology. More troubling [to Microsoft] was the fact that Intel was developing versions of its NSP software for non-Microsoft operating systems. The different versions of the NSP software exposed the same set of software interfaces to developers, so the more an application took advantage of interfaces exposed by NSP software, the easier it would be to port that application to non-Microsoft operating systems.

Microsoft, 84 F. Supp. 2d at 34, Finding No. 97.

1019. Microsoft sent several senior executives to Intel "to discuss the latter's incursion into Microsoft's platform territory." *Microsoft*, 84 F. Supp. 2d at 35, Finding No. 100. After the meeting, one of these executives argued that Microsoft should refuse to allow Intel to continue to innovate by developing platform-level software; if Intel wanted the functionality developed, Intel should persuade Microsoft to develop it as a part of Windows. *Id.* As the executive put it, "'[s]ometimes Intel would have to accept the outcome that the time isn't right for [Microsoft].'" *Id.* Gates agreed, and met with Intel's CEO in an effort to convince him "'to basically not ship NSP.'" *Id.*

1020. Intel is primarily a hardware company, rather than a software company. *Microsoft*, 84 F. Supp. 2d at 34, Finding No. 95. Thus, its primary purpose in developing the advanced multimedia APIs in NSP had not been to challenge Microsoft, but to spur demand for next-generation Intel microprocessors. *Id.* at 35, Finding No. 101. Seeing an opportunity to head off the platform threat posed by NSP, "Microsoft hastened to assure Intel that if it would stop promoting NSP's interfaces, Microsoft would accelerate its own work to incorporate the

functions of the NSP software into Windows, thereby stimulating the development of applications and devices that relied on the new capabilities of Intel's microprocessors." *Id.*

1021. Just to be sure that Intel had no incentive to continue to develop NSP, Microsoft also pressured the OEMs not to distribute NSP so long as it exposed APIs. *Microsoft*, 84 F. Supp. 2d at 35, Finding No. 101. As Gates reported to other senior Microsoft executives, "'Intel feels we have all the OEMs on hold with our NSP chill.'" *Id.* at 36, Finding No. 103.

1022. Ultimately, Intel agreed to abandon NSP and cede the development of platform software to Microsoft. *Microsoft*, 84 F. Supp. 2d at 35, Finding No. 101. Microsoft in turn incorporated some of NSP's capabilities into Windows, but as of 1998 it still did not offer consumers the technological capabilities that Intel could have offered in 1995. *Id.* More significantly, by convincing Intel to leave the development of platform-level software to Microsoft, Microsoft squelched another potential threat to the applications barrier to entry.

3. Microsoft's Attempt to Dissuade Apple from Developing Platform Software

1023. Microsoft also perceived Apple's QuickTime software, which is cross-platform middleware used for creating, editing, publishing, and playing back multimedia content, as a threat to the applications barrier to entry. *Microsoft*, 84 F. Supp. 2d at 36, Finding No. 104. QuickTime exposed APIs that enabled developers to create multimedia content that ran on both the Mac OS and Windows, and therefore it posed a potential threat to Microsoft because it competed with Microsoft's "DirectX" multimedia APIs and the Windows media player. *Id.* Having identified another threat to its monopoly, Microsoft once again set out to convince the developers of the software not to compete. *Id.* at 36, Finding No. 105.

1024. Microsoft proposed a deal in which Microsoft would cede to Apple the market for "authoring software," the tools developers use to write multimedia content, in exchange for

Apple's agreement not to produce a version of QuickTime for Windows that exposed APIs. *Microsoft*, 84 F. Supp. 2d at 36, Finding No. 105. Apple would have been permitted to continue to market a version of QuickTime for Windows, but only if it relied upon the DirectX technologies in Windows. *Id.* Apple also would have been allowed to continue to develop QuickTime as platform-level software, but only on the Mac OS. The District Court explained that:

> As was the case with the Internet technologies it was prepared to tolerate from Netscape, Microsoft felt secure in the conviction that developers would not be drawn in large numbers to write for non-Microsoft APIs exposed by platforms whose installed bases were inconsequential in comparison with that of Windows.

Id.

1025. Microsoft executives met with Apple executives, including Apple's CEO Steve Jobs, in hopes of convincing Apple to abandon the development of platform-level multimedia software for Windows. *Microsoft*, 84 F. Supp. 2d at 37, Finding No. 108. One of the Microsoft executives, Eric Engstrom, said that:

> he hoped the two companies could agree on a single configuration of software to play multimedia content on Windows. He added, significantly, that any unified multimedia playback software for Windows would have to be based on DirectX. If Apple would agree to make DirectX the standard, Microsoft would be willing to do several things that Apple might find beneficial. First, Microsoft would adopt Apple's ".MOV" as the universal file format for multimedia playback on Windows. Second, Microsoft would configure the Windows Media Player to display the QuickTime logo during the playback of ".MOV" files. Third, Microsoft would include support in DirectX for QuickTime APIs used to author multimedia content, and Microsoft would give Apple appropriate credit for the APIs in Microsoft's Software Developer Kit.

Id.

1026. The District Court found that Microsoft's primary motive in proposing this arrangement was not to resolve multimedia file-format incompatibilities, but "to limit as much as possible the development of multimedia content that would run cross-platform." *Microsoft*, 84

F. Supp. 2d at 37, Finding No. 110. Jobs ultimately declined Microsoft's proposal, *id.* at 37, Finding No. 109, but the episode represents yet another attempt by Microsoft to limit any form of competition to its operating-system monopoly.

4. Microsoft's Attempt to Dissuade RealNetworks from Developing Platform Software

1027. In 1997, Microsoft executives viewed RealNetworks' streaming media software, which exposes APIs that compete with the APIs in Microsoft's then-called DirectX technologies, "as competitive technology that could develop into part of a middleware layer that could, in turn, become broad and widespread enough to weaken the applications barrier to entry." *Microsoft*, 84 F. Supp. 2d at 37-38, Finding No. 111.

1028. Much as it did with Netscape and Apple, Microsoft attempted to negotiate a deal with RealNetworks in which RealNetworks would abandon any platform aspirations it had for its streaming media middleware and move to a model of providing value-added software. *Microsoft*, 84 F. Supp. 2d at 38, Finding No. 113. Microsoft entered into a deal with RealNetworks in which Microsoft agreed, among other things, to make a substantial investment in RealNetworks and to distribute a copy of RealNetworks' media player with every copy of Internet Explorer. *Id.* Microsoft believed that, in exchange, RealNetworks would in the future rely on Microsoft's media technologies rather than continue to develop its own platform. *Id.*

1029. RealNetworks, however, saw the deal differently, and has continued to develop its streaming media software. *Microsoft*, 84 F. Supp. 2d at 38, Finding No. 114. While the deal ultimately did not work out as Microsoft had expected, "its dealings with the company that summer[ ] show that decision-makers at Microsoft were willing to invest a large amount of cash and other resources into securing the agreement of other companies to halt software development that exhibited discernible potential to weaken the applications barrier." *Id.*

B. How States' Remedy 11 Achieves Its Intended Purpose

1030. Through its responses to Netscape, Intel, Apple, and RealNetworks, Microsoft has repeatedly demonstrated a willingness to seek out agreements limiting competition from those companies that might threaten its operating-system monopoly. States' Remedy 11 endeavors to address Microsoft's potentially anticompetitive conduct directly by preventing Microsoft from offering or providing consideration to the companies that develop new platform threats in exchange for their agreement not to compete with Microsoft's own products.

1031. States' Remedy 11 provides:

> ***Agreements Limiting Competition.*** *Microsoft shall not offer, agree to provide, or provide any consideration to any actual or potential Platform Software competitor in exchange for such competitor's agreeing to refrain or refraining in whole or in part from developing, licensing, promoting or distributing any Operating System Product or Middleware product competitive with any Windows Operating System Product or Microsoft Middleware Product.*

1032. States' Remedy 11 is necessary to prevent Microsoft from convincing, or attempting to convince, a rival software developer not to develop a product that might threaten Microsoft's desktop operating system monopoly. Barksdale Dir. ¶ 142.

C. Microsoft's Remedy Will Not Effectively Prohibit Agreements Not To Compete

1033. By including III.F.2 in its Remedy, Microsoft appears to acknowledge the need to restrict its ability to extract agreements limiting competition from rival ISVs, and thereby prevent episodes such as those with Netscape, Intel, Apple, and RealNetworks from recurring. Section III.F.2 provides:

> *Microsoft shall not enter into any agreement relating to a Windows Operating System Product that conditions the grant of any Consideration on an ISV's refraining from developing, using, distributing, or promoting any software that competes with Microsoft Platform Software or any software that runs on any software that competes with Microsoft Platform Software. . . .*

Microsoft's Remedy, however, falls short of the necessary protections afforded by States' Remedy 11 in several important ways.

1034. *First*, III.F.2 contains an exception with the capacity to swallow the rule it is supposedly pronouncing. As long as an ISV contracting with Microsoft has a "bona fide contractual obligation" to use, distribute, or promote Microsoft software, or to develop software for or in conjunction with Microsoft, Microsoft can insist that the ISV refrain from developing, using, distributing, and promoting any software that competes with Windows or Microsoft middleware, or that runs on software that competes with Windows or Microsoft middleware. Barksdale Dir. ¶ 113; Richards Dir. ¶ 209. This exception means that Microsoft is permitted to do precisely what the first part of III.F.2 says Microsoft cannot do—enter into a contract with an ISV that requires the ISV to use, distribute, or promote Microsoft software and to limit its use, distribution, or promotion of non-Microsoft software. Barksdale Dir. ¶ 114; *see* Tr. 5254:5-5255:11 (Jones) (under III.F.2, Microsoft can enter join development agreements with ISVs in which the ISVs agree not to develop, use, distribute, or promote a competing platform).

1035. *Second*, the restrictions in III.F.2 only apply to agreements "relating to a Windows Operating System Product," and not to other Microsoft software. This means that what Microsoft could not accomplish using inducements related to Windows, it could still accomplish using inducements related, for example, to Internet Explorer. Barksdale Dir. ¶ 115. Either way, the result would be the same: Microsoft would be able to curtail or seriously limit the use, distribution, or promotion of non-Microsoft middleware that could pose a threat to its desktop operating system monopoly. *Id*.

D. States' Remedy 11 Meets the Court of Appeals' Objectives for Relief

1036. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

1037. States' Remedy 11 will achieve the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by restricting a practice, the entry into agreements limiting competition with platform software rivals, that will predictably have the same adverse effects on potential platform threats as the conduct found anticompetitive.

E. Microsoft's Criticisms of States' Remedy 11

1038. Microsoft does not dispute the need for a prohibition on agreements limiting competition; indeed, as discussed above, Microsoft's Remedy also addresses the issue in III.F.2, albeit ineffectively. Rather, two Microsoft executives—Bill Gates and Chris Jones—criticize States' Remedy 11 because they claim that it prohibits "evangelization" and certain other business arrangements that are routine in the software industry, such as joint development and "work-for-hire" agreements. Gates Dir. ¶¶ 380-85; Jones Dir. ¶¶ 127-28.

1039. As with many other provisions of the States' Remedy, Microsoft has resorted to an unreasonable reading of Remedy 11 in order to fabricate criticisms of it. Remedy 11 is not designed to prevent Microsoft from engaging in routine, pro-competitive business arrangements with ISVs with the aim of creating new software for Windows—in those situations, the consideration is offered "in exchange for" development work. Rather, States' Remedy 11 is intended to prohibit deals such as those offered to Netscape, Intel, Apple, and RealNetworks, where Microsoft offered the consideration "in exchange for" the agreement not to compete with

Microsoft. States' Remedy 11 would prohibit Microsoft from using inducements—such as the information needed to interoperate with Windows—only to those ISVs who agree not to compete with Microsoft's platform software.

XVIII. States' Remedy 12—Internet Browser Open-Source License

A. Purpose of States' Remedy 12

1. Destroying Navigator and Establishing Internet Explorer as the Dominant Browser Was the Central Focus of Microsoft's Illegal Monopoly-Maintenance Strategy

1040. A primary focus of the liability trial was the threat that the Netscape Navigator Internet browser posed to Microsoft's operating system monopoly, and the multitude of illegal tactics that Microsoft employed to neutralize that threat. *See supra* Section II.D.1 ("Microsoft's Efforts to Thwart Navigator"). The Court of Appeals explained why wresting control of the browser market from Netscape was of crucial importance to Microsoft:

> Browser usage share is important because . . . a browser (or any middleware product, for that matter) must have a critical mass of users in order to attract software developers to write applications relying upon the APIs it exposes, and away from the APIs exposed by Windows. Applications written to a particular browser's APIs, however, would run on any computer with that browser, regardless of the underlying operating system. . . . If a consumer could have access to the applications he desired—regardless of the operating system he uses—simply by installing a particular browser on his computer, then he would no longer feel compelled to select Windows in order to have access to those applications; he could select an operating system other than Windows based solely upon its quality and price. In other words, the market for operating systems would be competitive.

Microsoft, 253 F.3d at 60.

1041. Bill Gates understood the threat that Navigator posed to the Windows monopoly, and in May 1995, he wrote a memorandum titled "The Internet Tidal Wave," in which he warned his fellow Microsoft executives about this "new competitor 'born' on the Internet"—a competitor that had the potential to lower the crucial applications barrier to entry. *Microsoft*, 84 F. Supp. 2d at 29, Finding No. 72. From that point onward, Microsoft re-oriented its priorities to deal with the issue by making its share of the browser market "job # 1." *Id.* at 44, Finding No. 138.

1042. From there, Microsoft engaged in a multi-front battle to eliminate Navigator and establish Microsoft's Internet Explorer ("IE") as the dominant browser. Microsoft's strategy involved: (1) trying to convince Netscape not to compete with Internet Explorer; (2) commingling the code for its own Internet Explorer browser into Windows so that it could not be deleted without damaging the operating system; (3) altering the Windows license agreements with OEMs in ways that discouraged them from distributing Navigator pre-installed on their computers; and (4) entering into exclusive contracts with IAPs, ISVs, and Apple to ensure that it was Internet Explorer, rather than Navigator, that was promoted and distributed through those channels.

1043. Microsoft's first effort was to attempt to convince Netscape that it should not develop a version of Navigator for the Windows operating system that exposed its own APIs to software developers. *Microsoft*, 84 F. Supp. 2d at 30, Finding No. 79; *see also supra* Section XVII.A ("Purpose of States' Remedy 11"). In exchange for such a concession, Microsoft offered Netscape the right create a "value-added" browser for Windows using Microsoft's Internet technologies, and it also offered to cede to Netscape the Mac OS, UNIX, and Microsoft 16-bit operating system browser markets. *Microsoft*, 84 F. Supp. 2d at 30-31, Finding No. 83. Netscape, however, declined the deal and continued to develop Navigator's platform capabilities. *Id*. at 33, Finding No. 91.

1044. When it became clear that Navigator was not going to go away, Gates recognized that Microsoft had "'to offer a decent client'"—*i.e.*, improve its inferior Internet Explorer browser so that it offered features and functionality competitive with Navigator. *Microsoft*, 84 F. Supp. 2d at 43, Finding No. 134. Gates knew, however, that parity "'alone won't get people to switch away from Netscape.'" *Id*.

1045. Microsoft also knew that its greatest advantage over Netscape was the distribution power it possessed through its operating system monopoly, and so it bundled Internet Explorer 1.0 with the OEM version of Windows 95 in order to capitalize on that advantage. *Microsoft*, 84 F. Supp. 2d at 49, Finding No. 158. Microsoft ensured that Internet Explorer would be present on every new PC that shipped from a major OEM by including a clause in its Windows licenses that prohibited the OEMs from modifying or deleting Internet Explorer prior to shipment. *Id*. This move not only increased Internet Explorer's distribution, but simultaneously reduced Navigator's—OEMs were largely unwilling to distribute two browsers on a single computer because of the likelihood that it would confuse consumers and increase the OEMs' support costs. *Id*. at 49, Finding No. 159.

1046. To further ensure that a copy of Internet Explorer was found on every copy of Windows, "Microsoft set out to bind Internet Explorer more tightly to Windows 95 as a technical matter." *Microsoft*, 84 F. Supp. 2d at 50, Finding No. 160. This technological "binding" made it harder for anyone to delete the Internet Explorer code from Windows, and at the same time made it more difficult to use Navigator. *Id*. at 50, Findings Nos. 160-61. Microsoft internal documents make it clear that Microsoft's intent was to "'bind the [Windows] shell to the Internet Explorer, so that running any other browser is a jolting experience.'" *Id*. at 50, Finding No. 160.

1047. Microsoft "bound" Internet Explorer to Windows by "commingling" the software code pertaining to web browsing functions with the code that related to operating system functions. *Microsoft*, 253 F.3d at 65-66; *Microsoft*, 84 F. Supp. 2d at 50, Finding No. 161; *see also supra* Section VI.A ("Purpose of States' Remedy 1"). The result was that if a user attempted to delete the Internet Explorer code, the user would also delete code that supports the

Win-32 APIs and "cripple" the Windows operating system. *Microsoft*, 84 F. Supp. 2d at 50, Finding No. 164.

1048. Jim Allchin, a senior Microsoft executive, was one of the primary proponents of binding IE more tightly to Windows. In a series of emails to Paul Maritz, another senior Microsoft executive, Allchin stated that he did not "'understand how IE [wa]s going to win'" the battle for browser share if it simply copied the features of Navigator. *Microsoft*, 84 F. Supp. 2d at 51, Finding No. 166. Allchin argued, "'I am convinced we have to use Windows—this is the one thing they don't have. . . . We have to be competitive with features, but we need something more—Windows integration.'" *Id.* His rationale was that if Microsoft tightly bound Internet Explorer to Windows and then made sure that it was "'killer on OEM shipments,'" then "'Netscape never gets a chance on these systems.'" *Id.*

1049. Maritz agreed with Allchin, and decided to hold the release of Windows 98 until Internet Explorer 4.0 was ready and could be bound to the operating system. *Microsoft*, 84 F. Supp. 2d at 51-52, Finding No. 168. When asked by another Microsoft executive why the release of Windows was going to be held, even if it meant missing the important holiday shopping season, Maritz responded:

> [T]o combat Nscp, we have to position the browser as 'going away' and do deeper integration on Windows. The stronger way to communicate this is to have a 'new release' of Windows and make a big deal out of it. . . . IE integration will be [the] most compelling feature of [Windows 98].

Id.

1050. Through a series of studies, Microsoft confirmed Allchin's theory that binding Internet Explorer more tightly to Windows was the surest way to increase Internet Explorer's market share. As Microsoft's Christian Wildfeuer observed:

> The stunning insight is this: To make users switch away from Netscape, we need to make them upgrade to [Windows 98]. It seems clear to me that it will be very hard to increase browser market share on the merits of IE 4 alone. It will be more important to leverage the OS asset to make people use IE instead of Navigator.

Microsoft, 84 F. Supp. 2d at 52, Finding No. 169 (alterations omitted).

1051. The Court of Appeals agreed with the District Court that Microsoft's commingling of IE code with Windows operating system code achieved the desired anticompetitive effect, for "the commingling deters OEMs from pre-installing rival browsers, thereby reducing the rivals' usage share and, hence, developers' interest in rivals' APIs as an alternative to the API set exposed by Microsoft's operating system." *Microsoft*, 253 F.3d at 66.

1052. At the same time that it increased the commingling of Internet Explorer code with operating system code in Windows 98, Microsoft also made it so users could no longer uninstall IE from Windows using the "Add/Remove Programs" utility. *Microsoft*, 84 F. Supp. 2d at 52, Finding No. 170. The Court of Appeals found that Microsoft's exclusion of IE from the Add/Remove Programs utility had an anticompetitive effect by reducing the likelihood that OEMs would install a second browser. *Microsoft*, 253 F.3d at 65.

1053. But Microsoft's assault on Navigator did not end with making it contractually and technologically impossible for OEMs to remove the Internet Explorer code from Windows. Microsoft feared that all of its efforts would come to naught if OEMs remained free to present users with the choice of using Navigator instead of IE when the user first booted the new computer. *Microsoft*, 84 F. Supp. 2d at 59, Findings Nos. 202-03.

1054. Microsoft used its Windows licensing agreements with OEMs to restrict OEMs' ability to configure Windows in ways that would facilitate the distribution of Navigator rather than IE. *Microsoft*, 87 F. Supp. 2d at 59, Findings Nos. 203-204; *see also supra* Section II.D.1.a ("Licensing restrictions on OEMs"); Section VII.F ("Purpose of States' Remedy 2.c"). The

license restrictions that Microsoft imposed on the OEMs as part of Microsoft's efforts to gain browser share at Navigator's expense included:

> First, Microsoft formalized the prohibition against removing any icons, folders, or "Start" menu entries that Microsoft itself had placed on the Windows desktop. Second, Microsoft prohibited OEMs from modifying the initial Windows boot sequence. Third, Microsoft prohibited OEMs from installing programs, including alternatives to the Windows desktop user interface, which would launch automatically upon completion of the initial Windows boot sequence. Fourth, Microsoft prohibited OEMs from adding icons or folders to the Windows desktop that were not similar in size and shape to icons supplied by Microsoft. Finally, when Microsoft later released the Active Desktop as part of Internet Explorer 4.0, it added the restriction that OEMs were not to use that feature to display third-party brands.

Microsoft, 84 F. Supp. 2d at 61, Finding No. 213.

1055. The Court of Appeals noted that these license restrictions on the OEMs were particularly important, because the OEMs provided one of the two most efficient channels for the distribution of browser software. *Microsoft*, 253 F.3d at 60. The Court of Appeals held that, with the exception of the user-interface provision of Microsoft's OEM license agreements (which prohibited OEMs from automatically launching a shell interface so that the Windows desktop was never seen by the user, *id.* at 63), each of the new contractual restrictions on the OEMs constituted unlawful monopoly maintenance in violation of § 2 of the Sherman Act. *Id*. at 64.

1056. The other primary distribution channel for browser software was through Internet-access providers, or IAPs, which typically bundled a browser with their Internet-access software. *Microsoft*, 253 F.3d at 60. Before Microsoft began its campaign against Navigator, many of the most popular IAPs were shipping the Navigator browser with their own access software. *Microsoft*, 84 F. Supp. 2d at 69, Finding No. 242. In response, Microsoft attempted to secure "exclusive arrangements" with a broad range of IAPs to distribute and promote IE rather than

Navigator. *Id*. at 70, Finding No. 244; *see also supra* Section II.D.1.c ("Agreements with IAPs"); Section XII.A ("Purpose of States' Remedy 6").

1057. Microsoft ultimately succeeded in reaching exclusive deals with "fourteen of the top fifteen access providers in North America[, which] account for a large majority of all Internet access subscriptions in this part of the world." *Microsoft*, 253 F.3d at 70-71 (alterations in original) (quoting *Microsoft*, 84 F. Supp. 2d at 86, Finding No. 308). The Court of Appeals found that by cutting Navigator off from the IAP distribution channel, "Microsoft's deals with the IAPs clearly have a significant effect in preserving its monopoly," *Microsoft*, 253 F.3d at 71, and, lacking a procompetitive justification, violate § 2 of the Sherman Act. *Id*.

1058. While taking steps to banish Navigator from both the OEM and IAP distribution channels, Microsoft also moved to "ensure[ ] that many of the most popular Web-centric applications will rely on browsing technologies found only in Windows and . . . increase[ ] the likelihood that the millions of consumers using these products will use Internet Explorer rather than Navigator." *Microsoft*, 84 F. Supp. 2d at 93-94, Finding No. 340; *see also supra* Section II.D.1.d ("Dealings with ISVs and Apple"); Section XII.A ("Purpose of States' Remedy 6").

1059. Microsoft sought to rally ISV support around Internet Explorer through what came to be known as the "First Wave" agreements. In the First Wave agreements, Microsoft offered ISVs consideration including preferential technical support, early access to Windows betas, and Microsoft seals of approval in exchange for the ISVs' agreement, among other things, to use Internet Explorer as the default browser in any software they developed that required an Internet browser or HTML rendering. *Microsoft*, 84 F. Supp. 2d at 93, Finding No. 339.

1060. The Court of Appeals held that these exclusive agreements Microsoft signed with various ISVs had a "substantial effect in further foreclosing rival browsers from the market."

Microsoft, 253 F.3d at 72. The First Wave agreements had the "anticompetitive effect of preserving Microsoft's monopoly," and therefore violated § 2 of the Sherman Act. *Id.*

1061. Microsoft also took steps to ensure that Navigator did not achieve widespread distribution by Apple, which is both an ISV and an IHV. *See supra* Section II.D.1.d ("Dealings with ISVs and Apple"); Section XIV.A.2.b ("Apple Computer"); Section XVII.A ("Purpose of States' Remedy 11"). Navigator's presence on Apple's Mac OS merited particular attention for the very reason that cross-platform middleware poses a threat to Microsoft's monopoly—if Navigator were widely distributed on multiple operating systems, ISVs could write a single program to Navigator, rather than to Windows' APIs, and thereby have access to both the massive Windows user base and the incremental market of Mac OS users. *Microsoft*, 84 F. Supp. 2d at 94, Finding No. 341. Microsoft therefore set out to convince Mac OS users to adopt Internet Explorer and to convince ISVs that Navigator's cross-platform appeal was limited. *Id.*

1062. Bill Gates made it clear that he wanted to "see if we can get [Apple] to embrace Internet Explorer in some way," and, more specifically, to "agree to immediately ship IE on all their systems as the standard browser." *Microsoft*, 84 F. Supp. 2d at 94, Finding No. 343. Apple resisted Microsoft's initial overtures, and instead made Navigator the standard browser on the Mac OS. *Id*. at 95, Finding No. 349.

1063. Microsoft, however, remained undaunted. It knew that the continued availability of Mac Office, a version of Microsoft's popular Office software for the Mac OS that was used by 90% of all Mac OS users, was so important to Apple that it was seen as essential to the company's survival. *Microsoft*, 84 F. Supp. 2d at 94-95, Findings Nos. 344-45. Ben Waldman, the Microsoft executive in charge of Mac Office, told Bill Gates that "The threat to cancel Mac Office 97 is certainly the strongest bargaining point we have, as doing so will do a great deal of

harm to Apple immediately. I also believe that Apple is taking this threat pretty seriously." *Id*. at 95, Finding No. 346.

1064. Mr. Gates called Gil Amelio, at the time Apple's CEO, and asked him "how we should announce the cancellation of Mac Office." *Microsoft*, 84 F. Supp. 2d at 95, Finding No. 349. Within a month of Gates' threat, Apple capitulated—in exchange for Microsoft's pledge to continue to release updated versions of Mac Office for five years, Apple agreed to bundle Internet Explorer with the Mac OS and make it the default browser. *Microsoft*, 253 F.3d at 73. In addition to distributing Internet Explorer, Apple also agreed not to include Navigator on the default installation of the Mac OS or to put icons for any non-Microsoft browser on the Mac OS desktop. *Id.*

1065. Microsoft's exclusive deal with Apple achieved its intended effects—the Court of Appeals found that it had a "substantial effect in restricting distribution of rival browsers," and that it furthered Microsoft's monopoly. *Microsoft*, 253 F.3d at 73-74. The Court of Appeals went on to hold that the deal was anticompetitive and violated § 2 of the Sherman Act. *Id*. at 74.

1066. Microsoft's multi-pronged strategy was highly successful in both drastically reducing Netscape's market share and in establishing Internet Explorer as the dominant browser. *Microsoft*, 84 F. Supp. 2d at 98-99, Finding No. 360; *id.* at 100, Finding No. 364. Today, Navigator has been reduced to approximately 10% of the browser market, Barksdale Dir. ¶ 29, and Internet Explorer's share has grown to almost 90%. Shapiro Dir. ¶ 124. It is true that Internet Explorer could not have achieved widespread success in the market had Microsoft not drastically improved the quality of its software, but it was only through violating the antitrust laws that Microsoft was able to supplant Navigator with Internet Explorer so completely and in such a short period of time. *Microsoft*, 84 F. Supp. 2d at 102, Finding No. 375.

1067. By gaining control over the dominant browser, Microsoft "forestalled a serious potential threat to the applications barrier to entry," *Microsoft*, 84 F. Supp. 2d at 103, Finding No. 377, and thereby perpetuated its operating system monopoly.

2. The Fact that Microsoft Now Controls the Dominant Browser Has Tremendous Significance for Competition in the PC Operating System Market Today

1068. The Internet browser has proven to be an enormously important application that becomes even more important as the number of PCs connected to the Internet continues to grow and as new uses of the Internet continue to develop. Shapiro Dir. ¶ 46. The fact that Microsoft now exercises sole control over the dominant Internet browser therefore enhances its ability to maintain its operating system monopoly in today's world of networked computing. *Id.* ¶¶ 46, 124.

a. Linux's PC Operating System Is Significantly Disadvantaged Because It Cannot Run Internet Explorer, the Dominant Browser

1069. Before Microsoft's campaign, Navigator was the dominant Internet browser, and, being cross-platform middleware, it ran on the Linux operating system as well as Windows. Tr. 1103:5-19 (Tiemann). Internet Explorer is the dominant Internet browser today, and it does not run on Linux. Tiemann Dir. ¶ 107. The fact that Linux's Intel-compatible PC operating system is no longer able to offer its users access to the dominant Internet browser hurts Linux's competitive viability in two significant ways. *See supra* Section II.B ("Other PC Operating Systems Have Failed to Overcome Successfully the Applications Barrier to Entry"),

1070. First, the Internet browser is now an essential application on the PC desktop. Tiemann Dir. ¶ 106. There are a number of Internet browsers, including Navigator and Mozilla, that run on Linux today. *Id.* ¶ 107. Microsoft, however, has extended certain Internet standards so that many web pages may properly be viewed only with Internet Explorer, and thus Internet

Explorer is the only browser today that provides users with a full web-browsing experience. *Id.* ¶¶ 106-110; Schwartz Dir. ¶ 91 & Figs. 5 & 6. Accordingly, many computer users, including the enterprise users who are most likely to be receptive to the price and features of the Linux operating system, do not see these browsers as acceptable substitutes for Internet Explorer. Tiemann Dir. ¶ 107. Given the incredible user demand for Internet Explorer, as opposed to demand for a browser, generally, Internet Explorer comprises a significant part of the applications barrier to entry in and of itself for Linux. *Id.* ¶¶ 106-107.

1071. Second, when Navigator was the dominant browser, it presented a platform for development of Internet applications that attracted a significant amount of ISV attention. Tr. 1103:10-19 (Tiemann). Because Navigator is cross-platform middleware, any applications developed to Navigator would in turn run on any operating system that supported Navigator, including Linux. Tiemann Dir. ¶ 115. Therefore, if more applications had been written to Navigator, Linux's competitiveness as an operating system would have continued to increase as a result. Tr. 1117:1-9 (Tiemann). When Internet Explorer supplanted Navigator as the dominant browser, however, ISVs stopped developing applications to Navigator and focused on Internet Explorer's APIs instead. Tr. 1103:20-1104:1 (Tiemann).

1072. Thus, as a result of Microsoft's illegal practices, Linux lost not only the ability to offer potential customers access to the dominant browser, but also the competitive boost that it would have gained from being able to run the library of Internet applications that would have been developed for Navigator. Tr. 1103:24-1104:9 (Tiemann).

b. The Fact That Internet Explorer Is Not Available for Non-Microsoft Handheld Operating Systems Weakens the Nascent Platform Threat They Pose

1073. Handheld devices are an important platform threat to Microsoft's operating system monopoly. *See supra* Section III.D.4 ("Hand-Held Devices"). And as handheld devices

increasingly offer wireless Internet connections, users increasingly expect that the Internet browser on their handhelds will render Web sites the same way that a PC browser would render them. Mace Dir. ¶ 28. This means that just as the Linux operating system is placed at a competitive disadvantage, so, too, are non-Microsoft handheld operating systems disadvantaged by not being able to offer users access to Internet Explorer. Palm has developed a Web browser for its handheld devices, but, like Navigator or Mozilla on Linux, it provides a less-than-satisfying experience for many users in a world in which much Internet content is developed to work specifically with Internet Explorer. Mace Dir. ¶¶ 87-88. Palm's web browser is not seen as an acceptable substitute for Internet Explorer web-browsing technologies by many users, including enterprise users who want "absolute compatibility" with Internet Explorer. Tr. 2488:15-25 (Mace).

1074. Microsoft's Pocket PC runs an Internet browser called Pocket Internet Explorer. Mace Dir. ¶ 89. Palm requested that Microsoft port Pocket Internet Explorer to the Palm OS, but Microsoft refused. *Id*. Instead, Microsoft offered to make an inferior product called "Mobile Explorer" available to Palm, but that product offered only limited functionality, and Palm declined. *Id*. To capitalize on the fact that Palm cannot currently offer Internet Explorer, Microsoft specifically advertises that its own Pocket PC provides a better Internet-browsing experience than the Palm OS. *Id*. ¶ 88.

1075. Because Palm and other non-Microsoft handheld devices do not have the ability to offer a fully Internet Explorer -compatible Internet browser, the competitive threat that these devices pose to Microsoft's operating system monopoly is blunted.

c. Microsoft's Control Over the Dominant Browser Gives It the Ability To Squelch the Nascent Threat Web Services Pose to Its Operating System Monopoly

1076. The development of Web services poses a potential platform threat to Windows. *See supra* Section III.D.2 ("Web Services"). Because Microsoft controls Internet Explorer, now the overwhelmingly dominant browser, Microsoft has secured for itself a choke point for the presentation of, and therefore the delivery of, and access to, Web services. Schwartz Dir. ¶ 51; Pearson Dir. ¶ 47. While the Web services model improves the ability of computers and applications to interact directly with each other, almost all web services will eventually require some presentation to or interaction with the end-user. Schwartz Dir. ¶ 50. The browser is the key user interface for Web services, because the "browser is the way an end user navigates and accesses Web services." Schwartz Dir. ¶ 80; *see also* Tr. 2810:22-2811:7 (Schwartz). Therefore, if Microsoft can impede the ability of competing Web services or the technologies upon which they are built to access and interoperate with Internet Explorer, it can protect Windows from the competitive platform threat that Web services would otherwise pose.

1077. When both Navigator and Internet Explorer enjoyed substantial market share, Web site developers tended to favor open standards. Schwartz Dir. ¶ 81. If a company had a Web site that could only be viewed using Internet Explorer, it might "lose business that potentially would have been generated by the millions of Navigator users." *Id.* Thus, Web developers tended to "adhere [ ] to open standards in order to ensure access by the widest possible range of browser users." *Id.*

1078. The market forces favoring open Internet standards have been substantially weakened now that Internet Explorer has a 90% market share. Schwartz Dir. ¶ 82. Given Internet Explorer's dominant market share, most Web sites are now designed to be viewable by Internet Explorer without regard to whether they are viewable by other browsers. This enables

Microsoft to exclude competing browsers from accessing or correctly displaying Web pages that Internet Explorer can access and correctly display. *Id.* ¶ 83.

1079. For example, Microsoft has implemented support for software programs called "ActiveX" controls, which, in general, can only be accessed using the Internet Explorer browser running on top of the Windows operating system. Schwartz Dir. ¶ 85. Microsoft has ensured the dissemination of ActiveX controls on Web sites across the Internet by, among other methods, designing Microsoft FrontPage (one of Microsoft's popular Web-publishing tools) so that it easily creates Web pages that rely on ActiveX controls. *Id.* ¶ 86. As these Web pages proliferate, browsers such as Navigator, which do not support ActiveX controls, become less viable. *Id.*

1080. Microsoft also uses ActiveX controls in products like its Remote Desktop Web Connection for the Windows Terminal Server product. Schwartz Dir. ¶ 87. The Remote Desktop Web Connection allows a user to use the Internet Explorer browser to remotely connect to a network, recreating a version of the user's Windows desktop in the browser. *Id.* Thus, a user at home could access his or her company's network, check email, and run applications as if he or she were sitting in the office. *Id.*; *see also* PX 1702 (Tab J to Schwartz Dir.). Because of the ActiveX controls used by this product, the same user at home using Netscape Navigator on an Apple Macintosh or Windows PC cannot access that service. Schwartz Dir. ¶ 88.

1081. Microsoft has disclosed some of the specifications relevant to ActiveX; however, since ActiveX controls are built using Microsoft's Component Object Model (COM+) architecture, which has not been fully disclosed, Microsoft's disclosures are insufficient to run most ActiveX controls on non-Windows operating systems. Schwartz Dir. ¶ 89. In fact, despite Microsoft's claims that ActiveX controls can be supported on other operating systems,

Microsoft's own versions of Internet Explorer for the Mac and Solaris operating systems do not provide full support for ActiveX controls on the Web. *Id*.; *see also* PX 1706 and PX 1707 (Tab K to Schwartz Dir.).

1082. In addition to ActiveX controls, Microsoft has extended the HTML standard in ways that only Internet Explorer can recognize; Web pages containing such extensions will not display correctly using a Navigator browser. Schwartz Dir. ¶ 91 & Figs. 5 & 6. If competing browsers cannot correctly display such content and such content becomes increasingly prevalent on the Internet, then competing browsers and operating systems will be at a substantial disadvantage to Microsoft's Internet Explorer and Windows in providing Web services. *Id*. ¶ 92. In the extreme case, Microsoft could ensure that only its browsers can access Web servers running Microsoft software, by, for example, adopting a proprietary protocol to replace an industry standard protocol. *Id*. ¶ 131; Pearson Dir. ¶¶ 10, 48.

1083. Microsoft derives several other advantages over rival Web services platforms as a result of its control of the dominant browser— Internet Explorer is a key distribution channel for middleware necessary for Web services, and it also functions as a tool that directs users to Microsoft Web services. Schwartz Dir. ¶¶ 93, 97.

1084. First, by controlling the browser, Microsoft can bundle middleware that supports its own Web services. Schwartz Dir. ¶ 94. For example, MSN Messenger, which provides alerts for Microsoft Web services, is bundled with Internet Explorer. Microsoft's Media Player for displaying Microsoft's proprietary streaming media content is also bundled. *Id*. In addition, Microsoft has the power to ensure the ubiquitous distribution of its .NET platform by bundling it with every copy of Internet Explorer. *Id*.

1085. Similarly, Microsoft also has the power to undermine or greatly diminish the commercial viability of competing web services middleware by (1) excluding its distribution in Internet Explorer or (2) restricting the ability of such middleware to interoperate with Internet Explorer. Schwartz Dir. ¶ 95. Microsoft's recent exclusion of the Java platform from Internet Explorer 6.0 and its failure to document Internet Explorer's applet tag interfaces demonstrate that power. *Id*.

1086. The power Microsoft possesses to control the Web services gateway is further exemplified by the default settings of Microsoft's Web browsers, which are designed to direct users to Microsoft's Web services. Schwartz Dir. ¶ 97. For Internet Explorer, the initial default home page is Microsoft's MSN.com. *Id*. ¶ 98. MSN.com is controlled by Microsoft and offers an array of Microsoft Web services. *Id*. And when a user enters an incomplete Web address or search term in the address bar for Internet Explorer, the default search engine is Microsoft's MSN Search. *Id*. For example, if a user types "Email" in the address bar for Internet Explorer 6.0 in order to search for email programs, MSN's search program automatically launches, the user is connected to Microsoft's Hotmail Web site, and the user is then prompted to sign up for Microsoft's web-based email service. *Id*.

1087. MSN Explorer, another Microsoft Internet browser that incorporates Internet Explorer, has even tighter built-in links to Microsoft's Web services. Schwartz Dir. ¶ 99. MSN Explorer frames the standard Internet Explorer browser with a fixed array of icons and embedded applications linked to popular Internet activities including email, instant messaging, streaming music and video, Internet searching, and financial and e-commerce sites. *Id*. Ostensibly designed to simplify and enhance users' experience on the Web, MSN Explorer actually locks its

users into pre-selected Microsoft applications, Web sites, and services that cannot be altered. *Id*. ¶ 99 & Fig. 7.

1088. When MSN Explorer launches, it always opens to the MSN Web site as its home page, which cannot be altered. *Id*. ¶ 100. The email icon always takes users to Microsoft's Hotmail/MSN service, and cannot be changed. *Id*. The Money icon connects only to Microsoft's MoneyCentral site, and cannot be changed. *Id*. Similarly, when streamed audio and video is encountered on the Internet, MSN Explorer invariably opens its embedded Windows Media Player to access the content. *Id*. Furthermore, MSN Explorer, which is installed by default with Windows XP, requires users to obtain a Microsoft .NET Passport account before it will operate, further driving adoption of Microsoft's Web services. *Id*.

1089. Internet Explorer and MSN Explorer demonstrate the extent of Microsoft's power over Web services. Schwartz Dir. ¶ 101. Because Microsoft controls the dominant PC operating system, it controls the gateway to Web services. *Id*. Microsoft can exploit that control to bias and direct users to its services in preference to competitors' services. *Id*. If there were vigorous competition for browsers, such actions might not be of concern. *Id*. However, where one firm—Microsoft—bundles its browser into its dominant PC operating system, it can exploit that power to advantage its Web services over those of all competing web service vendors. *Id*. Thus, Microsoft is able to use Internet Explorer and MSN Explorer to stifle potential threats to its desktop operating system monopoly. *Id*.

d. Microsoft's Control Over the Dominant Browser Gives It the Ability to Neutralize the Platform Threats Posed by Other Forms of Non-Microsoft Middleware

1090. While Navigator and Java posed particularly strong threats to Microsoft's monopoly, other forms of middleware pose platform threats, as well. *See supra* Section III.D.5 ("Other Forms of Middleware"). Microsoft's control over Internet Explorer, the gateway to the

Internet for most PC users today, gives it the power to influence which Internet-related middleware programs users adopt beyond the browser. As a result, Microsoft has the ability to use Internet Explorer to neutralize the platform threat that may be posed by any such non-Microsoft middleware, including RealNetworks' media software.

1091. One example of the power inherent in Internet Explorer to discourage the use of non-Microsoft middleware, such as RealNetworks' RealOne Player, is Microsoft's inclusion of a default media bar in Internet Explorer 6.0. Richards Dir. ¶ 79. The Windows Media Player ("WMP") is embedded as the default media player in the Internet Explorer Media Bar. *Id*. The Internet Explorer Media Bar launches within the browser and plays media encountered on the Internet even when an end user has otherwise specified RealNetworks' media player software as the default player. *Id*. The Internet Explorer Media Bar launches within Internet Explorer, not in a separate window. *Id*. ¶ 79, Figs. 13, 14 & 15. Microsoft has not published the APIs and technical information that would allow a rival middleware manufacturer to replace the Internet Explorer Media Bar with an equivalent, competing media bar, or even to replace WMP within the existing Internet Explorer Media Bar. *Id*. ¶ 79.

1092. The Internet Explorer Media Bar has an undisclosed technical architecture that allows it to override regular media software that has been set by the consumer or OEM as the default player for a given file format. Richards Dir. ¶ 80. Windows has a list, or registry, in which different pieces of software are assigned to be the default player for different file formats and protocols. *Id*. Normally, this means that when a user encounters a file in a particular format, Windows XP will launch the default media player for that media file. *Id*. For instance, if RealNetworks' media player is assigned in the Windows registry to play files in the popular "MP3" music format, then it will be launched when a user tries to open an MP3 file. *Id*. But the

Internet Explorer Media Bar, instead of respecting these settings, uses a specially created, undocumented file association registry that overrides the regular Windows registry. *Id*. This means that the Internet Explorer Media Bar will launch and play files in formats for which RealNetworks' software has been designated the default player. *Id*. Although on first use the Internet Explorer Media Bar displays a dialog box, that dialog does not explain to the end user that the Media Bar will change the default setting for the format selected. *Id*. Fig. 14.

1093. There would be substantial end-user benefit if Microsoft disclosed the Internet Explorer Media Bar functionality, because it would enable RealNetworks to provide end users the ability to play back more digital formats within the browser than Windows Media Player, including its own RealAudio and RealVideo formats, which are among the most popular formats on the Internet. Richards Dir. ¶ 81.

1094. Microsoft does disclose sufficient APIs and technical information to allow a third-party ISV such as RealNetworks to create a task bar. Richards Dir. ¶ 82. However, unlike the Internet Explorer Media Bar, such a task bar would not launch automatically upon encountering a relevant file format and would not launch manually when a user clicks on the Internet Explorer "Media" toolbar button. *Id*. This Internet Explorer Media Bar functionality has the effect of diminishing the use of competing media products, which Microsoft uses as a marketing tool to convince developers and content providers not to use competing platforms, such as that provided by RealNetworks. *Id*.

1095. Because Microsoft has refused to disclose the APIs for the Internet Explorer Media Bar, RealNetworks has been forced to invest substantial time and resources to engineer around this lack of disclosure from Microsoft. Richards Dir. ¶ 83. RealNetworks has created a solution that at least temporarily enables RealNetworks' RealOne Player to continue to honor

consumers' default media player selections. *Id*. Microsoft, however, is in a position to use its Windows Update utility or other "patches" to its operating system to override the solutions created by RealNetworks. *Id.*

1096. In sum, the Internet Explorer Media Bar represents a prime example of how Microsoft may use its control over the dominant browser to diminish potential middleware threats to its operating system monopoly.

B. How States' Remedy 12 Achieves Its Intended Purpose

1097. Mandatory licensing of intellectual property is often required as part of a remedy addressing anticompetitive harm. Shapiro Dir. ¶ 85. This licensing of intellectual property offers a particularly advantageous means to increase competition in the marketplace because multiple parties can make use of the intellectual property without depriving others of the ability to use the same asset. *Id.* at ¶ 86. The result is the creation of a marketplace in which the licensees can more effectively compete, while the monopolist is allowed to continue to compete as well. *Id.* States' Remedy 12 is just such a mandatory-licensing provision.

1098. States' Remedy 12 provides:

> ***Internet Browser Open-Source License***. *Beginning three months after the date of entry of this Final Judgment, Microsoft shall disclose and license all source code for all Browser software. In addition, during the remaining term of this Final Judgment, Microsoft shall be required to disclose and make available for license, both at the time of and subsequent to the first beta release (and in no event later than one hundred eighty (180) days prior to its commercial distribution of any Browser software), all source code for Browser software. As part of this disclosure, Microsoft shall identify, provide reasonable explanation of, and disseminate publicly a complete specification of all APIs, Communications Interfaces and Technical Information relating to the Interoperation of such Browser software and each Microsoft Platform Software product. The aforementioned license shall grant a royalty-free, non-exclusive perpetual right on a non-discriminatory basis to make, use, modify and distribute without limitation products implementing or derived from Microsoft's source code, and a royalty-free, non-exclusive perpetual right on a non-discriminatory basis to use all Microsoft APIs and Communications Interfaces used or called by Microsoft's Browser software not otherwise covered by this Section 12. Nothing in this*

> *Section 12 shall require Microsoft to disclose or license the source code for non-Browser software that relies in whole or in part on functionality in Browser software.*

1099. The term "Browser," as used in States' Remedy 12, is defined in States' Remedy 22.e as:

> *Internet Explorer 6.0, MSN Explorer 6.10, or their successors (which shall include any future product offering the same functionality as the then most recent version of Internet Explorer or MSN Explorer, whether or not styled as a version of Internet Explorer or MSN Explorer), offered on either Macintosh or Windows.*

1100. Essentially, States' Remedy 12 requires Microsoft to disclose and license all of the source code for its latest Internet Explorer and MSN Explorer software on a nondiscriminatory, royalty-free basis for the next ten years. Shapiro Dir. ¶ 101. Remedy 12 also allows the licensees of the Browser software to modify and redistribute the code as they see fit. Under this licensing model, Microsoft's Browser software would be "open source."

1101. "Open source" is a generic term that encompasses many different types of software licenses. The key point here is that the source code is distributed broadly with no restrictions on its use or redistribution. Remedy 12 takes the benefits inherent in the open-source model of software development and employs them to serve several distinct remedial purposes.

1102. First, by open-sourcing Microsoft's Browser software, Remedy 12 creates the possibility to restore what Microsoft destroyed when it destroyed Navigator—namely, a dominant Internet browser that runs cross-platform. Shapiro Dir. ¶ 126; Tr. 1118:2-14 (Tiemann). In its Findings of Fact, the District Court explained why the open-source model of software development is likely to produce cross-platform products, generally:

> Since application developers working under an open-source model are not looking to recoup their investment and make a profit by selling copies of their finished products, they are free from the imperative that compels proprietary developers to concentrate their efforts on Windows. In theory, then, open-source developers are at least as likely to develop applications for a non-Microsoft operating system as

> they are to write Windows-compatible applications. In fact, they may be disposed ideologically to focus their efforts on open-source platforms like Linux.

Microsoft, 84 F. Supp. 2d at 23, Finding No. 51. Thus, for example, it is likely that the open-source community will take advantage of States' Remedy 12 by porting Microsoft's Browser technologies to Linux, providing it with one of the key pieces of technology that it currently lacks and thereby making it a more realistic alternative to Windows for some customers. Tiemann Dir. ¶ 112.

1103. One does not have to be a member of the general open-source community, however, to make use of Microsoft's Browser software code under Remedy 12. Under the open-source license provided in Remedy 12, all ISVs, whether or not they subscribe to an open-source business model generally, would have the freedom to port the Microsoft Browser code to whatever operating system they wish, to incorporate its capabilities into the ISV's own software, or to create a new browser that is compatible with the dominant browser, and thereby enjoy the benefits of the overall market created by a dominant, cross-platform Internet browser. Tr. 1118:2-14 (Tiemann).

1104. In fact, if Microsoft's Browser software were open-sourced under Remedy 12, there are a number of proprietary software companies that would have not only the ability, but very strong incentives to port Internet Explorer to their operating systems. For example, Apple would be able to port Internet Explorer 6.0, which does not currently run on the Mac OS, to its platform. Shapiro Dir. ¶ 101. Apple, if it chose, would in the process also be able to customize Internet Explorer 6.0 in any ways that it believed would appeal to Mac users, while still retaining overall compatibility with Microsoft's version of Internet Explorer. *Id.* To take another example, Palm would be able to create a new browser for its Palm OS that would be compatible with Internet Explorer's standards, thereby ensuring that Palm's handhelds can compete with the

Pocket PC and continue to pose a threat to Microsoft's operating system monopoly. Mace Dir. ¶ 99; Tr. 2480:25-2481:7 (Mace). Consumers would benefit from the open-sourcing of Internet Explorer as the overall rate of innovation in browser development among these various companies increased. Shapiro Dir. ¶ 102.

1105. But there are pro-competitive benefits to allowing third parties to develop Microsoft's Browser code under an open-source license such as that provided in Remedy 12 beyond simply making the Browser cross-platform. As discussed *supra*, Microsoft has designed Internet Explorer and MSN Explorer to distribute and to favor other Microsoft middleware products and Web services. Schwartz Dir. ¶¶ 93-101; Richards Dir. ¶¶ 79-84. Under Remedy 12, third parties could decide which middleware to distribute along with their version of Internet Explorer, and could redesign the Browser code to eliminate its current biases toward Microsoft products and services. Shapiro Dir. ¶ 126; Schwartz Dir. ¶ 159.

1106. Further, Remedy 12 has the potential to promote competition without any additional development of Microsoft's Browser software at all. Because the source code for Microsoft's Browsers would be public under Remedy 12, web services providers would be able to see the various proprietary protocols and extensions used by Internet Explorer and MSN Explorer. Pearson Dir. ¶ 96. If Microsoft decides to extend standards or otherwise change the way in which its Browser software operates, this transparency of the source code will allow competing companies to understand the changes and adapt their own products to retain compatibility with the dominant browser. *Id.*; Schwartz Dir. ¶ 159.

1107. It is important that Microsoft's obligation to open-source the code for its Browser software be an ongoing obligation. A license to today's version of a piece of copyrighted software may be of limited value unless the licensee also has rights to successor versions.

Shapiro Dir. ¶ 91. If successor versions of Microsoft's Browser software are not also made open source, Microsoft, building on its natural advantages as the developer of Internet Explorer and the supplier of Windows, might soon regain proprietary control over the dominant browser and undermine much of the benefit of Remedy 12. *Id*. ¶ 103. The mandatory license of Microsoft's Browser software therefore needs to include rights to successor versions if it is to help restore competition in the operating system market. *Id*. ¶ 91.

C. States' Remedy 12 Meets the Court of Appeals' Objectives for Relief

1108. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

1109. States' Remedy 12 will unfetter the market from Microsoft's anticompetitive practices, ensure that Microsoft does not benefit from the fruits of its statutory violation, and ensure that there remain no practices likely to result in monopolization in the future.

1110. First, Remedy 12 unfetters the operating-system market from Microsoft's anticompetitive conduct by attempting to restore the applications barrier to entry to the level it would have achieved but for Microsoft's antitrust violations. *See* Shapiro Dir. ¶ 46. For example, Microsoft's destruction of Navigator helped maintain the applications barrier to entry for Linux, Microsoft's primary competition in the monopolized desktop operating system market, in two ways: (1) today, Linux can no longer offer its customers access to the dominant browser because, unlike Navigator, Internet Explorer does not run on Linux; and (2) Linux lost the benefit of all of the Internet applications that would have been developed to Navigator had it retained its market share, but were ultimately developed to Internet Explorer instead. Tiemann Dir. ¶ 107; Tr. 1103:10-1104:9 (Tiemann).

1111. Remedy 12 has the potential to restore directly to Linux, and to other platforms that similarly suffered because of Navigator's demise, some of the ability to compete that they lost due to Microsoft's illegal actions. By making Internet Explorer open-source and permitting it to be ported to other platforms, a large chunk of the applications barrier to entry will fall, as Linux will once again be able to offer its users a complete Internet experience through access to the dominant browser. Tiemann Dir. ¶ 112. And once Internet Explorer is ported to Linux, Linux will also be able to run all of the Internet applications that have been developed to Internet Explorer, and all of those that will be developed to Internet Explorer in the future, further eroding the applications barrier to entry. *Id*.

1112. Second, it is clear that one of the primary "fruits" of Microsoft's statutory violations is its current position of complete control over the dominant Internet browser. The District Court found that Microsoft did make legitimate improvements to Internet Explorer, but that Internet Explorer would not have displaced Navigator as the dominant browser so completely or so quickly absent Microsoft's illegal behavior. *Microsoft*, 84 F. Supp. 2d at 102, Finding No. 375.

1113. By requiring Microsoft to open-source its Browsers, Remedy 12 does not deny Microsoft the legitimately-acquired benefits of its improved Browser software; Microsoft will be permitted to continue to develop its Browser software for the Windows platform, and will have a unique ability to influence the direction in which the Browser evolves. Tr. 3539:24-3540:9 (Shapiro). What Remedy 12 does deny Microsoft is the "fruits" that it illegally reaped—namely, the power to perpetuate its operating-system monopoly by limiting which competitors' operating systems, middleware, Web services, and other software the dominant Browser will support.

Remedy 12 restores the right to access the dominant browser to all companies that possess the technological wherewithal to port it to their platforms. Tiemann Dir. ¶ 113.

1114. Finally, Remedy 12 ensures that there remain no practices likely to result in monopolization in the future. As discussed above, Microsoft's control over the dominant browser gives it the power to thwart a number of nascent threats to its operating system monopoly, including handheld devices, Web services, and non-Microsoft middleware. Making Microsoft's Browser software open source is the surest way to prevent Microsoft from further using its Browser software to maintain its monopoly illegally against these nascent threats.

D. Microsoft's Criticisms of States' Remedy 12

1. States' Remedy 12 Does Not "Confiscate" Microsoft's Intellectual Property and Will Not Eliminate Microsoft's Incentives to Innovate

1115. Microsoft's primary criticism of States' Remedy 12 is that it allegedly "confiscates" Microsoft's valuable intellectual property. Gates Dir. ¶ 386; Bennett Dir. ¶ 126; Jones Dir. ¶ 64. Microsoft claims that as a result of this "confiscation," it would have no incentive to innovate and further improve its Browser software. Gates Dir. ¶ 396; Jones Dir. ¶ 64. In fact, Mr. Gates went so far as to claim that Remedy 12, in conjunction with States' Remedies 14 and 15, would lead to the end of innovation and the elimination of most of Microsoft's current employees. Tr. 4531:5-10 (Gates). These hyperbolic arguments are legally and factually misguided.

1116. Microsoft's basic "confiscation" claim seems to be that it is simply not fair to require Microsoft to disclose and license such highly valuable intellectual property as its Browser code on a nondiscriminatory, royalty-free basis. For example, Bill Gates argued that Remedy 12 "is akin to a requirement that . . . Coca-Cola give[ ] the secret formula for Coke to Pepsi (and other soda makers)." Gates Dir. ¶ 387. What this "fairness" argument ignores,

however, is the fact that Microsoft acquired control over the dominant browser wrongfully; this exclusive control is the "fruit" of Microsoft's illegal actions that must be denied to Microsoft under the Court of Appeals' opinion. *Microsoft*, 253 F.3d at 103. A remedy that failed to strip Microsoft of the advantage that it has gained through its illegal acts would be legally insufficient.

1117. Microsoft's argument that Remedy 12 confiscates its intellectual property and reduces its incentives to innovate is also wrong as a factual matter. Bill Gates claimed that Remedy 12 "would divest Microsoft of any significant opportunity to seek reward from its investment" in Browser software. Gates Dir. ¶ 396. This argument, of course, ignores the fact that Microsoft does not charge and never has charged customers separately for its Browser software. Shapiro Dir. ¶ 102. In fact, when asked on cross-examination to identify the financial returns that have accrued to Microsoft as a result of its development of its Browser software, or even to answer whether Microsoft's investments in Internet Explorer had yielded a profit, Gates was unable to give an answer that distinguished the returns generated by Internet Explorer from the returns generated by the Windows operating system, generally. Tr. 5011:6-5013:6 (Gates).

1118. Under Remedy 12, Microsoft will be able to earn a return on its Browser investment just as it does today—through its licensing of the Windows operating system. Shapiro ¶ 102. Thus, under Remedy 12, even after Internet Explorer is open-sourced, Microsoft will continue to have the same strong incentives to develop Browser code that works well with Windows that drive its Browser investments today. *Id*. Microsoft's argument that the imposition of Remedy 12 would reduce Microsoft's research and development and somehow result in the elimination of Microsoft's workforce is a "doomsday" argument that is flatly inconsistent with the facts.

2. States' Remedy 12 Will Not "Fragment" Browser Compatibility

1119. Microsoft's next basis for contesting States' Remedy 12 is its claim that the open-sourcing of Microsoft's Browser software would lead to fragmentation, increasing the time and money that ISVs and Web site developers must spend to ensure that their products work with Internet Explorer. Gates Dir. ¶ 393. Microsoft's arguments on this point are specious.

1120. First, Microsoft attempts to liken the open-sourcing of Internet Explorer under Remedy 12 to Netscape's decision to open-source Navigator in the Mozilla project. Elzinga Dir. ¶ 109. As Professor Shapiro noted, the manner in which Netscape open-sourced its browser software created a risk of incompatibilities, and proved to be a largely unsuccessful undertaking. Tr. 3538:22, 3546:1-13 (Shapiro). Microsoft's warnings of fragmentation of its Browser software under Remedy 12, however, completely ignore the real-world market forces that exist today and how they would likely drive the further development of Microsoft's Browser software were it open-sourced.

1121. At the time Netscape began the Mozilla project, Navigator was no longer the dominant browser, and Netscape was backing away from further browser development. Tr. 3543:15-3544:4 (Shapiro). Thus, developers did not have strong incentives to maintain compatibility with the Mozilla specifications. To the contrary, platforms like Linux and the Palm OS are at a competitive disadvantage today precisely because they cannot offer their customers access to Internet Explorer; their incentives, were Internet Explorer open-sourced, would be to create a browser that is compatible with the industry standard, not to attempt to fragment that standard. Tiemann Dir. ¶ 112; Mace Dir. ¶ 99. In fact, ported and customized versions of Microsoft's Browser software would remain useful, and therefore marketable, only to the extent that they remain compatible with Microsoft's ongoing developments. Tr. 3539:9-12 (Shapiro).

1122. Second, in making its fragmentation argument, Microsoft neglects to mention that, unlike Netscape in the Mozilla project, Microsoft will retain a unique ability to influence the direction in which its Browser software evolves, even after it is open-sourced under Remedy 12. Tr. 3539:24-3540:9 (Shapiro); 3543:15-3544:4 (Shapiro). Because Microsoft possesses superior knowledge of the Browser software, but also because of the power it wields in the industry as a result of its operating system monopoly, any third parties developing the open-source Browser code will likely still look to the direction Microsoft is taking when considering the extent to which it makes sense, from a business perspective, to customize the Browser. Tr. 3539:24-3540:14, 3543:24-3544:4 (Shapiro).

1123. Third, Microsoft's argument about the perils of browser fragmentation ignores the fact that there are numerous versions of Internet Explorer already present in the market today—in fact, Gates admitted on cross examination that there are "nine or ten" different versions of Internet Explorer currently in use. Tr. 5013:7-11 (Gates). Although Gates would not admit that this constitutes "fragmentation," the fact remains that these nine or ten different versions of Internet Explorer currently in use expose different numbers of APIs, Tr. 5013:22-5014:6 (Gates), and thus the type of problems Microsoft claims would result from Remedy 12 are already in existence, and being dealt with effectively, today.

3. "Browser" Is Properly Defined for Purposes of States' Remedy 12

1124. Finally, Microsoft complains that the term "Browser," as defined in States' Remedy 22.e and utilized in States' Remedy 12, is flawed because (1) it is supposedly so vague that Microsoft would not know which software to open-source; and (2) it improperly includes the code for MSN Explorer in addition to IE. Again, these arguments do not have merit.

1125. First, several Microsoft witnesses, including Mr. Gates and Dr. Bennett, expressed their bewilderment over the term "Browser," which is defined in the Remedy as

"Internet Explorer 6.0, MSN Explorer 6.10, or their successors . . . offered on either Macintosh or Windows." *See* Gates Dir. ¶ 389; Bennett Dir. ¶ 124. It is puzzling that Microsoft's top executive and one of its computer-science experts feel that "Internet Explorer 6.0" and "MSN Explorer 6.10" do not provide content to the definition of "Browser," given that (1) both of these are the names of specific Microsoft software products, and (2) Microsoft's Remedy, which both witnesses support, defines "Microsoft Middleware Product" in Section VI.K. in terms of "the functionality provided by Internet Explorer," and functionality that is "a version of a Microsoft Middleware Product (such as Internet Explorer 5.5)." The definition of "Browser" is not vague, and in fact could not be more specific without going so far as to name each of the specific software files included in the products.

1126. Second, Mr. Gates incorrectly insinuated that MSN Explorer, which includes proprietary client code used to access certain MSN services in addition to the basic Internet Explorer code, was included in the definition of "Browser" to benefit AOL. Gates Dir. ¶¶ 399-401. The reason that MSN Explorer 6.10 and its successors are included in the definition of "Browser" is that MSN Explorer provides the same functionality as Internet Explorer. DX 1530 at 144:19-145:3. If the definition of "Browser" were limited to the Internet Explorer 6.0 product and its successors, Microsoft could completely subvert the effect of the remedy simply by ceasing to support that product and relying exclusively on MSN Explorer instead. DX 1530 at 145:9-16. Thus, MSN Explorer must necessarily be included in the definition of "Browser" in order to effectuate the purpose of Remedy 12.

1127. Additionally, this assertion is also puzzling because it is not clear in the first place why AOL, which has its own proprietary client software and has been far more successful than MSN in the IAP marketplace, would be interested in Microsoft's client software.

XIX. States' Remedy 13—Java Distribution

A. Purpose of States' Remedy 13

1128. States' Remedy 13, which requires Microsoft to distribute a compliant version of the cross-platform Java middleware, remedies specific anticompetitive acts by Microsoft that were intended to eliminate, and succeeded in seriously crippling, the competitive threat posed by the Java platform. Remedy 13 will help re-establish the competitive threat posed by Java, which can enable computer applications to run on multiple operating systems without the need for porting, and will therefore help lower the applications barrier to entry that sustains Microsoft's monopoly. *See Microsoft*, 253 F.3d at 55-56.

1. Java Is Cross-Platform Middleware that Threatens Microsoft's PC Operating System Monopoly by Breaking Down the Applications Barrier to Entry

1129. As the Court of Appeals and District Court recognized, the desktop Java platform is cross-platform middleware that, by exposing its own APIs, has the potential to cause software developers to be indifferent with regard to which operating system is running on a PC; hence, Java threatens Microsoft's PC operating system monopoly by helping to break down the applications barrier to entry. *Microsoft*, 253 F.3d at 53; *Microsoft*, 84 F. Supp. 2d at 28, 30, 110, Findings Nos. 68, 77, 407.

1130. The Java platform includes a programming language; a set of Java APIs provided in class libraries; a compiler that translates Java-based source code (instructions written by, and understandable to, software developers) into Java-based byte code (instructions that the computer can understand); and a Java virtual machine ("JVM") that translates Java-based byte code into instructions that the underlying operating system can understand. The JVM and the set of Java class libraries used by a Java-based application running on the JVM compromise the Java runtime environment ("JRE"). A Java-based application can only operate effectively on a

particular computing device if a compatible JRE is installed. Green Dir. ¶ 13; Tr. 359:20-361:16 (Green); *Microsoft*, 84 F. Supp. 2d at 29-30, Findings Nos. 73-77. (The terms "JRE" and "JVM" are sometimes used interchangeably to refer to the Java platform. *See* Green Dir. ¶ 13.)

1131. The JRE is a middleware platform on which applications run. It was designed to run on a number of different operating systems so that applications developers could write Java-based applications that would operate effectively with any of those different operating systems. Hence, the Java platform lowers the cost of porting applications to different operating systems, because applications written to cross-platform Java's APIs will run on any operating system to which the JRE itself has been ported. Moreover, Java lowers the cost of substituting one operating system for another, because an individual or enterprise seeking to switch its operating system need not purchase new applications or convert its data files, to the extent that its current applications were written to cross-platform Java rather than the underlying operating system itself. Green Dir. ¶¶ 12, 47-55, 71-75; Tr. 181:21-182:8, 199:17-200:4 (Green).

1132. Given "the evolution of the software industry over the past few years, as exemplified by Microsoft's own strategy," it is, by now, all but indisputable that Java "could have matured into, or helped enable, significant competition for Windows . . . ." Shapiro Dir. ¶ 83. But Microsoft's illegal tactics took "critical momentum away from Java." *Id.* ¶ 83. This denied "Java the ability to take advantage of self-reinforcing favorable network effects." *Id.* ¶ 82 & n.61.

2. States' Remedy 13 Addresses Specific Anticompetitive Acts by Microsoft

1133. States' Remedy 13 directly addresses Microsoft's anticompetitive acts that undermined the Java platform and its ability to lower the applications barrier to entry. The Court

of Appeals held that three specific acts against Java, intended "to contain and to subvert Java technologies," *Microsoft*, 253 F.3d at 58, violated the Sherman Act.

1134. *First*, Microsoft entered into First Wave agreements that granted ISVs early access to Windows beta versions and technical information, and the right to use certain Microsoft seals of approval, in exchange for the ISVs' agreements to: (i) make their applications reliant on Microsoft's Windows-specific Java rather than cross-platform Java, and (ii) refrain from distributing JVMs that complied with Sun's cross-platform standards. As the Court of Appeals held: "[I]n exchange for costly technical support and other blandishments, Microsoft induced dozens of important ISVs to make their Java applications reliant on Windows-specific technologies and to refrain from distributing to Windows users JVMs that complied with Sun's standards." *Microsoft*, 253 F.3d at 75 (quoting *Microsoft*, 84 F. Supp. 2d at 108-09, Finding No. 401).

1135. *Second*, Microsoft "deceived Java developers regarding the Windows-specific nature of [its Java development] tools." *Microsoft*, 253 F.3d at 76. As a result, "developers who relied upon Microsoft's public commitment to cooperate with Sun and who used Microsoft's tools to develop what Microsoft led them to believe were cross-platform applications ended up producing applications that would run only on the Windows operating system." *Id.*; *accord Microsoft*, 84 F. Supp. 2d at 106-08, Findings Nos. 394, 398.

1136. *Third*, "Microsoft threatened Intel that if it did not stop aiding Sun on the multimedia front [thereby enhancing the capabilities of cross-platform Java], then Microsoft would refuse to distribute Intel technologies bundled with Windows." *Microsoft*, 253 F.3d at 77. Thus, Microsoft forced Intel to abandon its work in developing a high-performance, cross-

platform version of Java by threatening to withhold support for forthcoming Intel technologies and products. *Id.*; *Microsoft*, 84 F. Supp. 2d at 107, 109-10, Findings Nos. 396, 404-06.

1137. The District Court also found that, prior to Microsoft's anticompetitive acts directed against the Netscape Navigator browser, Navigator was the primary distribution vehicle for cross-platform Java. *Microsoft*, 84 F. Supp. 2d at 30, Finding No. 76; *see also* Green Dir. ¶ 16; Schwartz Dir. ¶ 64. Hence, Microsoft's conduct toward Navigator had a profound, negative effect upon the distribution of cross-platform Java, and severely diminished competition with Microsoft's non-standard, Windows-specific Java runtime environment. *See* Green Dir. ¶¶ 16, 98-103; Schwartz Dir. ¶ 64.

1138. The Court of Appeals found that Microsoft's exclusionary "First Wave" agreements, with the backdrop of its anticompetitive conduct toward Navigator, had the effect of foreclosing Java from a substantial portion of the market:

> [T]he record indicates that Microsoft's deals with the major ISVs had a significant effect upon JVM promotion. As discussed above, the products of First Wave ISVs reached millions of consumers. . . . Moreover, Microsoft's exclusive deals with the leading ISVs took place against a backdrop of foreclosure: the District Court found that "[w]hen Netscape announced in May 1995 [prior to Microsoft's execution of the First Wave Agreements] that it would include with every copy of Navigator a copy of a Windows JVM that complied with Sun's standards, it appeared that Sun's Java implementation would achieve the necessary ubiquity on Windows." *Findings of Fact* § 394. As discussed above, however, Microsoft undertook a number of anticompetitive actions that seriously reduced the distribution of Navigator, and the District Court found that those actions thereby seriously impeded distribution of Sun's JVM. *Conclusions of Law*, at 43-44. Because Microsoft's agreements foreclosed a substantial portion of the field for JVM distribution and because, in so doing, they protected Microsoft's monopoly from a middleware threat, they are anticompetitive.

Microsoft, 253 F.3d at 75-76.

1139. The results of these behaviors were: (1) Microsoft gained control over the browser, the most important distribution channel for JREs, Green Dir. ¶¶ 96-109; (2) ISVs that

might have otherwise written to, or distributed, cross-platform Java instead wrote to and distributed Microsoft's non-cross-platform Java because of the exclusive First Wave agreements, *Microsoft*, 84 F. Supp. 2d at 108-09, Finding No. 401; (3) software developers were left with little incentive to write desktop applications using Java because the distribution of Windows and of Microsoft's incompatible JRE dwarfed that of cross-platform Java, Green Dir. ¶¶ 18, 117; and (4) compatible JREs are no longer present on most desktop PCs, Tr. 382:21-383:6 (Green).

1140. Moreover, Java ran on the Linux operating system, and its loss directly reduced Linux's viability as a competitor to Microsoft on the desktop. Tiemann Dir. ¶ 118.

3. Microsoft's Anticompetitive Acts Toward Java Have Strengthened the Applications Barrier to Entry

1141. Java has the potential to lower significantly the applications barrier to entry and thereby enable competition in the desktop operating system market over which Microsoft exerts monopoly power. *Microsoft*, 84 F. Supp. 2d at 29, Finding No. 74; Green Dir. ¶ 23. But broad distribution of compatible JREs is necessary for Java to realize its potential. Without a large base of users able to run Java programs, developers will have little incentive to create Java-based applications for the desktop (which, because they are written to cross-platform APIs, are able to run on multiple operating systems). Green Dir. ¶¶ 18, 96, 117; Shapiro Dir. ¶ 129; Tr. 294:19-296:6 (Green) (noting that the viability of a platform is directly a function of the unit volume of that platform). Indeed, if no middleware platform is distributed nearly as widely as Windows, developers will have little or no economic incentive to create applications for any desktop platform other than Windows. Green Dir. ¶ 36; *see Microsoft*, 84 F. Supp. 2d at 20, Finding No. 38.

1142. Microsoft's anticompetitive acts have greatly reduced the market share of the compliant Java platform. Prior to Microsoft's anticompetitive acts, cross-platform Java had

enjoyed close-to-ubiquitous distribution on desktops by virtue of Sun's agreement with Netscape to distribute cross-platform Java with Navigator. *Microsoft*, 84 F. Supp. 2d at 30, Finding No. 76; Green Dir. ¶ 103; Schwartz Dir. ¶ 67. As a result of Microsoft's illegal acts to undermine Navigator, however, there is no longer widespread distribution of the Java platform to PCs, nor is there a competing channel for such distribution, because Internet Explorer does not have a significant rival in the browser market. Schwartz Dir. ¶ 67. Currently, compatible JREs are on a very small percentage of Windows-based PCs. Tr. 382:21-383:6 (Green).

1143. Microsoft's anticompetitive conduct took critical momentum away from Java at a time when it was poised to become a platform competitor to Windows. Shapiro Dir. ¶ 83. Java's "write once, run anywhere" paradigm was a "game-changing" technology that would have allowed developers to develop platform-independent applications. For example, desktop Java ran on the Linux PC operating system, and it would have made Linux more competitive by freeing software developers from their dependence upon Windows APIs. Tr. 1104:15-1105:16, 1164:23-1166:2 (Tiemann); Tiemann Dir. ¶ 118. Thus, Linux was poised to benefit significantly from the cross-platform nature of Java, because applications developed in cross-platform Java would run on both Windows and Linux. Had such development occurred, the applications barrier to entry would have been weakened, helping to enable Linux to compete with Windows on the merits. But because of Microsoft's illegal conduct, cross-platform Java did not achieve widespread distribution on the desktop, and therefore did not attract significant applications development. This, in turn, significantly reduced Linux's viability as a competitor to Windows. Tiemann Dir. ¶ 118. Today, Linux has less than 2% of the Intel-based PC operating system market, compared to Microsoft Windows' 95% market share. Tiemann Dir. ¶ 31.

1144. Moreover, Microsoft's acts against Java hurt a large number of PC software developers who depended upon the continued viability of the Java platform. To take one example, the removal of Java from Windows-based PCs causes significant harm to the Unified Messaging Service ("UMS") developed by SBC Communications, Inc. Pearson Dir. ¶ 101. To take another example, the software developed by Liberate Technologies relies upon a Java-based standard, and therefore depends upon the continued existence of Java. Kertzman Dir. ¶¶ 76-78.

1145. Microsoft's illegal conduct had the effect of strengthening the applications barrier to entry, Shapiro Dir. ¶ 22, in part because it disrupted Java's ability to facilitate the writing of platform-independent applications, Shapiro Dir. ¶ 82, and in part because it steered developers toward Microsoft's incompatible Java, which resulted in the creation of more Windows-only applications. *See Microsoft*, 253 F.3d at 75-76; *Microsoft*, 84 F. Supp. 2d at 108, Finding No. 398; Green Dir. ¶ 110.

4. Java Remains a Potentially Viable Middleware Platform Threat to the Microsoft Monopoly If Its Distribution Is Restored

1146. Despite Microsoft's anticompetitive conduct, Java has the potential to become once again a PC-based middleware platform capable of eroding the applications barrier to entry that helps sustain Microsoft's monopoly. Green Dir. ¶¶ 23, 128. To do so, however, its distribution must be restored to levels that will once again provide ISVs the economic incentives to create Java-based desktop applications. Green Dir. ¶ 128.

a. Java Has the Potential To Be a Viable Desktop Middleware Platform

1147. There are still some desktop applications that use and rely upon the Java platform. For example, Microsoft witness Scott Borduin testified that his company, Autodesk, markets software products that require Java to be present on the desktop in order to execute. Tr. 4178:3-22 (Borduin). Mr. Borduin was "displeased" when Microsoft decided to stop distributing

a JRE with its latest version operating system product, Windows XP. *Id.* Mr. Borduin believed that Microsoft's decision to drop Java was not good for Autodesk's customers or its software engineers, and he asked Microsoft to reverse its decision. PX 1341, at 2; Tr. 4180:6-25 (Borduin). He also believed that Microsoft's decision to drop Java was merely "a transparent way to try to get people to move to the .NET environment, and therefore a heavy handed way of pushing the development community . . . ." Tr. 4178:10-4180:9 (Borduin); PX 1341. Mr. Borduin agreed that he would like to see a Java virtual machine included in every Windows environment for a long period of time, and testified that he "would like [a] for Java virtual machine to be consistently available." Tr. 4188:19-4189:1 (Borduin).

1148. Despite its limited distribution in the PC market, Java remains very popular in non-PC markets. The current version of Java for servers, Java 2 Enterprise Edition ("J2EE"), is very successful, and Java has become a leading platform for Web services. Green Dir. ¶¶ 121-25; Shapiro Dir. ¶ 128. However, many Java server-based applications also need Java on the desktop in order to function fully and effectively. Green Dir. ¶ 80; Tr. 383:7-383:18, 384:3-8 (Green); Schwartz Dir. ¶¶ 145-48. And ISVs are disinclined to write Java applications if Java is not also present on the desktop. Shapiro Dir. ¶¶ 128-30.

1149. Because of Java's success in various non-PC markets, it remains a powerful platform with a very large base of software developers currently writing in the Java language. Shapiro Dir. ¶¶ 128-30; Green Dir. ¶¶ 119-28; Tiemann Dir. ¶ 120; Tr. 382:11-22 (Green). There exists a large community of software developers skilled in writing Java code. If they can be assured that cross-platform Java will achieve and maintain widespread distribution, Java development will likely resume, as it had promised to do prior to Microsoft's anticompetitive acts. Tiemann Dir. ¶ 120; Green Dir. ¶ 140.

b. The Remedy Must Ensure Widespread Distribution of Java If It Is to Once Again Be a Viable Platform Competitor

1150. Due to the serious setback caused by Microsoft's illegal conduct, cross-platform Java today lacks sufficient desktop market share to be a serious platform competitor to Windows. Shapiro Dir. ¶¶ 129-30. While the mandatory distribution of Java will not make up for the years in which Microsoft operated without this competitive threat, Green Dir. ¶ 22, it will help provide software developers with confidence in Java's ubiquity so that they have the choice and incentive to write to Java's APIs rather than Windows' APIs. Kertzman Dir. ¶ 80; Shapiro Dir. ¶ 130; Green Dir. ¶ 128.

1151. A remedy that ensures Java's widespread distribution is necessary because Java currently lacks an economically feasible means to re-establish its market share absent a mandatory distribution remedy. Green Dir. ¶ 106. *First*, Microsoft itself does not currently distribute a compliant, cross-platform JRE (or indeed any JRE) with Windows XP or Internet Explorer 6.0. Green Dir. ¶ 107; Pearson Dir. ¶ 101; Schwartz Dir. ¶ 66; Shapiro Dir. ¶ 129; Tr. 6577:1-7 (Allchin). Indeed, Microsoft has refused Sun's offers to provide it with a free, compatible JRE for distribution with Microsoft's browser and operating system products. Green Dir. ¶ 19; Tr. 216:3-20 (Green). Microsoft could distribute the current desktop JRE at no cost under the standard Java licensing agreement, Green Dir. ¶ 108; Schwartz Dir. ¶¶ 151-52, and nothing in the Settlement Agreement reached in the Sun-Microsoft litigation in California prevents Microsoft from distributing a current, compliant JRE. Green Dir. ¶ 19 n.2; Tr. 372:24-373:4 (Green); PX 1157 (under seal); Tr. 6576:22-25 (Allchin).

1152. *Second*, distribution by OEMs is not an economically practical mechanism. The five largest OEMs have 60-70% market share, but the remaining 30-40% of the desktop market is fragmented among thousands of small companies, making it economically infeasible to make

agreements with enough OEMs to approximate Microsoft's distribution of its platforms. Green Dir. ¶ 105. Moreover, OEMs are unlikely to distribute cross-platform Java because many of them already distribute Microsoft's incompatible JRE, which currently enjoys the largest installed base because it was distributed with Internet Explorer. Green Dir. ¶ 105; Tr. 300:7-301:8 (Green).

1153. *Third*, Java's former primary distribution channel, Netscape, is no longer a viable option because Microsoft's acts have greatly reduced Navigator's market share. Green Dir. ¶¶ 96-101; Schwartz Dir. ¶ 67.

1154. *Fourth*, downloading a JRE from the Internet is not a feasible means for ensuring widespread distribution because of the amount of time required for download over a typical dial-in Internet connection. Green Dir. ¶ 104; Tiemann Dir. ¶ 121; Tr. 4181:14-4182:16 (Borduin); PX 1341.

1155. Even if widespread distribution is achieved, for Java to be successful there also must be assurances that this level of distribution will last for a sufficiently long period of time. ISVs must be assured that the Java platform will be present on enough desktops for a long enough time period to allow them to recoup their investment in developing Java-based applications. Otherwise, they will not have an economic incentive to create desktop Java applications. Tr. 219:7-20 (Green). Ten years is an appropriate period of time to provide the necessary incentives to ISVs. Green Dir. ¶ 140; Kertzman Dir. ¶ 80.

1156. Requiring the mandatory distribution of Java with Windows and Internet Explorer would greatly facilitate the writing of cross-platform applications, thereby diminishing the applications barrier to entry. Green Dir. ¶ 138; Shapiro Dir. ¶ 130. Over time, as desktop

applications developers begin to write their programs in a cross-platform environment, Windows competitors such as Linux will benefit substantially. Tiemann Dir. ¶¶ 119-20.

1157. The effect of helping to ensure broad distribution of cross-platform Java will be to foster competition in the PC operating system market, because software developers would be free to choose whether to write to an operating system's platform-specific APIs (which may in some instances enable a range of functionality more attractive to a particular developer), or to Java's cross-platform APIs (which would increase the application's total market potential because it could run on numerous operating systems). Green Dir. ¶¶ 52-53. Thus, end users, developers, operating system manufacturers, and hardware manufacturers all would benefit. Tr. 173:2-19, 200:23-201:9 (Green).

B. How States' Remedy 13 Achieves Its Intended Purpose

1158. States' Remedy 13 requires Microsoft to distribute, free of charge, an already-created, compatible version of Java with each Windows Operating System Product and Internet browser it distributes. States' Remedy 13; Green Dir. ¶ 134. This obligation continues for ten years.

1159. Microsoft will have no obligations under States' Remedy 13, however, unless a compliant JRE is available to Microsoft at no charge and on reasonable terms and conditions, ninety days before the commercial release of a new version of the Windows Operating System Product or Internet Browser. States' Remedy 13; Tr. 381:15-382:3 (Green); DX 1530, at 146:18-147:5 (Greene deposition). Sun is willing to make such a compliant JRE available to Microsoft for this purpose at no charge, per its standard binary license agreement. Green Dir. ¶ 135; Schwartz Dir. ¶¶ 151-52. Compliant JREs are also currently distributed by several companies other than Sun, at no charge, pursuant to uniform licensing terms, and these

companies could also potentially supply compliant JREs to Microsoft. Green Dir. ¶¶ 87-88, 136; Tr. 380:6-25 (Green).

1160. The JRE provided by Sun or any other provider of a compatible JRE will have been tested for compatibility with the Java specification prior to receipt by Microsoft; therefore, Microsoft will not be required to perform any implementation or compatibility testing of the JRE. Green Dir. ¶¶ 135-36; Tr. 324:14-20, 327:22-328:9, 381:1-14 (Green). All companies who build technology as part of the Java standard have a technology compatibility kit, or "TCK," and can thus perform the requisite testing to ensure that their JRE meets the criteria for compatibility with the cross-platform Java specification. Tr. 174:3-9 (Green).

1161. Hence, Microsoft is not required to create the JRE that it must distribute (although it is free to do so), nor is it required to accept Sun's JRE (although it will be free to do so), nor is it required to pay for the license to distribute the JRE. *See* States' Remedy 13.

1162. States' Remedy 13 is a low-cost way to help restore the threat posed by Java prior to Microsoft's illegal conduct. By availing software developers of the option to write cross-platform applications, States' Remedy 13 will increase choice to software developers and end users, and increase competition. Shapiro Dir. ¶ 131; Green Dir. ¶ 138; Tr. 203:2-19 (Green).

C. Microsoft's Remedy Fails To Address Microsoft's Anticompetitive Conduct With Respect to Java

1163. In contrast to the States' Remedy, Microsoft's Remedy contains no provision that specifically addresses or remedies Microsoft's anticompetitive conduct directed toward the Java platform. Microsoft's Remedy does nothing to help put the Java platform in the position it would have occupied had Microsoft not acted illegally to undermine it. Green Dir. ¶ 129; Kertzman Dir. ¶ 77; Schwartz Dir. ¶ 189. Microsoft's Remedy does nothing to restore the desktop distribution channels for Java. Green Dir. ¶ 129. Nor does it address or prohibit

Microsoft's deception of software developers concerning its Java development tools. *Id.* In short, it does nothing to restore the Java desktop platform that the Court of Appeals and the District Court found to pose a potential competitive threat to Microsoft's PC operating system monopoly. *Id.*

D. States' Remedy 13 Meets the Court of Appeals' Objectives for Relief

1164. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

1165. States' Remedy 13 mandates the wide distribution of competing middleware that constitutes a platform threat capable of supporting a rich array of general purpose applications. It thus achieves the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by reducing directly the applications barrier to entry in order to restore that barrier to the level it would have been absent any unlawful conduct.

1166. Moreover, Microsoft engaged in specific illegal conduct that was intended to eliminate the competitive threat posed by Java, and largely succeeded in this goal. Remedy 13 will ensure that Microsoft does not benefit from the fruits of its statutory violation, a stronger applications barrier to entry gained at the expense of the near-elimination of Java from desktops.

E. Microsoft's Criticisms of States' Remedy 13

1167. Microsoft has attempted to criticize States' Remedy 13 on various grounds. None of these criticisms points to any weakness in the proposal, nor does any provide a reason not to impose a remedy requiring Microsoft to distribute a compatible JRE with all new versions of Windows and its Internet browsers.

1. States' Remedy 13 Does Not Provide a Special Benefit to Sun

1168. Microsoft Chairman Bill Gates testified that States' Remedy 13 "singles out a proprietary technology from a particular company, Sun Microsystems, and grants it special treatment." Gates Dir. ¶ 402. This criticism is without merit.

1169. *First*, Java technology is not proprietary to Sun. Although in two limited and rarely occurring instances Sun retains certain veto rights over changes to the Java platform, the Java specifications are in all respects controlled by the Java Community Process ("JCP"), an industry standards body of which Sun is one five hundred members, all of whom have the right to contribute and make changes to the Java standards. Numerous companies aside from Sun have intellectual property rights in Java. Moreover, Java is publicly available at no cost and on uniform licensing terms, and is distributed by a number of companies other than Sun. Green Dir. ¶¶ 85-92; Green Supplemental Direct Testimony (PX 1514); Tr. 316:1-7, 362:7-20 (Green).

1170. *Second*, Microsoft is not required to obtain a compatible JRE from Sun; rather, Microsoft may obtain a JRE from any number of vendors who currently produce Windows-compatible JREs that comply with the standards set by the JCP. Green Dir. ¶ 88 & Fig. 20; Tr. 380:6-25 (Green). Microsoft may also opt to create its own compatible JRE to distribute along with Windows and its Internet browsers. *See* States' Remedy 13.

2. States' Remedy 13 Serves a Vital Purpose

1171. Mr. Gates also testified that because OEMs are already free to install any Java runtime that they want, a Java distribution remedy serves "no practical purpose." Gates Dir. ¶ 403. While it is true that OEMs could install compatible JREs, they currently have little incentive to do so, and thus the compatible JRE is unlikely to receive the broad distribution it needs to become once again a platform competitor. States' Remedy 13 serves the vital purpose of ensuring Java's widespread distribution.

1172. Microsoft's incompatible JRE currently enjoys the largest installed base because it was distributed with Internet Explorer. Green Dir. ¶ 105. As a result of Microsoft's deception with respect to its development tools, and Microsoft's effective conduct in reducing the market share of desktop Java, many existing Java desktop applications are written to run on the incompatible Microsoft JRE and therefore may or may not run on the standard, cross-platform JRE. *See* Green Dir. ¶ 105. OEMs therefore currently have a positive incentive to carry the out-of-date Microsoft JRE, as evidenced by the fact that several OEMs have opted to do so even though Microsoft's JRE is not included on the installation disks for Windows XP. Green Dir. ¶¶ 105, 109; Allchin Dir. ¶ 75; Tr. 6579:12-6580:14 (Allchin). No similar incentive exists with respect to the compatible JRE—that is, OEMs have no incentive to install a JRE that is not included in Microsoft's Windows installation disks and for which there do not currently exist many desktop applications. *See* Green Dir. ¶ 105.

1173. Java needs broad distribution if it is to attract developers who would otherwise create applications for Windows, because developers generally write for the platform with the largest distribution. *Microsoft*, 84 F. Supp. 2d at 20-21, Finding No. 41; Tr. 201:18-202:22 (Green). Thus, if uncertainty exists as to the extent of Java distribution—how widespread will it be and for how long—developers will not have the proper incentives to write to the Java platform. Green Dir. ¶¶ 139-40. On the other hand, if developers can be certain that cross-platform Java will be nearly ubiquitous on desktop PCs for a significant length of time, they can choose whether to write to Java's cross-platform APIs. *Id.* ¶¶ 52-53.

3. States' Remedy 13 Does Not Expose Microsoft to Intellectual Property Infringement Risk

1174. Mr. Gates also speculates that States' Remedy 13 "would expose Microsoft to substantial intellectual property infringement risk"—that if the JRE Microsoft were required to

distribute violated any patent, Microsoft could be sued. Gates Dir. ¶ 405; *see also* Tr. 5019:4-5020:17 (Gates).

1175. This criticism ignores the plain terms of Remedy 13, which requires that the JRE be provided to Microsoft "on reasonable terms and conditions." This language would permit Microsoft to require the supplier of the compliant JRE to provide the types of intellectual property representations and protections that are customary in licensing agreements in the software industry. DX 1530, at 154:7-156:18 (Greene deposition); *see also* Tr. 6577:8-6579:6 (Allchin) (Microsoft is very careful in entering licenses to distribute third-party software as part of the Windows Operating System Product).

4. States' Remedy 13 Does Not Enable Sun to Sabotage Microsoft

1176. Mr. Gates testified that nothing in States' Remedy 13 prevents Sun from supplying a JRE that is incompatible with Windows, that is excessively large, or that is of poor quality. Gates Dir. ¶¶ 406-10. But Mr. Gates's claim that "Sun could easily include specifications that would render any compliant Java runtime environment incompatible with Windows," Gates Dir. ¶ 406; *see also* Tr. 5022:14-5024:3 (Gates), is belied by the language of States' Remedy 13, which requires that the JRE distributed by Microsoft be "a competitively performing Windows–compatible version of the Java runtime environment." A JRE that is incompatible with Windows, or excessively large, or of poor quality would not meet this condition, and Microsoft would not be obligated to distribute such a JRE under Remedy 13. Schwartz Dir. ¶¶ 151-152. Moreover, the "reasonable terms and conditions" language of Remedy 13 would allow Microsoft to reject any JRE that was altered in respects that are outside the scope of what would be considered the normal evolution of the Java specification. States' Remedy 13; DX 1530 at 156:19-158:21 (Greene deposition).

5. States' Remedy 13 Will Enable Java To Compete with the .NET Framework on the Merits

1177. Jim Allchin, Microsoft's Group Vice President for Platforms, has criticized Java for being an outdated and limited technology in comparison to .NET. Allchin Dir. ¶¶ 66-72. The criticism is inaccurate and in any event does not constitute a reason not to mandate the distribution of a cross-platform JRE with Windows and Internet Explorer.

1178. The .NET framework imitates many of the features of Java, Green Dir. ¶ 116; Tr. 273:11-22 (Green), as even one of Microsoft's own witnesses has testified. Tr. 4183:12-15 (Borduin). Like the Java platform, the .NET platform is middleware and exposes APIs such that, if ported, the .NET framework could enable applications written to it to run on multiple operating systems. But unlike Java, the .NET framework runs only on Windows. Schwartz Dir. ¶¶ 76-77; Tr. 6564:23-6565:1 (Allchin); Tr. 387:6-14 (Green); Tr. 4184:15-17 (Borduin). Although Microsoft claims to have submitted its C# language and the standards for the common language infrastructure to the industry standards body known as ECMA, these are merely parts of the .NET platform. Microsoft has not submitted the full .NET platform to any standards body, Tr. 6565:15-17 (Allchin), nor made its source code available to the public, Tr. 6567:16-19 (Allchin). And Microsoft has not yet decided whether it will make the .NET platform available on any platform other than Windows. Tr. 6569:5-24 (Allchin); Tr. 223:25-224:11, 227:16-228:17 (Green). Thus, applications written to run on the .NET framework will run only on Windows, thereby further strengthening the applications barrier to entry. Green Dir. ¶ 118.

1179. Java reduces porting and switching costs; enables software developers to choose between the virtues of certain platform-specific APIs and the cross-platform nature of Java's APIs; and improves the ability of non-Windows operating systems to compete for a share of the Intel-based PC market. Green Dir. ¶ 55. It is specifically designed and ideally suited to the

creation, distribution, and secure execution of applications for distributed network computing. Green Dir. ¶¶ 56-70; Tr. 207:3-18 (Green).

1180. Numerous ISVs continue to depend on Java and would benefit from its widespread distribution. Kertzman Dir. ¶ 77; Pearson Dir. ¶¶ 99-100; Tiemann Dir. ¶120; Tr. 4178:3-22, 4188:19-4189:1 (Borduin); PX 1341 (discussing "three major initiatives heavily dependent on Java today").

1181. By diminishing competition in the distribution of Java runtime environments, Microsoft was able to retard the deployment of upgraded Java platforms and to forestall the adoption of the latest, most competitive versions of Java. *See* Shapiro Dir. ¶ 130. Thus, to condemn Java for being outdated is to ignore both the substantial improvements in the platform since it first was introduced, and the extent to which Microsoft's own actions slowed Java's development as a platform. Schwartz Dir. ¶ 65; Shapiro Dir. ¶ 82; *see also Microsoft*, 84 F. Supp. 2d at 109-10, Findings Nos. 404-06.

1182. In any event, Mr. Allchin's criticism is wholly irrelevant, because nothing in States' Remedy 13 prevents Microsoft from continuing to develop .NET, distributing it with Windows, and competing with Java. States' Remedy 13; Green Dir. ¶ 139.

6. States' Remedy 13 Permits Sufficient Time for Microsoft To Ship a Compatible JRE with Each New Version of Windows

1183. Microsoft's expert Dr. Bennett claims that Remedy 13's 90-day time period between Microsoft's receipt of a compatible JRE and the commercial release of a new version of Windows is unreasonably short. He opined that 90 days would not allow sufficient time for the necessary testing of the Windows-compatible JRE. Bennett Dir. ¶ 129.

1184. Dr. Bennett's criticism is predicated upon a misreading of Remedy 13, which only requires Microsoft to distribute a JRE *if* one has been delivered to Microsoft that is already

compliant, competitively performing, and Windows-compatible. States' Remedy 13. All that is required of Microsoft under Remedy 13 is to include the Java binary in the Windows and browser products it distributes. Green Dir. ¶ 135. And because there are multiple suppliers of compliant JREs, Microsoft will be able to choose the version that it believes best meets these criteria, Green Dir. ¶ 136, although at least one supplier, Sun, has committed to supplying a JVM that meets the requirements of Remedy 13. Green Dir. ¶ 136.

XX. States' Remedy 14—Porting of Office

A. Purpose of States' Remedy 14

1185. Remedy 14 is one of several provisions of the States' Remedy (others, as explained elsewhere, include Remedy 12 and elements of Remedy 4) that seeks directly to lower the applications barrier to entry and restore the potential for competition to what it would have been absent Microsoft's unlawful conduct—that is, not by focusing on enabling middleware platform threats, but rather by acting directly on the applications barrier to entry in the monopolized market, the market for Intel-compatible PC operating systems.

1. Minimal Success by Rival Desktop Operating Systems in Competing with Microsoft's Windows

1186. As set forth more fully above, *see supra* Section II.B ("Other PC Operating Systems Have Failed to Overcome Successfully the Applications Barrier to Entry"), the District Court during the liability phase based its analysis of the applications barrier to entry primarily on IBM and Apple, Microsoft's main operating system competitors during the period at issue in the liability trial. The District Court explained that "[t]he experiences of IBM and Apple, Microsoft's most significant operating system rivals in the mid- and late 1990s, confirm the strength of the applications barrier to entry." *Microsoft*, 84 F. Supp. 2d at 22, Finding No. 45.

1187. As the District Court explained, IBM, for example, could not overcome the applications barrier in trying to compete despite spending tens of millions of dollars: "Thus, although at its peak OS/2 ran approximately 2,500 applications and had 10% of the market for Intel-compatible PC operating systems, IBM ultimately determined that the applications barrier prevented effective competition against Windows 95." *Microsoft*, 84 F. Supp. 2d at 22, Finding No. 46.

1188. Similarly, even though Apple was not in the Intel-compatible PC operating system market, the District Court still examined Apple's inability to compete effectively with Windows and traced that inability to the applications barrier to entry: "The inability of Apple to compete effectively with Windows provides another example of the applications barrier to entry in operation. Although Apple's Mac OS supports more than 12,000 applications, even an inventory of that magnitude is not sufficient to enable Apple to present a significant percentage of users with a viable substitute for Windows." *Microsoft*, 84 F. Supp. 2d at 22, Finding No. 47.

1189. As also set forth more fully above, *see supra* Section II.B ("Other PC Operating Systems Have Failed to Overcome Successfully the Applications Barrier to Entry"), the District Court also made findings concerning what were then described as the "fringe operating systems," including Linux, concluding that the applications barrier to entry prevents such non-Microsoft, Intel-compatible PC operating systems from "drawing a significant percentage of consumers away from Windows." *Microsoft*, 84 F. Supp. 2d at 22-23, Finding No. 48. The Court further concluded: "In practice, then, the open-source model of applications development may increase the base of applications that run on non-Microsoft PC operating systems, but it cannot dissolve the barrier that prevents such operating systems from challenging Windows." *Microsoft*, 84 F. Supp. 2d at 23-24, Finding No. 51.

1190. The District Court's finding that even the many open-source developers cannot "dissolve the [applications] barrier that prevents [Linux] from challenging Windows", *Microsoft*, 84 F. Supp. 2d at 24, Finding No. 51, remains true today. Tr. 1099:7-1105:12, 1116:2-1118:1, 1119:17-1120:6 (Tiemann). As also set forth more fully above, *see supra* Section II.B ("Other PC Operating Systems Have Failed to Overcome Successfully the Applications Barrier to Entry"), it is clear that these fundamentals persist and, if anything, have been worsened by

Microsoft's unlawful monopoly maintenance. Thus Microsoft's Windows currently has a share of over 95% of the Intel-compatible desktop operating system market, compared with Linux's share of less than 2%. Tiemann Dir. ¶ 31; Shapiro Dir. ¶¶ 105, 107; Tr. 1093:17-24 (Tiemann).

1191. One high water mark of Linux's efforts to compete on the desktop came in the Summer of 2000, when Dell entered into a program called the One Source Alliance with Red Hat, a leading distributor of the Linux operating system. Tiemann Dir. ¶¶ 36, 68; Tr. 1119:17-1121:14 (Tiemann). As described more fully above, *see supra* Section II.B ("Other PC Operating Systems Have Failed to Overcome Successfully the Applications Barrier to Entry"), after a period of only a few months—hardly long enough for a serious market test of a new product – Dell discontinued the offering. Tiemann Dir. ¶ 70; Tr. 1119:17-1121:14 (Tiemann). Red Hat has repeatedly been unable to convince major OEMs to pre-install Linux on a desktop. Tiemann Dir. ¶¶ 57, 83-85.

1192. As also discussed more fully above, *see supra* Section II.B ("Other PC Operating Systems Have Failed to Overcome Successfully the Applications Barrier to Entry"), Linux's lack of success as a rival in the desktop operating system market, moreover, stands in marked contrast to its success in the server operating system market (market share of roughly 28%). Tiemann Dir. ¶¶ 41-2, 52, 55; Shapiro Dir. ¶ 107; Tr.1094:22-1095:17, 1126:16-1127:12 (Tiemann). The difference in Linux's success as a competitor in the server operating system market and its total lack of success in the desktop operating system market confirms the importance of the applications barrier in preventing effective competition in the PC operating system market. *See* Tr. 1099:7-1105:12 (Tiemann). Even Linux, the most serious rival PC operating system available today, cannot today overcome the applications barrier to entry, as maintained and

enhanced by Microsoft, so as to meaningfully challenge the Windows monopoly. Shapiro Dir. ¶¶ 105, 108-9; Tr. 1094:22-1095:4, 1099:7-1105:12, 1116:2-1118:1 (Tiemann).

2. The Need to Lower Directly the Unlawfully Enhanced and Maintained Applications Barrier to Entry in Order to Restore the Potential for Competition in the PC Operating System Market

1193. As detailed above, Microsoft's illegal conduct significantly raised the entry barriers protecting its Windows desktop monopoly over where they would have been absent the illegal conduct. *See supra* Section II.E.2 ("Microsoft's Actions Maintained and Enhanced the Barrier to Entry"); *see also* Shapiro Dir. ¶¶ 7, 11-24. The Court of Appeals has described one of the challenges in crafting a remedy as *"restoring* competition to a dramatically changed, and constantly changing, marketplace." *Microsoft*, 253 F.3d at 49 (emphasis in original). To restore the potential for competition, the remedy needs to return the barrier to entry to a level consistent with what it would have been absent Microsoft's anticompetitive actions. Shapiro Dir. ¶¶ 7, 25-26, 45-47, 58.

1194. As set forth more fully above, *see supra* Section III.B ("The Appropriate Remedy Here Must Reduce the Applications Barrier to Entry to the Level It Would Have Been Absent Microsoft's Anticompetitive Conduct"), and as the Court of Appeals noted, it is difficult to determine with any great precision just how competition from existing rivals or new entrants would have played out over the past five or six years, had Microsoft not illegally impeded the middleware threats posed by Navigator and Java. *Microsoft*, 253 F.3d at 79; Shapiro Dir. ¶¶ 38, 58.

1195. Moreover, as the Court of Appeals also explained, it is not the States who must suffer from the uncertainty about how much different the world would have been in the absence of Microsoft's illegal conduct: "[T]he underlying proof problem is the same—neither plaintiffs nor the court can confidently reconstruct a product's hypothetical technological development in a

world absent the defendant's exclusionary conduct. To some degree, 'the defendant is made to suffer the uncertain consequences of its own undesirable conduct.'" *Microsoft*, 253 F.3d at 79 (citations omitted).

1196. It is clear, however, that Linux, as a competing operating system, would surely have benefited from the combination of (a) remaining able to offer its users the dominant browser, Navigator, and (b) having the chance also to offer its users the various additional cross-platform applications that likely would have been written to Navigator and Java in the absence of Microsoft's unlawful attack. *See, e.g.,* Tr. 1099:7-1105:12, 1116:2-1118:1 (Tiemann).

1197. The ability of such rival operating systems to present even the potential for competition, and to overcome the applications barrier that was maintained and enhanced beyond what it would have been absent Microsoft's illegal conduct, depends directly on the availability now of applications. In these circumstances, the purpose of Remedy 14 is to facilitate making one set of key applications available to rival operating systems, and thereby to lower the applications barrier in a balanced manner that will provide rival operating systems with a meaningful potential for competition, without guaranteeing to such rivals a particular market share or even a competitive foothold. Tiemann Dir. ¶ 99; Shapiro Dir. ¶¶ 110-11, 113. As detailed below, the remedy strikes this balance in that access to Office is critical for a rival desktop operating system to have a meaningful potential for competition, while, even with Office, a rival operating system is by no means guaranteed that it will actually provide competition or even gain a foothold.

3. Importance of Office as an Application for Linux and Other PC Operating Systems

1198. States' Remedy 14, requiring the mandatory licensing of Office for non-Windows Intel-compatible operating systems and ensuring the continued licensing of Office for Apple's

Macintosh operating system, seeks to directly lower the applications barrier to entry and thereby enhance the potential for competition in the market for PC operating systems, with little or no cost to Microsoft and significant benefit to consumers. *See* Shapiro Dir. ¶¶ 8, 109-111, 113; Tiemann Dir. ¶¶ 101-02, 104. The costs of this remedy are borne by companies other than Microsoft. Shapiro Dir. ¶ 8. The provision seeks to benefit consumers, particularly those who seek to use operating systems other than Windows, while not disrupting Microsoft's ability or incentive to improve its own software. *See* Shapiro Dir. ¶¶ 8, 113; Tiemann Dir. ¶ 103.

1199. The District Court previously concluded that access to Office was critical to the very survival of one rival desktop operating system, Apple. *Microsoft*, 84 F. Supp. 2d at 95, Findings Nos. 345-50. The District Court also explained that Microsoft recognized that access to Office was critical to Apple's survival. *Microsoft*, 84 F. Supp. 2d at 95, Finding No. 345 ("Recognizing the importance of Mac Office to Apple's survival, Microsoft threatened to cancel the product unless Apple compromised on a number of outstanding issues between the companies."). The District Court also quoted a message that the Microsoft executive in charge of Mac Office sent to Mr. Gates: "The threat to cancel Mac Office 97 is certainly the strongest bargaining point we have, as doing so will do a great deal of harm to Apple immediately." *Microsoft*, 84 F. Supp. 2d at 95, Finding No. 346. Recognizing "that the threat of canceling Mac Office was too valuable a source of leverage to give up before Microsoft had extracted acceptable concessions from Apple . . . Gates asked whether Microsoft could conceal from Apple in the [then] coming month the fact that Microsoft was almost finished developing Mac office 97." *Id*. at 95, Finding No. 347. After concluding that "Apple let us down on the browser by making Netscape the standard install," Mr. Gates called the Apple CEO "to ask 'how we

should announce the cancellation of Mac Office'." *Id*. at 95, Finding No. 349. The Court of Appeals cited these passages in affirming the District Court. *Microsoft*, 253 F.3d at 73.

1200. There has been no diminution in the importance for any rival operating system to have access to Office if it is going to have even the potential to compete in the desktop operating system market. Michael Tiemann, the Chief Technology Officer of Red Hat Linux, detailed for the Court his extensive experience trying to compete against Microsoft with the existing applications barrier. Tiemann Dir. ¶¶ 2-4, 41, 53, 56-58, 83-84, 97; Tr. 959:5-960:11, 962:9-963:1, 1094:4-1095:1 (Tiemann). Mr. Tiemann explained, without contradiction, the importance of Office as being necessary for an operating system to have the potential for competition, while not guaranteeing any level of actual competition or even the ability to compete. Tiemann Dir. ¶¶ 83-86, 88-99; Shapiro Dir. ¶¶ 110-12. As Mr. Tiemann explained:

> [I]n the space in which Red Hat believes a Linux desktop operating system is most likely to gain traction initially, the enterprise marketplace, there are two Microsoft software products that comprise an applications barrier to entry for Linux in and of themselves – Microsoft Office and Internet Explorer. . . . [T]he playing field in the enterprise market would level dramatically (although by no means would it be level) if Office and Internet Explorer were available on the Linux operating system.
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> . . .[I]f the goal of a remedy in this proceeding is to restore the potential for competition in the operating system market, my extensive experience with customers has made clear that that potential cannot be restored without the availability of Office. The porting of Office holds the potential to jump-start some notion of competition in the desktop operating system market. Second, the jump-start is appropriate to remedy the lost opportunities caused by the destruction of Navigator and Java. Had Linux operating systems had years of access to fully robust Navigator and Java products—had Linux had the dominant browser in the years of the internet explosion and had available applications written to a healthy Java—Linux's start on competition would have occurred long ago. A jump-start now through the auctioning of the right to port Office will in no way restore what has been lost, but takes a large step in the right direction.

Tiemann Dir. ¶¶ 85, 99; *see also* Tr. 1108:3-1112:3 (Tiemann).

1201. Mr. Tiemann detailed for the Court the specific factors making Office critical for enterprise clients of operating system manufacturers. Tiemann Dir. ¶¶ 88-99. Enterprise customers must use Office to reliably share documents with parties with whom they regularly deal. *Id.* ¶ 88. Given Office's market dominance during the past five or six year period of Microsoft's illegal conduct, the burden for employers of retraining the workforce to use a different application would be prohibitively high. *Id.* ¶ 93. Most revealing, in discussing a presentation he had made to Cisco, Mr. Tiemann explained that "by simultaneously making Office a requisite application, and ensuring interoperability problems between Office and competing productivity suites, Microsoft could force even the CTO of Red Hat to have to use Office for his presentation" and that the Red Hat sales force "—the very people whose job it is to convince the world of the virtues of running the Linux operating system—are forced to run Windows desktops so that they may run Microsoft Office and exchange documents and presentations with potential customers." *Id.* ¶¶ 91-92; *see also* Tr. 1108:23-1111:23 (Tiemann). Certain enterprise users—like Cisco, Systems, CS First Boston, and Amazon.com—are forced to have their employees run two operating systems side-by-side, simply to enable such employees to have access to Office. Tr. 1107:18-1108:17 (Tiemann).

1202. Mr. Gates similarly agreed that the lack of availability of Office would be a reason why consumers might choose not to use a rival operating system. Tr. 4951:6-14 (Gates). He agreed that in deciding whether to buy an operating system, consumers would look at the full range of applications available and that his experience has shown that, for some consumers, the availability of Office is among the most important applications governing the choice of a particular operating system. Tr. 4951:10-21 (Gates).

1203. Mr. Borduin, an ISV who testified as a witness for Microsoft, also agreed that it would benefit consumers and ISVs like Mr. Borduin's company, if Office were available on Linux. Tr. 4194:19-4195:11. (Borduin).

1204. At the same time, providing rival operating systems with access to Office will in no way guarantee that any rival operating system can compete with Windows or even attain any foothold in the market. Although Apple has consistently had access to Office since 1989, such access has not put any meaningful dent on Microsoft's monopoly. As the District Court found, even considering Apple, Microsoft has consistently maintained its monopoly. *Microsoft*, 84 F. Supp. 2d at 15, 22, Findings Nos. 21, 47. As Mr. Gates agreed: "[T]he mere availability of any single application, even an important one like Office, on any particular platform is not likely to turn that platform into a success. Microsoft Office has been available on the Apple Macintosh platform since 1989, yet Apple's sales have remained relatively small when compared to the sales of Windows-based PCs." Gates Dir. ¶ 421; *see also* Tiemann Dir. ¶ 99 ("A jump start now [by the mandatory licensing of Office] will in no way restore what was lost [Linux's start on competition years earlier through Navigator and Java], but takes a large step in the right direction.").

1205. Thus, a remedy providing access to Office strikes an appropriate balance in lowering the applications barrier in a manner that will provide rival operating systems with a meaningful potential for competition, without guaranteeing to such rivals a particular market share or even a competitive foothold.

B. How States' Remedy 14.b and 14.c—The Availability of Office on Non-Windows Intel-Compatible PCs—Achieve Their Intended Purpose

1206. Remedy 14 contains two distinct parts. Remedy 14.a provides for the continued availability of Office for Macintosh, the non-Intel-compatible rival operating system. Provisions

14.b and 14.c relate to the mandatory licensing of Office for non-Windows Intel-compatible operating systems.

1207. Remedy 14.b and 14.c provide:

> *b. Auction of Licenses To Port. Within 60 days of entry of this Final Judgment, Microsoft shall offer for sale, at an auction administered by an independent third party, licenses to sell Office for use on Operating Systems other than Windows and Macintosh, without further royalty beyond the auction price. In conjunction with these licenses, Microsoft shall supply to the winning bidders all information and tools required to port Office to other Operating Systems, including but not limited to all compatibility testing suites used by Microsoft to make Office available to the Macintosh Operating System, the source code for Office for Windows and Office for Macintosh (to be used for the purpose of such porting only), all technical information required to port Office to other Operating Systems (including but not limited to file formats), and all parts of the source code of the Windows Operating System Product necessary for the porting. At such auction, Microsoft shall offer to sell at least three such licenses, as described in this Section 14.b, to three third parties not affiliated with either Microsoft or each other. The terms of such licenses shall become effective (and the relevant source code made available to the licensee) immediately upon their sale.*
>
> *c. Provision of Necessary Information. As soon as practicable, but in no case later than 60 days prior to the date each new version of Office becomes commercially available for use with a Windows Operating System Product, Microsoft shall provide, to holders of the licenses issued pursuant to Section 14.b, the compatibility testing suites and source code necessary to enable porting of the new version of Office to other Operating Systems. The terms of such licenses shall become effective (and the relevant source code made available to the licensee) no later than the date on which the new version of Office becomes commercially available.*

1208. As noted above, the purpose of Remedy 14 is to lower the applications barrier to entry by requiring Microsoft to license Office for use on rival operating systems, while allowing Microsoft to retain the exclusive rights to Office for Windows. Requiring the mandatory licensing of a monopolized product—even, when unlike here, the mandatory license would allow the rival to sell the same product to the same customer base to whom the monopolist sells—is a recognized remedy in antitrust cases. Shapiro Dir. ¶¶ 85-86.

1209. In this case, however, the product to be licensed, Office for use on a non-Windows Intel-compatible operating system, is not one that Microsoft produces, sells or licenses, and thus Microsoft derives virtually no income today from the product which rivals would be producing and selling under Remedy 14.b. *See* Shapiro Dir. ¶ 113 ("[B]ecause the rights auctioned off do *not* include making a version of Office on Windows or Macintosh, the platforms on which Microsoft has chosen to provide Office, Microsoft's Office franchise is not directly impacted by this provision. Put differently, Provision #14b involves auctioning off rights that Microsoft has decided not to exploit.") (italics in original); Shapiro Dir. ¶ 113; Tr. 1112:12-1114:5 (Tiemann); 4698:10-16 (Gates).

1210. As well, the product to be licensed under this provision, Office for use on a non-Windows rival Intel-compatible operating system, does not yet even exist and may require significant time and expense to create. Tiemann Dir. ¶¶ 101-02; Shapiro Dir. ¶ 113. There is in fact no certainty that the creation of the product is even feasible. Tiemann Dir. ¶¶ 101-02; Shapiro Dir. ¶ 113.

1211. Remedy 14 does not require that Microsoft mandatorily license a version of Office that works on any Intel-compatible PC nor does it select any particular licensee. Rather, Remedy 14.b and 14.c require Microsoft to license the right simply to try to create a version of Office to work on operating systems other than Windows. Remedy 14 therefore places the risk, time and expense of creating the version of Office for the non-Windows Intel-compatible operating system on the licensee. Tiemann Dir. ¶¶ 101-02, 104; Shapiro Dir. ¶ 113. In addition, Remedy 14.b provides for the market to select the potential licensees by providing for an auction of the licenses to sell Office for use on operating systems other than Windows and Macintosh. *See* Shapiro Dir. ¶ 113.

1212. Remedy 14.b imposes on Microsoft only the obligation to make information and tools required for porting available to the winning bidders of the auction. *See* Shapiro Dir. ¶ 113; Tr. 1049:21-1050:21 (Tiemann). The remedy does not require Microsoft to provide new information or new tools, nor is Microsoft required to assume any of the costs of production. *See* Tiemann Dir. ¶¶ 101-02. Nor does the remedy place the risk of the feasibility on Microsoft. Tiemann Dir. ¶¶ 101-02, 104; Shapiro Dir. ¶ 113. The risk will be born by winners of the auction. Shapiro Dir. ¶ 113.

1213. Remedy 14.b, by its plain language, limits the licenses that must be sold to licenses to sell Office for use on operating systems other than Windows and Macintosh. Microsoft would retain the exclusive right to license Office for Windows and Office for Mac. Tiemann Dir. ¶¶ 103, 113; Shapiro Dir. ¶¶ 110, 113; Tr. 1113:14-22 (Tiemann). Microsoft remains free therefore to place any and all terms in the license agreement necessary to prevent a licensee or any other third party from attempting to sell Office for use ultimately on a Windows operating system. *Id.* Under this remedy, Microsoft's rights, obligations, and challenges in stopping any illegal piracy of Office for Windows systems would remain the same as already exist today.

1214. Microsoft's Remedy does not address at all the issue of lowering the applications barrier directly in the operating system market. Tr. 1112:4-14 (Tiemann). While no witness disputed the testimony of Mr. Tiemann and Mr. Shapiro that access to Office is a prerequisite to the potential for competition, without guaranteeing any level of actual competition, Microsoft's Remedy does not address the barrier to entry that Microsoft Office poses. Shapiro Dir. ¶ 115. Absent adoption of Remedy 14, the ability of the remedial provisions to put rival operating

systems in a position of having a meaningful potential to compete with Windows would be remote or doubtful.

C. Microsoft's Criticisms of States' Remedy 14.b and 14.c

1215. Although offering no counter-proposal, Microsoft has launched a series of criticisms of Remedy 14.b and 14.c. These criticisms amount to little more than a misreading of the States' Remedy.

1216. Microsoft has argued that creating a version of Office that runs on Linux would be a very difficult and very costly task. Tiemann Dir. ¶ 101. As a preliminary matter, the testimony has established that ISVs, such as Red Hat for Linux, believe that they can create a version of Microsoft Office for Linux if Remedy No. 14 were implemented. Tiemann Dir. ¶ 101. While there are large differences between the Windows and Linux code bases, Microsoft's creation of a version of Microsoft Office for the Mac OS X, which is a UNIX-based operating system, provides at least some indication of the feasibility of the project. Tiemann Dir. ¶ 101. More importantly, however, Remedy 14 renders irrelevant any arguments Microsoft might make about the cost or feasibility of creating, for example, a Linux version of Microsoft Office. Tiemann Dir. ¶102. As detailed above, under Remedy 14, Microsoft bears none of the cost of producing the new version of Office and none of the risk that it might prove difficult or impossible to create a version of Office for a particular rival operating system. Rather, the interested ISVs who prevail in the auction bear the costs and risks of producing the product. Tiemann Dir. ¶ 104. Presumably, such ISVs will assess for themselves the feasibility of creating the new product, and the difficulty of the project will be factored into the price for which the licenses will sell. If it ultimately were to prove impossible to create a working version of Microsoft Office for other operating systems such as Linux, Microsoft will not have suffered for the imposition of the remedy, and in fact will have profited from the receipt of licensing fees by

the winning bidder for a license that was never subject to being used. Tiemann Dir. ¶¶ 102, 104; Shapiro Dir. ¶ 113; Tr. 1114:6-13 (Tiemann).

1217. Were there any legitimate doubt about the meaning of Remedy 14.b in requiring Microsoft simply to disclose existing information and tools and placing all of the costs of producing the new version of Office or tools needed to produce the new version on the auction-winning licensees, which there would appear not to be, the word "existing" could be added to Remedy 14.b to describe the extent of Microsoft's obligation to furnish information and tools to the winning bidder. Remedy 14.b then would read:

> b. Auction of Licenses To Port. Within 60 days of entry of this Final Judgment, Microsoft shall offer for sale, at an auction administered by an independent third party, licenses to sell Office for use on Operating Systems other than Windows and Macintosh, without further royalty beyond the auction price. In conjunction with these licenses, Microsoft shall supply to the winning bidders all *existing* information and tools required to port Office to other Operating Systems, including but not limited to all compatibility testing suites used by Microsoft to make Office available to the Macintosh Operating System, the source code for Office for Windows and Office for Macintosh (to be used for the purpose of such porting only), all technical information required to port Office to other Operating Systems (including but not limited to file formats), and all parts of the source code of the Windows Operating System Product necessary for the porting. At such auction, Microsoft shall offer to sell at least three such licenses, as described in this Section 14.b, to three third parties not affiliated with either Microsoft or each other. The terms of such licenses shall become effective (and the relevant source code made available to the licensee) immediately upon their sale.

(Emphasis added to reflect potential change.)

1218. Microsoft also raises a series of arguments designed to demonstrate that Remedy 14 would reduce Microsoft's incentive and ability to innovate Office, and would thereby harm consumers. Gates Dir. ¶¶ 422-30. Again, these arguments do not withstand scrutiny.

1219. Microsoft first argues that this remedy improperly seizes intellectual property belonging to Microsoft. Gates Dir. ¶¶ 412, 423, 425; Tiemann Dir. ¶ 103; Tr. 1051:3-19 (Tiemann). As detailed above, Microsoft today earns revenue from Office from the sales and

licenses for Office on Windows and Office for Mac. Tiemann Dir. ¶ 103; Shapiro Dir. ¶ 113; Tr. 1051:3-11, 1112:24-1113:13 (Tiemann). Under States' Remedy 14, Microsoft would retain the exclusive right to sell or license Office for Windows and the exclusive right to license Office for the Mac. Microsoft will not be forced to share any portion of its highly lucrative stake in these two markets. The remedy at issue simply provides for an auction and a payment to Microsoft for rights it now is not using and has never used. Tiemann Dir. ¶ 103; *see also* Shapiro Dir. ¶ 113; Tr. 1051:3-11; 1112:12-1114:5 (Tiemann). It provides for payment of revenue to Microsoft that Microsoft has not previously earned; in fact, payment for rights to use its application that Microsoft has deliberately chosen not to earn in order to assist in maintaining its monopoly in the desktop operating system market. *See* Shapiro Dir. ¶ 113.

1220. Microsoft also argues that a licensee might run Office on a server that would allow the application in turn to be run on a Windows PC, thereby reducing the value of Microsoft's rights exclusively to license and sell Office for Windows. Gates Dir. ¶ 425. As detailed above, by its language Remedy 14.b is limited to "licenses to sell Office for use on Operating Systems other than Windows and Macintosh . . . ." Microsoft remains free therefore to place any and all terms in the license agreement to restrict a licensee or any other third party from selling Office for use ultimately on a Windows operating system, whether through a server or any other means. *See* Tiemann Dir. ¶ 103; *see also* Shapiro Dir. ¶ 113. Remedy 14 does not change at all Microsoft's right to prevent the piracy or misuse of Office on Windows desktop operating machines for which the appropriate license fees have not been paid to Microsoft.

1221. Microsoft raises two criticisms directed at the pricing and terms of the auction process, arguing that Microsoft would be engaging in a "fire sale." Gates Dir. ¶ 423. First, Microsoft argues that because Microsoft may be auctioning off three licenses to make Office for

the same rival operating system (for example, Linux), as opposed to one license to sell Office for Linux, one for Unix and a third for yet a different operating system, none of the three winning licensees will be willing to pay an appropriate sum for the licenses because they will face competition in attempting to sell their product. *Id.* ¶¶ 423-424. The amount bidders will be willing to pay will depend, as in most auctions, on the identity of the bidders, the feasibility of producing the product and thus the expected risk to be borne by the bidders, the expected costs of producing the product and the like. The proceeds from the auction could well be substantial but, in any event, will be consistent with its value in the market. *See* Shapiro Dir. ¶ 113 ("[T]he parties who most value the porting rights can be expected to win those rights."); Tiemann Dir. ¶ 100 ("I am fairly certain Red Hat would be interested in bidding on one of these licenses for the purpose of porting Office to Linux.") And, as explained above, since the auction will be yielding revenue to Microsoft for a product from which they have never earned revenue, differences in the expected amount to be paid for the license should not affect the propriety of the remedy. Although the amount actually bid will be determined by the market and could be substantial, any revenue earned is more than Microsoft now earns for the product by withholding it from potentially rival operating systems.

1222. Although unnecessary, a small change in Remedy 14 would accommodate the concern about having to auction three licenses for potential use on the same rival operating system, with the potential to depress the market. Remedy 14 would remain fully effective and achieve its purposes even if the Remedy was amended slightly to limit the winning bidders to one for each rival operating system. As Professor Shapiro explained:

> The precise number of licenses auctioned off under Provision #14b is not critical to the effectiveness of this provision. The advantage of having three licenses is that multiple approaches can be taken by separate licensees; the licensees might port to different operating systems or focus on different aspects of Office. But

> even one license would provide a significant boost to competition and substantial benefits to consumers.

Shapiro Dir. ¶ 114.

1223. The language of Remedy 14.b could be easily modified as follows:

> b. Auction of Licenses To Port. Within 60 days of entry of this Final Judgment, Microsoft shall offer for sale, at an auction administered by an independent third party, licenses to sell Office for use on Operating Systems other than Windows and Macintosh, without further royalty beyond the auction price. In conjunction with these licenses, Microsoft shall supply to the winning bidders all information and tools required to port Office to other Operating Systems, including but not limited to all compatibility testing suites used by Microsoft to make Office available to the Macintosh Operating System, the source code for Office for Windows and Office for Macintosh (to be used for the purpose of such porting only), all technical information required to port Office to other Operating Systems (including but not limited to file formats), and all parts of the source code of the Windows Operating System Product necessary for the porting. At such auction, Microsoft shall offer to sell at least three such licenses, as described in this Section 14.b, to three third parties not affiliated with either Microsoft or each other, *provided however that Microsoft need not sell more than one license for potential use on any one particular operating system*. The terms of such licenses shall become effective (and the relevant source code made available to the licensee) immediately upon their sale.

(Emphasis added to reflect potential change.)

1224. Second, Microsoft argues that providing for a one-time royalty payment, as opposed to ongoing licensing payments, could allow rival operating systems to have an advantage over Microsoft, decreasing Microsoft's incentive to innovate and greatly devaluing Microsoft's business. Gates Dir. ¶¶ 414, 428-29. At the same time, Mr. Gates admits in his direct testimony, as the record relating to Apple already has established, "[T]he mere availability of any single application, even an important one like Office, on any particular platform is not likely to turn that platform into a success. Microsoft Office has been available on the Apple Macintosh platform since 1989, yet Apple's sales have remained relatively small when compared to the sales of Windows-based PCs." *Id.* ¶ 421. Mr. Gates' testimony simply confirms that, in

endorsing Remedy 14, the Court has struck the appropriate balance between creating the potential for competition in the desktop operating system market, to remedy the illegally heightened applications barrier (over what it would have been absent the illegal conduct), without providing any rival operating system a particular level of competition or even a foothold in the market. Thus, no change to the pricing structure in the auction in Remedy 14 is necessary.

1225. Were the criticism against requiring payment simply of a one-time, up-front fee to be regarded as significant, however, Remedy 14 would remain fully effective and achieve its purposes even if prospective licensees were able to bid on the basis of offering a single up-front payment, a royalty of a certain dollar amount on each copy sold, or a royalty as a percentage of sales. Thus, the limitation in the auction process of accepting bids only for a one-time payment could readily be removed simply by dropping the language in Remedy 14.b providing: "without further royalty beyond the auction price." Bidders could offer bids providing for 1) ongoing royalty payments by a particular dollar amount per copy; 2) ongoing royalty payments as a percentage of sales; and/or 3) a one time payment. Microsoft could then select the highest bidder based on its evaluation, as in any other auction. Although unnecessary, this slight change in the pricing process will not significantly alter the effectiveness of the remedy in providing for mandatory licensing of Office for rival Intel-compatible operating systems. At the same time, as Mr. Gates explained, such a change would measurably mitigate the negative consequences, as perceived by Microsoft, of Remedy 14. Tr. 4974:6-15 (Gates).

1226. Thus, none of Microsoft's assertions as to why Remedy 14 would reduce its incentive and ability to innovate Office withstand scrutiny. Moreover, Microsoft would continue to have the sole right under Remedy 14 to sell Office for Windows, a product that accounted for $7 billion dollars of revenue just last year. Gates Dir. ¶ 411. And Microsoft has had the

incentive and ability to innovate Office despite the fact that the most serious desktop rival, Apple, has had access to Office for the past thirteen years. Gates Dir. ¶¶ 421, 432. It simply strains credulity to believe that extending this mandatory license of Office from Apple to a couple of "fringe" operating systems that together now barely appear on the radar screen of sales of operating systems would in any way alter Microsoft's decision-making as to how best to innovate a product that accounts for $7 billion of annual revenue.

1227. Microsoft also tries to stretch their contentions against "cloning" to somehow argue against Remedy 14. Gates Dir. ¶¶ 413, 426. The issue of cloning has already been dealt with in detail above. *See* Section V.C. ("States' Remedies Will not Enable Cloning of Windows"). Remedy 14.b requires Microsoft to make disclosures solely "in conjunction with the licenses" for Office and only of information "required to port Office." Nothing in Remedy 14.b precludes Microsoft, in making such disclosures and issuing the licenses, from limiting the use of the information to making the port and, in fact, to prohibiting unauthorized use of such information.

1228. In sum, Remedy 14.b and 14.c create a meaningful potential for competition in the desktop operating system market without which no rival operating system, including Linux, likely will have such potential. The remedy provides no potential rival with a particular competitive share of or even a foothold in the market. The remedy places almost no cost or risk on Microsoft—cost and risk are borne by the winners of the auction. And, while providing an opportunity to the licensees to increase the competitiveness of a non-Microsoft operating system, the remedy takes no earnings opportunity away from Microsoft, from which Microsoft has earned or planned to earn revenue.

D. How States' Remedy 14.a—Continued Availability of Office on Macintosh—Achieves Its Intended Purpose

1229. The other provision of Remedy 14 requires Microsoft to continue its current practice, which has existed long before the liability trial, of licensing a version of Office to Apple for the Macintosh operating system. Remedy 14.a provides:

> *a. Continued Porting of Office to Macintosh. Microsoft shall continue to port or otherwise make available Office to the Macintosh Operating System, pursuant to the same terms and conditions under which it currently ports or otherwise makes available Office to Macintosh, whereby Microsoft shall commercially release the same number of major releases of Microsoft Office for Macintosh as are released of Microsoft Office for Windows, with features consistent with Microsoft Office for Windows.*

1230. The District Court identified the Apple Mac OS, a non-Intel-compatible desktop operating system, as a potential threat or a rival to the Windows desktop monopoly. The Court concluded that the Apple Mac OS did not currently constrain Microsoft's monopoly power because existing users of Windows find it expensive to switch to Apple and because Apple lacks the broad base of applications enjoyed by Windows. The Court concluded that, whether or not Apple was considered to be in the relevant market for purposes of calculating Windows monopoly power, Windows qualified as a monopoly. *Microsoft*, 84 F. Supp. 2d at 15, 22, Findings Nos. 20-21, 47; Shapiro Dir. ¶ 97.

1231. By requiring Microsoft to continue licensing Office to Apple, Remedy 14.a serves all of the same purposes served by Remedy 14.b and 14.c above. Specifically, Remedy 14.a, like 14.b and 14.c, seeks to lower the applications barrier directly in the desktop operating system market and thereby to "unfetter [the desktop operating system] market from anticompetitive conduct"; "terminate the illegal monopoly" and "deny to [Microsoft] the fruits of its statutory violation" (*i.e.* the illegally heightened applications barrier now protecting its monopoly). *Microsoft*, 253 F.3d at 103.

1232. Remedy 14.a accomplishes an additional purpose as well. As detailed above, Microsoft illegally used the threat of terminating Apple's right to license Office as leverage to control this rival operating system. *Microsoft*, 84 F. Supp. 2d at 95, Findings Nos. 345-50. The most senior officers of the company, including Mr. Gates, directly participated in such illegal conduct, *id.*, and such officers remain in charge of Microsoft today. The Court of Appeals cited these findings in affirming the District Court. *Microsoft*, 253 F.3d at 72-23.

1233. As long as Microsoft continues to maintain the type of leverage that the District Court, the Court of Appeals, and Microsoft all recognized that Microsoft now retains over Apple, based on Apple's dependency on Mac Office for its very survival, Apple's ability fully to compete with Windows always will be compromised. *Microsoft*, 84 F. Supp. 2d at 95, Findings Nos. 345-50; *Microsoft*, 253 F.3d at 72-3. State's Remedy 14.a prevents the recurrence of this illegal conduct, helping to "ensure that there remain no practices likely to result in monopolization [or its illegal maintenance] in the future." *Microsoft*, 253 F.3d at 103 (brackets added).

1234. In addition to helping prevent Microsoft from again using Office to threaten Apple, Remedy 14.a will assure actual and potential users of Apple computers that Microsoft Office will continue to be available on Apple computers. Shapiro Dir. ¶ 98. For each of these reasons, this provision should help prevent Microsoft from weakening a direct rival. *Id*.

1235. Remedy 14.a simply requires Microsoft to extend an existing agreement that has already proven workable in practice. Shapiro Dir. ¶ 99. The provision therefore should be low-cost and should be easy to implement for Microsoft. *Id*.

1236. As noted above, Microsoft's Remedy does not address at all the issue of lowering the applications barrier directly in the operating system market nor the barrier to entry that

Microsoft Office poses. Similarly, Microsoft's Remedy contains no proposal for eliminating the leverage that Microsoft illegally exercised over the critical rival Mac OS, by threatening Apple with the termination of Office. In fact, under Microsoft's Remedy, Microsoft could cease to support Office on the Mac OS, thereby weakening the Mac OS as a rival to Windows. As long as Microsoft continues to maintain the type of leverage that the District Court, the Court of Appeals, and Microsoft all recognized that Microsoft retains over Apple (based on Apple's dependency on Mac Office for its very survival), Apple's ability fully to compete with Windows always will be compromised. States' Remedy 14.a is necessary to correct these shortcomings.

1237. Microsoft has engaged for the past 13 years in the very conduct required by Remedy 14.a, namely, licensing Office to Apple. Gates Dir. ¶¶ 421, 432. Yet Microsoft criticizes the remedy, noting "[a] lot can happen over ten years," Gates Dir. ¶ 434, and positing a world in which Apple has gone out of business (or nearly so) and Microsoft would be forced to continue to produce Office for a defunct operating system. Under Remedy 18.g, Microsoft or the States can seek to amend or modify the judgment during its term. In the event that there were material changed circumstances that affected either the viability or the implementation of Remedy 14.a, Microsoft could simply seek appropriate relief.

E. States' Remedy 14 Meets the Court of Appeals' Objectives for Relief

1238. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

1239. States' Remedy 14 will achieve the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely

to result in monopolization in the future by directly reducing the applications barrier to entry in order to restore that barrier to the level it would have been absent any unlawful conduct.

XXI. States' Remedy 15—Necessary Intellectual Property License

A. Purpose of States' Remedy 15

1240. A number of the States' Remedies, including for example the disclosure provisions in Remedy 4, require Microsoft to disclose information to third parties. Much of this information is potentially subject to one or more forms of intellectual property protection, and thus third parties may require a license to actually make use of the information. Richards Dir. ¶ 101.

1241. The purpose of States' Remedy 15 is to ensure that other remedy provisions that require the licensing of intellectual property are not frustrated or undermined by Microsoft's insistence on onerous licensing terms and conditions. Remedy 15 does not provide an independent measure for remedying Microsoft's anticompetitive acts, or otherwise alter the substantive boundaries of other remedy provisions. Microsoft's disclosure of information is bounded by the carefully articulated options and alternatives specified by the other remedy provisions. Tr. 3292:18-3293:25, 3294:14-17 (Shapiro); DX 1530, 176:4-177:4 (Greene deposition).

1242. Remedy 15 also makes clear that Microsoft does not need to license to third parties any intellectual property rights beyond those necessary to meet the specified purposes of the other remedy provisions. This ensures that Microsoft can take all necessary steps to otherwise protect its intellectual property, the great majority of which is not implicated by the States' Remedies. Tr. 3191:12-3192:9 (Appel) (Remedy 15 only requires Microsoft to license intellectual property necessary for compliance with a specific remedy provision, and Microsoft may impose terms to otherwise protect its intellectual property); Tr. 3227:13-3228:11 (Appel) (Microsoft would not have to disclose a vast number of previously undisclosed APIs under the States' Remedy).

1243. The effective operation of the States' Remedy will be undermined without licenses to enable the use of these disclosures. Making this point, David Richards of RealNetworks testified: "The requirement that Microsoft license any intellectual property necessary to effectuate the remedies is critical to RealNetworks and other ISVs. The license associated with the disclosure of APIs and communications protocols is pivotal. Mere disclosure is not enough." Richards Dir. ¶ 101. The States' Remedy would also prove ineffective if these licenses are so onerous as to prevent third parties from taking advantage of the remedies or if the terms effectively preclude the use of the disclosed information for purposes of competing with Microsoft.

1244. When Microsoft discloses information to ISVs, it often demands restrictive license terms to limit the use of the disclosed information. These restrictions illustrate the type of license terms Microsoft can be expected to employ when attempting to suppress competing platforms. For example, Microsoft places various restrictions on ISVs that license Microsoft's Windows Media Platform Software Development Kit (SDK). Richards Dir. ¶¶ 16, 102-03.

1245. Under the Windows Media Format SDK license, Microsoft does not allow developers the choice of using only the portions of the APIs and related media technologies they actually need. Richards Dir. ¶ 103. Microsoft further limits ISVs' ability to create cross-platform applications by prohibiting the use of the SDK disclosures for the development of non-Microsoft platform software. *Id.* Also, unlike the perpetual Microsoft Platform SDK, Microsoft has limited the license of the Windows Media Format SDK license to a term of one year, impeding the ability to develop and bring to market new technology based on such limited short term access. *Id.* ¶¶ 103, 105; Schwartz Dir. ¶ 142.

1246. In addition, the Windows Media Format SDK license restricts the development of competing multimedia middleware by requiring that only a Microsoft-licensed Windows Media server can play back streaming Windows Media format. Richards Dir. ¶ 103. Microsoft further limits competing multimedia middleware through SDK license provisions that prevent licensees from using non-Microsoft digital rights management technology with Windows Media files. *Id.* Competing software developers are also encumbered by prohibitions against making improvements, or adding innovation, to the technology disclosed under the SDK unless Microsoft's Windows Media Player can independently provide the same functionality. *Id.* ¶¶ 103, 109.

1247. As a general matter, the mandatory licensing of intellectual property is often required as part of a remedy addressing anticompetitive harm. Shapiro Dir. ¶ 85. Mandatory licensing is a particularly advantageous method of increasing competition in the marketplace because multiple parties may use the intellectual property asset without depriving others of use of the same asset. *Id.* ¶ 86. This benefits consumers through the creation of a marketplace where licensees can more effectively compete while still allowing the monopolist to continue to compete. *Id.*

1248. Microsoft itself recognizes the need for providing an intellectual property license provision so that parties can use the information disclosed under other remedy provisions. This is reflected in Microsoft's Remedy III.I, which provides, in part, that "Microsoft shall offer to license to ISVs, IHVs, IAPs, ICPs, and OEMs any intellectual property rights owned or licensable by Microsoft that are required to exercise any of the options or alternatives expressly provided to them under this Final Judgment . . . ."

B. How States' Remedy 15 Achieves Its Intended Purpose

1249. States' Remedy 15 requires Microsoft to license under certain terms and conditions the necessary intellectual property rights for third parties to use the information made available through other provisions of the States' Remedy. Remedy 15 provides as follows:

> ***15. Necessary Intellectual Property License.*** *Microsoft shall, within 20 days of request, license to IAPs, ICPs, IHVs, ISVs, OEMs and Third-Party Licensees all intellectual property rights owned or licensable by Microsoft that are required to exercise any of the options or alternatives provided or available to them under this Final Judgment (including without limitation enabling their product(s) to Interoperate with Microsoft Platform Software and/or applications for Microsoft Platform Software), on the basis that:*
>
> *a. the license shall be on a royalty-free basis and all other terms shall be reasonable and non-discriminatory;*
>
> *b. the license shall not (i) be conditional on the use or licensing of any Microsoft software, API, Communications Interface, Technical Information, service, feature or technology; (ii) be conditional on any cross-license to Microsoft, or (iii) restrict any development pursuant to the license to software, services, features and/or technologies that are compatible with or use Microsoft software, services, features and/or technologies;*
>
> *c. the scope of any such license (and the intellectual property rights licensed thereunder) must be as broad as necessary to ensure that the licensee is able to exercise the options or alternatives provided under this Final Judgment (including without limitation enabling licensees' product(s) to Interoperate with Microsoft Platform Software and/or applications for Microsoft Platform Software), but nothing herein shall require Microsoft to permit the use or sub-licensing of any Microsoft source code beyond that necessary to permit the exercise of such options or alternatives; and*
>
> *d. the terms of any license granted under this section shall be in all respects consistent with the terms of this Final Judgment.*

1250. As specified in the first paragraph of Remedy 15, the rights that Microsoft must license to third parties are limited to those necessary to "exercise any of the options or alternatives provided or available to them under this Final Judgment." These terms make clear that Microsoft must license only intellectual property that is required to enable the implementation of other remedy provisions and does not represent an independent obligation. Tr. 3292:18-3293:25, 3294:14-17 (Shapiro); DX 1530, 176:4-177:4 (Greene deposition).

1251. The first paragraph of Remedy 15 also requires that Microsoft license the necessary intellectual property rights to third parties "within 20 days of request." This provides a reasonable time for compliance without allowing unnecessary delays that could hamper the use of disclosed information. Schwartz Dir. ¶ 142.

1. States' Remedy 15.a

1252. States' Remedy 15.a ensures that when the licensing of intellectual property is required to enable the implementation of another remedy provision, the licenses are offered on a royalty-free basis and on reasonable and non-discriminatory terms. The royalty-free requirement matches Microsoft's historical practice of licensing technical information necessary for interoperability, such as Windows platform APIs, free of charge. Gates Dir. ¶¶ 106-10; Tr. 4567:3-24 (Gates); Richards Dir. ¶ 110; Schwartz Dir. ¶ 141. This prevents Microsoft from charging third parties licensing fees that would thwart them from making use of the disclosures. Richards Dir. ¶ 110.

1253. The requirement that the terms included in the licenses are reasonable and non-discriminatory precludes Microsoft from imposing onerous terms on or favoring select third parties—actions that would undermine the intent and effectiveness of Remedy 15. *See* Richards Dir. ¶ 104. Microsoft's Remedy Section III.I.1 similarly includes a requirement to license intellectual property under terms that are "reasonable and non-discriminatory."

2. States' Remedy 15.b

1254. Microsoft commonly licenses its technology with numerous conditions and restrictions. Such terms would be burdensome and impede the ability of third parties to use the information disclosed under the States' Remedy in a manner that will achieve the purposes of the substantive remedies. Remedy 15.b explicitly prevents Microsoft from including such improper

restrictions in its intellectual property licenses in order to ensure that third parties can access disclosed information on fair terms.

1255. If Microsoft were able to condition the granting of necessary intellectual property licenses on parties' agreement to use Microsoft technology, Microsoft could greatly impair the effectiveness of the States' Remedy by thwarting competition from cross-platform technology. Remedy 15.b.i, therefore prohibits Microsoft from conditioning a necessary intellectual property license on a party's "use or licensing of any Microsoft software, API, Communications Interface, Technical Information, service, feature or technology." This provision allows parties to obtain licenses to use information disclosed under the States' Remedy without any requirement to use or license particular Microsoft technology. The prohibition of such license restrictions ensures that Microsoft cannot force developers to choose between using non-Microsoft platforms and the licensing of important Microsoft technology. In the absence of such protection, Microsoft could continue to require license terms that promote its platform as a way of obstructing competing platforms threats. Richards Dir. ¶ 106.

1256. States' Remedy 15.b.ii prevents a license from being "conditional on any cross-license to Microsoft." This provision prohibits Microsoft from using the States' Remedy as a means of obtaining cross-licenses from third parties. Criticism that such prohibitions impede Microsoft's ability to enter into cross-license agreements, Gate Dir. ¶ 448, are improper because parties remain free to voluntarily enter into cross-license agreements with Microsoft. The terms of Remedy 15.b.ii simply allow third parties to reach decisions about cross-licensing independent from their ability to use the disclosures mandated under the States' Remedy.

1257. States' Remedy 15.b.iii proscribes license terms that would "restrict any development pursuant to the license to software, services, features and/or technologies that are

compatible with or use Microsoft software, services, features and/or technologies . . . ." This provision ensures that software developers who take advantage of the disclosure provisions in the States' Remedy are not restricted to using the disclosures only to develop to Windows, but also to obtain cross-platform compatibility, thereby increasing the ability of third-party software to lower the applications barrier to entry. Richards Dir. ¶ 107. Remedy 15.b.iii also encourages greater innovation by providing parties the freedom to develop their own technology in combination with Microsoft's disclosed information in order to best meet consumer needs. *Id.* ¶¶ 107-08. This freedom to innovate allows the market to provide a greater consumer experience than can otherwise be achieved through only Microsoft technology. *Id.* In sum, Remedy 15.b.iii prevents Microsoft from using the licenses required under the States' Remedy in a way that actually helps to perpetuate Microsoft's monopoly by favoring its platform over competing platforms. *Id.* ¶ 106.

3. States' Remedy 15.c

1258. The scope of the license that Microsoft must provide to third parties under Remedy 15 will vary depending on the disclosures at issue. The scope of the license is bounded, however, such that Microsoft is not required to license its intellectual property rights beyond that necessary to fully implement the remedial provision that requires the license. Thus, Microsoft is specifically granted the ability to prevent the use of its intellectual property beyond that which is necessary. DX 1530, 176:4-177:4 (Greene deposition); Tr. 3191:12-3192:9 (Appel).

1259. Parentheticals in the first paragraph of Remedy 15, as well as in paragraph 15.c, state that Microsoft must license intellectual property rights necessary to exercise the options and alternatives available under the Final Judgment, "including without limitation enabling their product(s) to Interoperate with Microsoft Platform Software and/or applications for Microsoft Platform Software." By restating the interoperability purpose of the disclosure provisions under

States' Remedy 4.a, these parentheticals provide an example of how the scope of the intellectual property licenses at issue are determined by reference to the terms and purposes of other remedy provisions.

4. Remedy 15.d

1260. States' Remedy 15.d requires that "the terms of any license granted under this section shall be in all respects consistent with the terms of this Final Judgment." This provision requires, regardless of the specific terms proscribed under Remedy 15, that any license will be consistent with the other remedy provisions and that license terms or restrictions are not used to undermine the intended effect of the mandated disclosures. The need for Remedy 15.d is demonstrated by the fact that Microsoft's Remedy Section III.I.4 contains a nearly identical requirement.

C. Microsoft's Remedy Does Not Adequately Protect Licensees of Microsoft's Intellectual Property

1261. Microsoft's Remedy contains an intellectual property licensing provision that affords inadequate guarantees and protections to third parties.

1262. Section III.I.1 of Microsoft's Remedy provides that "all terms, *including royalties or other payment of monetary consideration*, are reasonable and non-discriminatory." (Emphasis added.) By not defining in any way what a reasonable royalty is or how it would be determined, Microsoft's Remedy could result in royalty fees so large that parties would not be able to afford the necessary licenses to use information disclosed under the States' Remedy. Pearson Dir. ¶ 73. And there is every reason to believe that Microsoft would use this provision to its benefit based on the willingness it has already demonstrated to advantage itself through its settlement. *See supra* Section VII.C.2 ("Microsoft Has Used the 'Uniform Terms' Provision of the Consent Decree to Impose More Onerous Terms on OEMs").

1263. Microsoft historically has licensed its Windows platform APIs and other technical information with no royalty payment. Gates Dir. ¶¶ 106-10; Tr. 4567:3-24 (Gates); Richards Dir. ¶ 110; Schwartz Dir. ¶¶ 140-41. Consistent with this practice, the licensing provisions under the States' Remedy provide that licenses must be made available on a royalty-free basis. This ensures that Microsoft cannot undermine the effectiveness of, or profit from, the disclosures required under the States' Remedy by charging prohibitive royalties. Without such restrictions, Microsoft could employ royalty schedules to thwart nascent middleware threats that otherwise could lower the applications barrier to entry. Richards Dir. ¶ 110.

1264. Another failing of Microsoft's intellectual property licensing provision is reflected in Microsoft's Remedy III.I.3, which allows Microsoft to condition the granting of licenses on third parties "not assigning, transferring or sublicensing its rights under any license granted under this provision." In order for third party ISVs, including middleware developers, to develop and sell software, they must be able to sublicense Microsoft's disclosed information to consumers as part of their product. Microsoft's ability to prohibit the sublicensing of this information can prevent parties from effectively making use of the disclosures required under other remedy provisions. Richards Dir. ¶ 111; Schwartz Dir. ¶ 140.

1265. One of the most significant failings of the licensing provisions in Microsoft's Remedy is the lack of a prohibition on Microsoft imposing license conditions and restrictions that serve to benefit its own platform technologies. For example, under its remedy, Microsoft can condition the granting of necessary licenses on parties' use of Microsoft technology, or contractually limit the use of disclosures only to software that interoperates with Microsoft software. With these licensing conditions, Microsoft will be able to favor its platforms over competing platforms. Richards Dir. ¶ 106. States' Remedy 15.b explicitly prohibits such

licensing conditions. This permits parties to use the technology that best suits their needs. In addition, it frees parties to use disclosures to develop software that has cross-platform capabilities. Richards Dir. ¶ 107.

D. Microsoft's Criticisms of States' Remedy 15

1266. Many of Microsoft's criticisms of States' Remedy 15 stem from the supposedly devastating effects caused by the interaction of Remedy 15 with other of the States' Remedies. Gates Dir. ¶¶ 441-42. In particular, Microsoft argues that the combination of Remedies 4, 12, 14 and 15 will "wipe out virtually all of Microsoft's intellectual property." Tr. 4530:6-9 (Gates). Mr. Gates further testified that "Section 15 would give competitors (and everyone else in the industry) the ability to demand free access to vast quantities of Microsoft intellectual property." Gates Dir. ¶ 440.

1267. Not only do such arguments misconstrue the scope of disclosures required under the States' Remedy, Tr. 3227:13-3228:11 (Appel), but they are at odds with the purpose and effect of States' Remedy 15 by suggesting that it operates to confer rights independent of other substantive remedies. To be clear, Remedy 15 only serves as an enabling provision to ensure that information disclosed pursuant to other of the States' Remedies is available for use by third parties. Tr. 3292:18-3293:25, 3294:14-17 (Shapiro).

1268. Microsoft also criticizes States' Remedy 15 for prohibiting Microsoft from requiring third parties to use the information disclosed under the remedy *only* for interoperability with Microsoft software, claiming that fragmentation will occur if it cannot do so. Gates Dir. ¶¶ 445-46. Microsoft further criticizes Remedy 15 on the grounds that it will facilitate the cloning of Windows. *Id.* ¶ 447.

1269. Rather than representing a critique specifically of Remedy 15, these criticisms generally reflect a broader attack on the substance and purpose of other of the States' Remedies,

which attempt, among other things, to address Microsoft's unlawful actions against cross-platform middleware, such as Netscape and Java. As discussed above, *see supra* Section V.B ("States' Remedies Will Not Create Undue Fragmentation"), Section V.C ("States' Remedies Will Not Enable Cloning of Windows") and Section V.D ("States' Remedies Will Not 'Confiscate' Microsoft's Intellectual Property"), these criticisms are without merit, and certainly do not justify rejection of States' Remedy 15.

1270. Last, Microsoft asserts that Remedy 15 would make it very expensive for Microsoft to obtain broad patent cross-licenses, which in turn would increase intellectual property infringement risk for Microsoft. Gates Dir. ¶ 448. This criticism too is unfounded.

1271. At the outset, Microsoft assumes two possible scenarios where Remedy 15 will hamper it from obtaining broad intellectual property cross-licenses – neither of which justifies its criticism of Remedy 15. First, Microsoft complains that it will not be able to freely use third parties' intellectual property because Remedy 15 will prevent it from using licenses for its intellectual property (that must be licensed under the States' Remedy) as leverage to obtain broad cross-licenses from third parties. Second, Microsoft posits that an inability to obtain broad cross-licenses from third parties will expose it to frivolous infringement claims brought by those third parties (though Microsoft presents no evidence of such conduct by third parties). The first scenario should not be condoned by this Final Judgment, and the second is speculative and certainly not outweighed by the benefits occasioned by Remedy 15.

1272. Moreover, as Mr. Gates concedes, Remedy 15 does not prevent Microsoft from negotiating to obtain a patent cross-license if such a license is mutually desired by the third party. Gates Dir. ¶ 448. It will only make it more expensive for Microsoft to obtain such a

cross-license. *Id.* Given Remedy 15's critical importance to the effective implementation of other of the States' Remedies, any extra licensing expense to Microsoft is greatly outweighed.

XXII. States' Remedy 16—Industry Standards

A. Purpose of States' Remedy 16

1. Industry Standards, and Their Role in Fostering Interoperability

1273. Industry standards establish uniformity with regard to a particular area of the computer industry, such as communications protocols, authentication, or file formats. Appel Dir. ¶ 144.

1274. One method through which standards may be created is the formal recognition and publication of standard specifications by a standards body. For example, the Institute of Electrical and Electronics Engineers ("IEEE") publishes wide-ranging industry standards relating to electrical and information technologies. Appel Dir. ¶ 144. Standards may also originate when the specifications created and used by a single company are disclosed and then become widely adopted by the industry as a whole. *Id.* These standards are commonly referred to as de facto standards. *Id.*

1275. Industry standards allow parties to develop products that will properly interoperate with others conforming to the same standard. Appel Dir. ¶ 144; Ledbetter Dir. ¶ 170. Standards represent one of the important methods for software developers to achieve cross-platform interoperability. Appel Dir. ¶ 145; DX 1067; Tr. 1134:18-1137:16 (Tiemann). Since most platform threats to Microsoft's Windows desktop monopoly are necessarily cross-platform, *Microsoft*, 253 F.3d at 53, standards may enable the development and growth of such threats.

2. Microsoft's Anticompetitive Act: Deceptively Undermining Its Public Commitment to the Java Standard To Frustrate Interoperability

1276. A Microsoft tactic in its efforts to unlawfully maintain its monopoly was to publicly embrace industry-wide, cross-platform standards while secretly frustrating interoperability. Microsoft particularly directed this tactic at the cross-platform threat posed by

Java. As the District Court found, and the Court of Appeals affirmed, Microsoft purposely deceived software developers into believing that using its Java programming tools would result in the creation of cross-platform, compliant Java applications, when in fact the tools produced applications that were Windows-specific. *Microsoft*, 253 F.3d at 76-77.

1277. The District Court found that "[i]n a further effort intended to increase the incompatibility between Java applications written for its Windows JVM and other Windows JVMs, and to increase the difficulty of porting Java applications from the Windows environment to other platforms, Microsoft designed its Java developer tools to encourage developers to write their Java applications using certain 'keywords' and 'compiler directives' that could only be executed properly by Microsoft's version of the Java runtime environment for Windows. Microsoft encouraged developers to use these extensions by shipping its developer tools with the extensions enabled by default and by failing to warn developers that their use would result in applications that might not run properly with any runtime environment other than Microsoft's and that would be difficult, and perhaps impossible, to port to JVMs running on other platforms." *Microsoft*, 84 F. Supp. 2d at 106-107, Finding No. 394.

1278. The District Court further found that "[t]his action comported with the suggestion that Microsoft's Thomas Reardon made to his colleagues in November 1996: '[W]e should just quietly grow j++ [Microsoft's developer tools] share and assume that people will take more advantage of our classes without ever realizing they are building win32-only java apps.' Microsoft refused to alter its developer tools until November 1998, when a court ordered it to disable its keywords and compiler directives by default and to warn developers that using Microsoft's Java extensions would likely cause incompatibilities with non-Microsoft runtime environments." *Microsoft*, 84 F. Supp. 2d at 106-107, Finding No. 394.

1279. As the Court of Appeals held with respect to Microsoft's deception of Java developers: "developers who relied upon Microsoft's public commitment to cooperate with Sun and who used Microsoft's tools to develop what Microsoft led them to believe were cross-platform applications ended up producing applications that would run only on the Windows operating system." *Microsoft*, 253 F.3d at 76. In other words, Microsoft intentionally undermined its own public commitment to a standard in order to deceive ISVs, frustrate interoperability and thus ensure a cross-platform threat to Windows was neutralized.

1280. This deception in the pursuit of frustrating standards and interoperability was deliberate and calculated. As the Court of Appeals held: "When specifically accused by a *PC Week* reporter of fragmenting Java standards so as to prevent cross-platform uses, Microsoft denied the accusation and indicated it was only 'adding rich platform support' to what remained a cross-platform implementation. An e-mail message internal to Microsoft, written shortly after the conversation with the reporter, shows otherwise:

> [O]k, i just did a followup call. . . . [The reporter] liked that i kept pointing customers to w3c standards [(commonly observed internet protocols)]. . . . [but] he accused us of being schizo with this vs. our java approach, i said he misunderstood [—] that [with Java] we are merely trying to add rich platform support to an interop layer. . . . this plays well. . . . at this point its [sic] not good to create MORE noise around our win32 java classes. instead we should just quietly grow j++ [(Microsoft's development tools)] share and assume that people will take more advantage of our classes without ever realizing they are building win32-only java apps.

GX 1332. *Microsoft*, 253 F.3d at 76 (alterations in original).

1281. That Microsoft's goal was to frustrate cross-platform interoperability and protect its desktop monopoly is beyond doubt. As the Court of Appeals held: "[O]ther Microsoft documents confirm that Microsoft intended to deceive Java developers, and predicted that the effect of its actions would be to generate Windows-dependent Java applications that their developers believed would be cross-platform; these documents also indicate that Microsoft's

ultimate objective was to thwart Java's threat to Microsoft's monopoly in the market for operating systems. One Microsoft document, for example, states as a strategic goal: 'Kill cross-platform Java by grow[ing] the polluted Java market.' GX 259; *see also id.* ("Cross-platform capability is by far the number one reason for choosing/using Java.") (emphasis in original). Microsoft's conduct related to its Java developer tools served to protect its monopoly of the operating system in a manner not attributable either to the superiority of the operating system or to the acumen of its makers, and therefore was anticompetitive." *Microsoft*, 253 F.3d at 76-77 (alteration omitted).

1282. Disclosure requirements are critical to interoperability, but additional requirements on standards are necessary to prevent, among other things, deception as to whether the disclosed information is consistent with cross-platform, standard specifications. Appel Dir. ¶ 146. A proper remedy in this case will ensure that Microsoft in fact adheres to an industry standard that it claims to support. *Id.* ¶¶ 146-47 (the States' Remedy addresses the remedial goals for this reason).

3. Microsoft's Continuing Practice of Embracing Cross-Platform Industry Standards While Engaging in Proprietary Implementations and Extensions

1283. Bill Gates testified that Microsoft strikes a balance "between doing things that are proprietary that might work against interoperability and doing things that promote interoperability based on the demands of the market." Tr. 4558:2-4558:8 (Gates); *see also* Tr. 4556:20-4557:3 (Gates). One tactic that Microsoft has employed to frustrate interoperability is the use of undisclosed modifications or extensions to industry standards. *See* Ledbetter Dir. ¶¶ 90-105 (Microsoft added proprietary extensions to Kerberos); Schwartz Dir. ¶ 91 (Microsoft added proprietary extensions to HTML); Tiemann Dir. ¶¶ 145-53, 158-66 (Microsoft added proprietary extensions to IMAP, LDAP, and Kerberos).

1284. As discussed in connection with States' Remedy 4, on a number of occasions Microsoft implemented undisclosed extensions to industry standards that frustrate interoperability, raising the issue as to whether Microsoft is in fact implementing the industry standard. *See supra* Section X.A.d ("Microsoft continues to use selective disclosure of APIs and technical information to disadvantage platform competitors"). For example:

a. Kerberos

1285. The Kerberos security protocol is used for authentication and authorization of members of computer networks. Ledbetter Dir. ¶¶ 92-96; *see* Tr. 5831:23-5832:25 (Madnick). This industry standard protocol, created by the Massachusetts Institute of Technology, was designed so that virtually any server, running any operating system, could securely exchange data. *See* Ledbetter Dir. ¶¶ 94-95. Microsoft added undisclosed and proprietary extensions to this protocol, such that non-Microsoft servers and clients could not be authorized to receive services from networks that included Microsoft servers and clients. Tr. 5833:15-5834:22 (Madnick); Short Dir. ¶ 72; Ledbetter Dir. ¶¶ 98-104; Schwartz Dir. ¶¶ 115-119; Tiemann Dir. ¶ 161; Pearson Dir. ¶ 48. Microsoft's Kerberos extension is "Windows-specific," *i.e.*, unlike the industry-standard version, it is not cross-platform. *See* Short Dir. ¶ 72. And, in October 2001 meetings with AOL, Microsoft representatives would not guarantee that Kerberos would not later be even further extended to favor Microsoft's .NET initiative. Borthwick Dir. ¶¶ 94, 100.

1286. A question exists as to whether a February 2002 disclosure by Microsoft relating to its proprietary extensions is sufficient to allow complete interoperability by third-party software with respect to Kerberos' authorization function. Cole Dir. ¶ 33 (Microsoft submitted Kerberos extensions to IETF for royalty-free licensing); Madnick Dir. ¶ 102 (Microsoft announced it would document Kerberos extensions); Short Dir. ¶ 74 (Microsoft disclosed Kerberos extensions in submission to IETF for royalty-free licensing); *cf*. Ledbetter Dir. ¶¶ 102-

104 (Microsoft's Kerberos disclosures will not enable servers using industry-standard Kerberos to interoperate with Microsoft Kerberos); Schwartz Dir. ¶¶ 118-19 (Microsoft's Kerberos disclosures are insufficient to enable third-party Web service providers to interoperate); Tiemann Dir. ¶¶ 165-66 (Microsoft's disclosure appears to be insufficient for servers to interoperate). Significantly, an internal Microsoft email suggests that Microsoft only intended partial disclosure of its Kerberos extensions, PX 466A, and Microsoft Vice President Robert Short confirmed that the disclosure was in fact incomplete, although he asserted that the non-disclosed portions were for testing purposes. Tr. 5519:21-5520:5, 5520:14-5521:9, 5532:15-5535:8 (Short). Microsoft Senior Vice President David Cole was unsure whether the disclosure was even now sufficient for interoperability. Tr. 4471:18-4472:13 (Cole). He said, however, that future disclosures would be made if necessary—although, in that case, Microsoft will have failed, at least three times, to make disclosures ostensibly sufficient to enable non-Microsoft servers to interoperate with Microsoft's Kerberos. *See* Ledbetter Dir. ¶¶ 101-104. Although Mr. Short testified that Microsoft's extensions do not impede interoperability, Short Dir. ¶ 73, he confirmed that this testimony was limited to the authentication, as opposed to the proprietary authorization, function. Tr. 5520:6-13 (Short).

1287. On balance, it appears that Microsoft, for a period of around two years, if not currently, has claimed to implement a cross-platform industry standard, while in fact implementing a variant of that standard that is Windows-specific and does not promote full interoperability, at least with respect to the authorization functionality.

b. LDAP / ADSI

1288. "Directory services" are a very important mechanism for looking up values in an efficient manner. For example, a person's name and phone number can be stored as values in a database; a user could then enter the person's name and the directory service would retrieve the

corresponding phone number. Tiemann Dir. ¶ 150. The industry standard for directory services is the Internet Engineering Task Force's ("IETF's") Lightweight Directory Access Protocol ("LDAP"). *Id.* ¶ 151.

1289. Microsoft has extended LDAP by adding a proprietary and undisclosed programming interface called Active Directory Services Interface or "ADSI." Tiemann Dir. ¶¶ 150-53; Bennett Dir. ¶¶ 197-200. This extension means that non-Microsoft servers cannot provide the full range of directory services to Microsoft clients and servers. Tiemann Dir. ¶¶ 150-53.

1290. Microsoft's expert Dr. Bennett addressed LDAP in his testimony, but he did not assert that Microsoft had disclosed its proprietary interface or that it had enabled full interoperation by third-party software. *See* Bennett Dir. ¶ 200 (testifying only that Microsoft has gone to "considerable lengths" to make ADSI functionality available to non-Microsoft clients and servers and "appear[ed]" to provide access to non-Microsoft directory services). In any event, the basis for Dr. Bennett's testimony is unclear, and it appears that full disclosure of the extension has not been made. Again, Microsoft has purported to implement a cross-platform industry standard, LDAP, while actually supporting an implementation of that standard that is proprietary and not fully disclosed.

4. States' Remedy 16 Seeks To Address Microsoft's Anticompetitive Conduct and the Same or Similar Practices Highlighted in the Remedy Proceeding

1291. By providing proprietary and often undocumented extensions to standards, Microsoft can mislead third parties to believe that the publicly documented specifications of a standard will ensure interoperability when in fact interoperability cannot be achieved without the extensions added by Microsoft. Appel Dir. ¶ 145.

1292. This behavior can cause developers to spend great resources under the mistaken belief that their software will achieve the benefits of cross-platform interoperability with those sharing the same standard, only to ultimately achieve (at best) limited interoperability. Appel Dir. ¶ 145.

1293. Standards foster interoperability, Appel Dir. ¶¶ 144-45; Ledbetter Dir. ¶ 170, and interoperability is a necessary component of a cross-platform threat to the Windows monopoly. *Microsoft*, 253 F. 3d at 53. Further, Microsoft was found to have acted anticompetitively to frustrate interoperability and hinder a cross-platform threat by secretly undermining its public commitment to interoperability through a standard. *Microsoft*, 253 F.3d at 76-77. An effective remedy must ensure that Microsoft cannot publicly commit to interoperability and standards and simultaneously undermine that commitment in pursuit of the protection of its monopoly.

1294. Truthful disclosure by Microsoft with regard to its use of standards will also assist developers to request necessary additional disclosures under States' Remedy 4, thus fostering cross-platform interoperability. *Cf*. Appel Dir. ¶ 143.

B. How States' Remedy 16 Achieves Its Intended Purpose

1295. States' Remedy 16 provides:

> **16. Adherence to Industry Standards.**
>
> a. Compliance With Standards. If Microsoft publicly claims that any of its products are compliant with any technical standard ("Standard") that has been approved by, or has been submitted to and is under consideration by, a Standard-Setting Body, it shall comply with that Standard. If Microsoft chooses to extend or modify the implementation of that Standard, Microsoft shall continue fully to implement the Standard (as that Standard may be modified from time to time by the Standard-Setting Body). Microsoft shall continue to implement the Standard until: (i) Microsoft publicly disclaims that it implements that Standard; or (ii) the Standard expires or is rescinded by the standard-setting body. However, Microsoft shall not be permitted to require, by contract or otherwise, third parties to use or adopt Microsoft's implementation of the Standard. To the extent Microsoft develops a proprietary implementation of a Standard, Microsoft Platform Software must

continue to support non-proprietary, industry implementations of such Standard (including without limitation for the purposes of enabling non-Microsoft Platform Software and non-Microsoft applications to Interoperate with Microsoft Platform Software and/or applications for Microsoft Platform Software).

b. Compliance With De Facto Standards. As to any Standard with which Microsoft is required to comply under the preceding paragraph, to the extent that industry custom and practice recognizes compliance with the Standard to include variations from the formal definition of that Standard (a "De Facto Standard"), Microsoft may discharge its obligations under this provision by complying with the de facto Standard provided that: (i) before doing so, Microsoft notifies Plaintiffs and the Special Master in writing of its intention to do so, and describes with reasonable particularity the variations included in the De Facto Standard; and (ii) Plaintiffs do not, within 30 days of receipt of such notice, object to Microsoft's intention to comply with the De Facto Standard.

1296. States' Remedy 16 is effectively a "truth in standards" provision, preventing Microsoft from engaging in deception, as the Court of Appeals held that it did with respect to Java. *Microsoft*, 253 F 3d at 76-77; *see* Shapiro Dir. ¶ 185; Green Dir. ¶ 144; Tiemann Dir. ¶ 192.

1297. States' Remedy 16 requires Microsoft to adhere to any industry standard that it has publicly stated it supports and that has been approved or is under consideration by a standard-setting body or has developed into a de facto industry standard. Pearson Dir. ¶ 98; *see* Appel Dir. ¶ 147; Kertzman Dir. ¶ 44; Green Dir. ¶ 144; Tiemann Dir. ¶ 192.

1298. The corollary is that States' Remedy 16 requires that Microsoft publicly disclaim that it implements a standard that it has previously claimed to support if and when Microsoft ceases to implement that standard. Shapiro Dir. ¶ 185.

1299. States' Remedy 16 requires Microsoft to continue to support an industry standard that it has claimed to support even if it chooses to create its own implementation of a standard by, for example, adding extensions to the standard. Kertzman Dir. ¶ 44; Green Dir. ¶ 144; Appel Dir. ¶ 147.

1300. States' Remedy 16 also prevents Microsoft from requiring others to adhere to its incompatible implementations of industry standards. Kertzman Dir. ¶ 44; Green Dir. ¶ 144; Appel Dir. ¶ 147.

1301. States' Remedy 16 provides flexibility to Microsoft in the case that a standard as used in practice differs from the formal definition of that standard. Appel Dir. ¶ 149. Significantly, Remedy 16 does not prevent Microsoft from extending or modifying standards, and does not prevent Microsoft from making product improvements. Shapiro Dir. ¶ 185. It merely prohibits Microsoft from claiming to adhere to an industry standard when it is actually using a proprietary implementation of that standard.

1302. States' Remedy 16 does not require Microsoft to adopt any particular standard. Nor does it even require Microsoft to adopt open standards in general. In fact, Microsoft would retain the right—openly—to attempt to move the industry toward its own version of any particular standard. Kertzman Dir. ¶ 51; *see* Green Dir. ¶ 142; Tiemann Dir. ¶ 192.

1303. This remedy will help prevent Microsoft from deceptively subverting industry standards and thereby excluding rivals seeking to offer competing software platforms. Shapiro Dir. ¶ 185.

1304. States' Remedy 16 prevents Microsoft from co-opting or undermining industry standards by replacing an open industry standard with its own proprietary codes and protocols, for the purpose, for example, of impeding the interoperability of potential competitors' products and services with Windows operating system products. Pearson Dir. ¶ 98. If Microsoft were deceptively to gain proprietary control over important interfaces, rival operating systems would find it harder to compete against Windows. Shapiro Dir. ¶ 185; *see* Schwartz Dir. ¶ 188.

1305. States' Remedy 16 prohibits Microsoft from proprietizing industry standards such as Kerberos, while publicly claiming compliance with such standards. This will restrain Microsoft from creating by stealth a closed proprietary system that controls users' access to Web services (and the access of Web service providers to such users). Schwartz Dir. ¶ 155; *see* Borthwick Dir. ¶ 113 (Remedy 16 will prohibit Microsoft from using Passport to favor Microsoft products).

C. Microsoft's Remedy Fails to Address Microsoft's Manipulation and Pollution of Industry Standards

1306. Microsoft's Remedy contains no provision comparable to States' Remedy 16. Shapiro Dir. ¶ 186. In particular, Microsoft's Remedy does not contain any provision that explicitly prohibits Microsoft from again deceiving third-party developers as it did with respect Java. Shapiro Dir. ¶ 186; Kertzman Dir. ¶ 52; Green Dir. ¶ 145; *see supra* Section IV.A.1 ("Microsoft's Remedy Has No Provisions That Address Its Commingling of Code or Its Deception of Java Developers"). Microsoft's Remedy therefore fails to address a key liability finding made by the District Court and affirmed by the Court of Appeals. Shapiro Dir. ¶ 186; Green Dir. ¶ 145.

1307. Thus, even assuming that Microsoft's Remedy required Microsoft to make all necessary disclosures to allow interoperation by third-party software, it does not address the problems created by the manipulation and pollution of industry and de facto standards. When Microsoft discloses its APIs, protocols, and other technical information, it encourages others within the industry to rely on this information as the means of achieving interoperability with Microsoft products. But Microsoft can, and has, subverted this reliance by not adhering to these standards, causing interoperability difficulties as significant as those created through nondisclosure. Therefore, in addition to addressing Microsoft's nondisclosure of necessary

information, an appropriate remedy must prevent the abuse of industry standards in order to provide meaningful relief. Appel Dir. ¶ 143.

1308. Finally, in light of the evolution of Web services and their centrality to Microsoft's future (*see, e.g.*, PX 123; PX 133; PX 1300), a remedy focusing on industry standards is essential. Although the Internet is largely built on open standards, Microsoft's control of the monopoly desktop operating system, combined with its ownership of the dominant browser and promotion of .NET Passport, means that it could lock consumers into a Microsoft-controlled world of Web services. Microsoft has already extended HTML in an undisclosed manner; secretly extending other Internet standards such as XML or SOAP would bind consumers more tightly to the .NET platform, thus potentially extinguishing competing Web service platform threats to Windows. *See* Schwartz Dir. ¶ 188.

D. States' Remedy 16 Meets the Court of Appeals' Objectives for Relief

1309. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

1310. States' Remedy 16 will achieve the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by preventing the continued use of a particular exclusionary practice—deception as to the cross-platform capabilities of Microsoft's Java tools.

1311. Remedy 16 also unfetters the market and prevents a recurrence of monopolization by preventing the use of particular practices—the use of claimed adherence to, and proprietization of, industry standards to frustrate cross-platform interoperability—that will

predictably have the same adverse effects on potential platform threats as the conduct found anticompetitive.

E. Microsoft's Criticisms of States' Remedy 16

1312. Microsoft has argued that the definition of "Standard-Setting Body" in the States' Proposed Remedy is vague, and could apply to any entity that claims to create a standard. Gates Dir. ¶ 449, 458. Mr. Gates testified that "Section 16 fails to distinguish between bona fide standard-setting bodies, such as the Internet Engineering Task Force or the World Wide Web Consortium, and ad hoc groups associated with particular companies or industry alliances, such as the Java Community Process." Gates Dir. ¶ 458.

1313. This is a misguided complaint, because the remedy only applies if Microsoft chooses to claim that its products are compliant with a particular standard. Schwartz Dir. ¶ 156. Microsoft thus itself chooses the standards bodies that it considers to be "bona fide."

1314. Microsoft complains that there may be several proposals for a particular standard submitted to the Standard-Setting Body, and that Microsoft is required to "fully" implement standards even before they have been finalized and adopted by a Standard-Setting body. Gates Dir. ¶ 456. But in that case, Microsoft would merely have to specify whether it is complying with the final standard or with one of the proposals. Schwartz Dir. ¶ 157.

1315. Microsoft complains that "[i]n most cases, there is no realistic option for Microsoft to build support for an industry standard into a product, but not 'publicly claim[ ]' that the product complies with the standard." Gates Dir. ¶ 453.

1316. Microsoft's complaint appears to be that it cannot avoid triggering the remedy if it supports a standard. That is the point of the States' Remedy 16. If Microsoft intends to build public support for a standard, then Microsoft inevitably must publicly state that it supports that standard. States' Remedy 16 merely seeks to prevent Microsoft from building public support for

a standard that it has secretly modified in a proprietary manner. If Microsoft wants later to disclaim support for the standard, it is free to do so.

1317. Microsoft also complains that a software product's "compliance" with a technical standard cannot be determined by objectively verifiable criteria, and that there is sometimes room for variation in how a standard is implemented. Gates Dir. ¶ 454.

1318. Microsoft's criticism is unfounded for several reasons. First, States' Remedy 16 is fundamentally a "Truth in Standards" provision, preventing Microsoft from engaging in deception, as it did with Java developers. Shapiro Dir. ¶ 185. If Microsoft publicly discloses the extent to which it is compliant with a variation of a standard, rather than the standard itself, then Microsoft is not in breach of States' Remedy 16. *See* Schwartz Dir. ¶ 157. This information will let developers know the information they require, and must request pursuant to States' Remedy 4, in order to achieve interoperability.

1319. Second, as Microsoft acknowledges, States' Remedy 16 itself recognizes that industry custom and practice may permit compliance with an industry standard to include variations from the formal definition of that standard. Gates Dir. ¶ 455. Remedy 16.b's "de facto" standards provision is satisfied if Microsoft "describes with reasonable particularity the variations" included in the de facto standard with which it has chosen to comply, and there is no objection from the Plaintiffs.

1320. Third, Bill Gates acknowledged that Microsoft already employs several processes under which Microsoft assesses its compliance with technical standards before it claims compliance. Tr. 4985:13-22 (Gates).

1321. Fourth, it appears that Microsoft's underlying concern is that States' Remedy 16 would hinder Microsoft's ability to claim compliance with a standard, *e.g.*, WSDL, when, under

a “strict view” of compliance, this is not the case. *See* Tr. 4988:17-4989:12 (Gates). Mr. Gates believes that the ability to make such inaccurate statements is “very valuable for consumers.” *Id*. In contrast, States’ Remedy 16 operates on the assumption that accurate statements promote interoperability and are more valuable to consumers.

1322. Microsoft’s last complaint is that nothing in States’ Remedy 16 states which products must comply with the standard and nothing grants Microsoft time to develop new implementations to meet changing specifications for a standard. Gates Dir. ¶ 457.

1323. Given that States’ Remedy 16 is fundamentally a “Truth in Standards” provision and triggered only when Microsoft claims its products comply with a standard, it is clear that Microsoft, through its public claims, decides which products comply with which standards. Moreover, industry custom and practice recognizes that there may be a period of adjustment after an industry standard specification has been changed. In that situation, Microsoft can satisfy States’ Remedy 16 merely by stating that it continues to comply with the former specification, until such time as it is ready to implement the updated specification.

XXIII. States' Remedy 17—Internal Antitrust Compliance

A. Purpose of States' Remedy 17

1324. The purpose of States' Remedy 17 is to provide those who monitor compliance with the Final Judgment with sufficient independence and reporting authority to ensure that the Final Judgment is complied with by Microsoft.

1325. An important first step to ensure that the substantive remedial provisions have their full and intended effect is to create a proactive and comprehensive internal compliance program. For an internal compliance program to succeed, those individuals charged with monitoring Microsoft's obligations under the Final Judgment must be given significant independent authority; without such, the interests of those responsible for monitoring compliance will necessarily, for better or for worse, align with their superiors.

1326. This fact is especially pertinent for this defendant, where senior executives entrusted with implementing some of the terms of the Final Judgment—Bill Gates, Jim Allchin and Chris Jones—were actively involved in and/or directed conduct found to be anticompetitive.

1327. Microsoft's Chairman, Bill Gates, testified to his commitment to comply with whatever remedies this Court imposes on Microsoft. Gates Dir. ¶ 156. However, much of the anticompetitive conduct sought to be remedied is a direct result of conduct engaged in or blessed by Mr. Gates. For example, Mr. Gates was not only aware of the anticompetitive threats and actions against Intel and Apple, but he was often the messenger of Microsoft's threats. *Microsoft*, 84 F. Supp. 2d at 35-36, 94-95, 105, 107, Findings Nos. 100, 102-03, 343, 347-49, 388, 396.

1328. Jim Allchin, Group Vice President for Platforms at Microsoft, is supervising Microsoft's compliance with III.D of its Remedy. Cole Dir. ¶ 11. However, Mr. Allchin was

one of the significant driving forces behind Microsoft's commingling strategy found to be unlawful by the Court of Appeals. *Microsoft*, 84 F. Supp. 2d at 51-52, Findings Nos. 166-71.

1329. Chris Jones, Vice President of the Windows Client Team of the Platforms Group at Microsoft, testified that he had responsibility for implementing certain provisions of Microsoft's Remedy. Tr. 5111:14-17 (Jones). In 1995, however, Mr. Jones sent a memorandum to Bill Gates recommending "bind[ing] the [Windows] shell to the Internet Explorer, so that running any other browser is a jolting experience"—one of the mechanisms employed by Microsoft to destroy the competitive threat posed by Netscape Navigator. PX 2013 at 6. On cross-examination, Mr. Jones strained to interpret this memorandum as indicative of Microsoft's goal to ensure that the "user experience was consistent and very well integrated." Tr. 5188:3-17 (Jones). When asked specifically how he understood the term "jolting experience" in his memo, Mr. Jones testified that his "understanding of how the term was meant was we want to make sure that people have an integrated experience." Tr. 5233:9-16 (Jones).

1330. This interpretation not only strains credulity, but directly contradicts the District Court's finding that Mr. Jones' recommendation was part and parcel of Microsoft's plan "to bind Internet Explorer more tightly to Windows as a technical matter," making it "more difficult for anyone, including systems administrators and users, to remove Internet Explorer from Windows 95 and to simultaneously complicate the experience of using Navigator with Windows 95." *Microsoft*, 84 F. Supp. 2d at 50, Finding No. 160.

1331. Given the active involvement by executives at the highest levels of Microsoft in conduct found to be anticompetitive, internal compliance with the Final Judgment cannot be entrusted solely to individuals whose self-interest is, and will continue to be, maintaining Microsoft's current monopoly status.

B. How States' Remedy 17 Achieves Its Intended Purpose

1332. The internal compliance programs in both parties' remedy proposals have many similarities, including some of the particular responsibilities of the respective compliance officers. Such duties include distributing copies of the Final Judgment to employees, obtaining written certifications of compliance from employees, and creating a mechanism for third-parties to file complaints regarding violations of the terms of the Final Judgment. States' Remedy 17.c.i-iv; Microsoft's Remedy IV.C.3.a-f.

1333. The inspection provisions in the respective remedies also share many similarities. *Compare* States' Remedy 17.f *with* Microsoft's Remedy IV.A.2-4 (permitting Plaintiffs reasonable access and inspection; requiring the creation of written reports by Microsoft).

1334. The major difference between the compliance mechanisms in the respective proposals is that States' Remedy 17 gives the Compliance Officer some measure of independent authority, thereby increasing the likelihood that the internal compliance program will be successful.

1335. Under States' Remedy 17, a Compliance Committee, consisting of at least three members of the Board of Directors who are not present or former Microsoft employees, is charged with hiring a Compliance Officer. States' Remedy 17.b. To ensure that Microsoft's obligations are considered by the highest levels of the company, the Compliance Officer reports directly to both the Compliance Committee and the Chief Executive Officer of Microsoft. *Id.*; Ashkin Dir. ¶ 166.

1336. The Compliance Officer has some protection against abrupt termination—with removal only permitted by the Chief Executive Officer upon the concurrence of the Compliance Committee. States' Remedy 17.d.

1337. The Compliance Officer must certify Microsoft's compliance on an annual basis, thereby enhancing the vigor of that officer's internal investigation. *Id.* at 17.c.vii.

1338. In addition, the Compliance Officer must report immediately to the Plaintiffs and the Special Master any credible evidence of a violation of the Final Judgment, thereby providing additional deterrence and giving Microsoft additional incentive to comply with the Final Judgment. States' Remedy 17.c.viii; Tr. 7463:4-12 (Shenefield).

1339. By empowering the Compliance Officer with both independent authority and a measure of job security, the Compliance Officer created by States' Remedy 17 is likely to be more successful in ensuring internal compliance with the Final Judgment.

1340. In addition, to ensure that the relevant information necessary to assess Microsoft's compliance with the Final Judgment is readily available, Microsoft is required to maintain relevant documents for a period of at least four years. States' Remedy 17.e.

C. Microsoft's Compliance Officer Does Not Have Sufficient Independent Authority to Effectively Monitor Microsoft's Obligations Under the Final Judgment

1341. Because they fail to give the Compliance Officer sufficient independent authority to monitor Microsoft's obligations, the internal compliance provisions in Microsoft's Remedy will have little success in policing Microsoft's obligations under the Final Judgment. Ashkin Dir. ¶ 162. Under Microsoft's Remedy, the Compliance Officer is wholly beholden to Microsoft; there are no assurances of independence, objectivity or continuity.

1342. The Compliance Officer under Microsoft's Remedy has no obligation to report violations to the Court or to the Plaintiffs or, in the absence of a complaint from a source external to Microsoft, even to the Technical Committee ("TC"). In addition, the Compliance Officer is not required to make any regular report regarding compliance to the Court, the Plaintiffs or the TC.

1343. By creating a Compliance Officer without sufficient independent authority to monitor Microsoft's obligations under the Final Judgment, and by failing to require compliance reports to the TC, the Court or the Plaintiffs, Microsoft's Compliance Officer is not likely to enhance Microsoft's efforts to comply with the Final Judgment.

D. States' Remedy 17 Meets the Court of Appeals' Objectives for Relief

1344. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

1345. States' Remedy 17 will prevent a recurrence of practices likely to result in monopolization in the future by recognizing the importance of an internal compliance mechanism in ensuring that potential future anticompetitive acts are discouraged, and, if they occur, quickly and efficiently identified.

E. Microsoft's Criticisms of States' Remedy 17

1346. Citing ambiguities in the States' Remedy generally, Bill Gates testified that the requirement that certain employees certify that they have read and understood the terms of the States' Remedy puts tens of thousand employees at risk for criminal contempt. Tr. 5050:1-5051:19 (Gates). This criticism is exaggerated. If an employee unknowingly violates the Final Judgment, criminal contempt sanctions would not be appropriate. However, requiring Microsoft employees to take responsibility for knowing and understanding the terms of the Final Judgment will increase the likelihood that they will take necessary steps to ensure full compliance with and adherence to the Final Judgment.

1347. A concern has also been raised that by requiring the Compliance Officer to report violations to the Plaintiffs and the Special Master, the Compliance Officer becomes an agent of

the Plaintiffs rather than an independent officer. Tr. 7462:12-24. However, the Compliance Officer created by Remedy 17, entrusted with developing and supervising Microsoft's internal compliance program, is likely to differ from those at Microsoft in charge of running the company's internal compliance program. Tr. 7462:25-7463:12 (Shenefield). By requiring the Compliance Officer to report judgment violations, States' Remedy 17 merely reduces the incentive of Microsoft to withhold information relevant to its compliance obligations. *Id.*

1348. Microsoft has also criticized Remedy 17 because it believes that requiring the Compliance Officer to disclose evidence of judgment violations would destroy the attorney-client privilege. *See* Microsoft Corporation's Memorandum Regarding Proposed Decree Compliance and Enforcement Provisions at 18. In addition, Microsoft claims that the Compliance Officer's reporting obligations would hinder the Compliance Officer's traditional role of providing compliance advice. *Id.* However, there is no requirement in Remedy 17 that a lawyer must serve as the Compliance Officer or be the individual entrusted with providing legal advice to employees on the subject of Microsoft's obligations under the Final Judgment. Opening Submission on Behalf of the Litigating States Regarding the Proposed Enforcement and Compliance Mechanisms ("Shenefield Submission") at 14-15.

XXIV. States' Remedy 18—Special Master

A. Purpose of States' Remedy 18

1349. As candidly observed by the Court of Appeals, "[b]y the time a court can assess liability, firms, products, and the marketplace are likely to have changed dramatically. This, in turn, threatens enormous practical difficulties for courts considering the appropriate measure of relief in equitable enforcement actions, both in crafting injunctive remedies in the first instance and reviewing those remedies in the second." *Microsoft*, 253 F.3d at 49.

1350. Given the enormous financial incentives that Microsoft has to protect its lucrative Windows monopoly, as well as the practical difficulties noted by the Court of Appeals in effectively redressing any anticompetitive conduct in the high technology sector, effective enforcement and compliance with the Final Judgment is essential.

1351. Compliance with the Final Judgment will at times necessarily conflict with Microsoft's own economic interests. States' Remedy 18, which provides for the appointment of a Special Master to monitor Microsoft's compliance with the Final Judgment and to aid the Court in enforcing the Final Judgment, creates an enforcement regimen that addresses those instances where these conflicts rise to the level of a potential violation of the Final Judgment. Its purpose is threefold: (1) to ensure that disputes/complaints are resolved in a timely manner; (2) to provide the parties and complainants with an informed forum to resolve disputes; and (3) to minimize the judicial resources required to enforce the Final Judgment.

1352. Effective and timely enforcement of the Final Judgment is crucial given the breadth of conduct engaged in by Microsoft that was designed to thwart competitive technologies. As noted by the District Court, "Microsoft has demonstrated that it will use its prodigious market power and immense profits to harm any firm that insists on pursuing initiatives that could intensify competition against one of Microsoft's core products. Microsoft's

past success in hurting such companies and stifling innovation deters investment in technologies and businesses that exhibit the potential to threaten Microsoft. The ultimate result is that some innovations that would truly benefit consumers never occur for the sole reason that they do not coincide with Microsoft's self-interest." *Microsoft*, 84 F. Supp. 2d at 112, Finding No. 412.

1353. States' Remedy 18 seeks to assure third-party developers and users of products and technologies that potentially threaten Microsoft's monopoly position that the provisions designed to remedy such conduct will have their intended effect, and that going forward such third parties will not suffer the consequences of initiating contempt proceedings. McGeady Dir. ¶ 92; Barksdale Dir. ¶¶ 143, 150.

1354. To ensure that competitors develop, promote and distribute their products free of Microsoft's influence, the community that both creates and funds many of these new and innovative items must be persuaded that the constraints imposed on Microsoft through the Final Judgment will effectively prevent Microsoft from using its monopoly power to destroy such efforts. Barksdale Dir. ¶¶ 143-44, 150. The effectiveness of the substantive remedial provisions of the Final Judgment directly correlates to their ability to be successfully enforced. Ashkin Dir. ¶ 159; Tiemann Dir. ¶ 79. Without effective enforcement, the substantive remedial provisions, notwithstanding their own independent merit, can be undermined. McGeady Dir. ¶ 93; Barksdale Dir. ¶ 143.

B. How States' Remedy 18 Achieves Its Intended Purpose

1355. States' Remedy 18 provides for the creation of a Rule 53 Special Master "to monitor Microsoft's obligations under the Final Judgment and to aid the Court in enforcing the Final Judgment."

1356. Because of the technical nature of the computer industry, any disputes that arise will likely raise complex technical questions requiring specific technical expertise. McGeady

Dir. ¶ 97; Kertzman Dir. ¶ 96; Barksdale Dir. ¶ 148. Therefore, for an enforcement mechanism to be effective, it must provide aggrieved parties with an informed forum for the resolution of disputes; otherwise, third parties will be reluctant to bring their grievances forward, notwithstanding that the substantive remedial provisions may provide some relief. McGeady Dir. ¶¶ 97, 99-100.

1357. States' Remedy 18 establishes an "Advisory Committee" comprised of technical, business and economic experts to help ensure that the Special Master's investigation is informed by up-to-date technical and industry expertise. McGeady Dir. ¶ 99; Barksdale Dir. ¶ 148. Without such assurances, companies affected by Microsoft's failure to comply with the Final Judgment will be hesitant to invoke any process to resolve such a dispute. McGeady Dir. ¶ 97.

1358. An effective enforcement mechanism also must keep pace with the dynamic nature of the computer industry. Accordingly, disputes arising as to compliance with the Final Judgment must be resolved in a timely and efficient fashion. Fama Dir. ¶ 148; McGeady Dir. ¶ 93; Ashkin Dir. ¶ 159; Kertzman Dir. ¶ 95; Richards Dir. ¶ 211; Barksdale Dir. ¶ 148; Mace Dir. ¶¶ 91, 100; Ledbetter Dir. ¶ 173; Tr. 3260:10-13 (Shapiro).

1359. In the computer industry, relief delayed is tantamount to relief denied. McGeady Dir. ¶ 93; Barksdale ¶ 144; Mace ¶ 91. This is particularly true when many of the remedial provisions seek to empower nascent technologies. *See* Shapiro Dir. ¶ 207 ("Rapid and effective enforcement is especially important for middleware threats" where a "six month delay . . . could make all the difference."); Tr. 7430:22-7431:8 (Shenefield).

1360. Third parties will not file complaints, notwithstanding their belief that Microsoft might be violating the Final Judgment, unless they are confident that the enforcement mechanism will provide timely and effective relief. McGeady Dir. ¶ 95.

1361. Swift enforcement of the remedies is of particular importance with respect to certain remedial provisions, including the disclosure and non-retaliation provisions. Kertzman Dir. ¶ 95; Richards Dir. ¶ 211. For example, if a software developer misses a product cycle or a key distribution date, it can have a significant impact on the success of that product, and potentially the long-term financial viability of the developer. Richards Dir. ¶ 211; Mace ¶ 91 (delay of a few months could allow a product to miss a critical selling season).

1362. The experience of both Netscape and IBM—and in particular the actions taken by Microsoft to ensure that their products were not ready for the retail release of Windows 95—evidence the importance of the need for timely relief. *Microsoft*, 84 F. Supp. 2d at 33, 40-41, Findings Nos. 90-91, 122-25.

1363. Because Microsoft refused to grant IBM a license to pre-install Windows 95 until the eve of its launch, IBM was unable to benefit from the surge of PC sales that coincided with the launch. *Id.* at 40-41, Findings Nos. 122-25.

1364. Similarly, Microsoft did not release to Netscape until late October 1995 "critical technical information and assistance in order to complete its Windows 95 version of Navigator in time for the retail release of Windows 95." *Id.* at 33, Findings Nos. 90-91. "The delay in turn forced Netscape to postpone the release of its Windows 95 browser until substantially after the release of Windows 95 (and Internet Explorer) in August 1995. As a result, Netscape was excluded from most of the holiday selling season." *Id.* at 33, Finding No. 91.

1365. To ensure effective and timely relief, States' Remedy 18.f. sets forth a procedure that allows complaints to be submitted, reviewed, investigated, processed, and if not resolved, sent to the Court within an expedited but reasonable time frame. Because aggrieved parties can be assured that their complaint will be resolved in a timely fashion, these parties will aid in the

enforcement of the Final Judgment by bringing their complaints to the Special Master. McGeady Dir. ¶ 96.

1366. Any person who believes Microsoft is not complying with underlying remedial provisions may submit a complaint to the Special Master. States' Remedy 18.f.i. Once a complaint has been submitted, the Special Master provides a copy of the complaint to the State chosen by the Plaintiffs to process such complaints. *Id.*

1367. Forms for complaints will be available on Microsoft's Internet Web site. *Id.* at 18.f.ii. The Special Master, in her discretion, may preserve the anonymity of any third-party complainant. *Id.* at 18.f.iii.

1368. After receiving the complaint, the Special Master has 14 days to determine whether an investigation is warranted. *Id.* at 18.f.iv. In making this determination, the Special Master has at his/her disposal all of the powers available under Rule 53, including questioning Microsoft, the complainant and the Plaintiffs and asking for further documentation from any of the entities involved. *Id.*; Tr. 7418:13-18, 7443:19-7444:8 (Shenefield).

1369. If the Special Master determines that an investigation is not warranted, the process ends. States' Remedy 18.f.iv. The Special Master is responsible for weeding out the meritless complaints, and thereby limits the investigation to only those complaints where Microsoft's compliance with the Final Judgment is truly at issue. Tr. 7418:19-23 (Shenefield). The Special Master must issue a statement notifying the complainant, Microsoft and each Plaintiff of her decision. States' Remedy 18.f.iv.

1370. If the Special Master decides to pursue a formal investigation, the Special Master must notify Microsoft, each Plaintiff and the complainant of the decision to do so. *Id.* 18.f.v. Fourteen days after receiving notice, Microsoft and the complainant must file responses with the

Special Master, including any documentation they wish the Special Master to consider. *Id*. at 18.f.vi.

1371. After the responses have been received, the Special Master will schedule a hearing within 21 days. *Id*. at 18.f.vii. During this 21 day period, and at the hearing, the Special Master may use any of the powers afforded under Rule 53, including examining witnesses and requiring production of documents. *Id.* The Plaintiffs have standing to participate at the hearing. *Id*.

1372. Within 15 days after the conclusion of the hearing, the Special Master will file a report with the Court pursuant to the requirements of Rule 53. *Id*. at 18.f.viii. If the dispute at issue requires the Special Master to render an interpretation of the Final Judgment, the Special Master's report will contain only the factual findings relevant to the dispute, reserving questions of interpretation for the Court. Tr. 7420:21-7421:1 (Shenefield). If the underlying dispute does not involve interpretation, in addition to presenting factual findings in the Rule 53 Report, the Special Master may also include a proposed order. Tr. 7420:14-20 (Shenefield).

1373. As required under Rule 53(e)(2), the parties may object to the Special Master's report. States' Remedy 18.f.ix. Therefore, once the dispute reaches the Court, the relevant facts are found, the disputed issues are framed, and the Court has a roadmap for its consideration of the matter. Tr. 7421:10-17 (Shenefield)

1374. By weeding out meritless complaints, investigating the underlying dispute and providing factual findings and recommendations to the Court, the Special Master will aid the Court in enforcing the Final Judgment and minimize the drain on the Court's resources.

1375. Under Remedy 18, the Court retains the power to "institute its own proceedings and modify, amend or interpret the Final Judgment as necessary either *sua sponte* or at the request of the Plaintiffs or Microsoft." States' Remedy 18.g.

1376. At any time during the course of a proceeding, the Special Master may, *sua sponte* or at the behest of the parties, take action to resolve disputes through various means of dispute resolution. Tr. 7419:21-7420:5 (Shenefield). The fact that the Special Master procedure continues, adds to, rather than detracts from, the ability of the Special Master to resolve disputes short of intervention by the Court. Tr. 7484:4-21 (Shenefield); *see also* Tr. 2196:23-2197:2 (Kertzman) (presence of Special Master helps facilitate the process of negotiation and discussion).

1377. To obtain the maximum benefit from the Special Master process, the findings made by the Special Master, and the work product created by either the Special Master or the Advisory Committee, are not prohibited from submission in another forum as it pertains to Microsoft's obligations under the Final Judgment. States' Remedy 18.h; Tr. 7462:3-11 (Shenefield). Likewise, the Special Master and members of its Advisory Committee are not prohibited from testifying in any such proceeding. States' Remedy 18.h.

1378. The Court, in addition to reviewing the recommendations of the Special Master, may *sua sponte* or at the request of the Plaintiffs or Microsoft, modify, amend or interpret the Final Judgment as it deems necessary. *Id*.

C. The Enforcement Mechanisms in Microsoft's Remedy Contain Significant Flaws That Limit Their Effectiveness

1379. Significant flaws in the enforcement mechanisms proposed by Microsoft ensure that the substantive remedial provisions are unlikely to have their intended affect. There is no corollary in Microsoft's Remedy to the Special Master provision in States' Remedy 18.

1380. The Technical Committee ("TC") proposed in Microsoft's Remedy IV.D is not an enforcement vehicle. Tr. 7438:4-12 (Rule). Rather, the TC is simply a voluntary dispute resolution procedure whereby complaints can be raised, considered and reviewed.

1381. In addition, the enforcement authority in Microsoft's Remedy resides solely with the Department of Justice and the Settling States—not with the TC. Microsoft's Remedy IV.A.1; Tr. 7438:22-7439:2 (Rule). While the Department of Justice or the Settling States may use the work of the TC to aid in an investigation, the work of the TC is not admissible for any purpose in any enforcement proceeding before the Court. Microsoft's Remedy IV.D.4.d.

1382. The enforcement procedures set forth in Microsoft's Remedy do not offer timely or efficient relief either through the dispute resolution procedure proposed by the TC or by petitioning the Department of Justice or Settling States to bring an enforcement action. McGeady Dir. ¶ 95; Fama Dir. ¶ 150; Ashkin Dir. ¶ 160; Kertzman Dir. ¶ 95; Richards Dir ¶ 213; Barksdale Dir. ¶ 144. As noted previously, if relief is not provided in a timely manner, it can be hollow. McGeady Dir. ¶ 93; Ashkin Dir. ¶ 160; Barksdale Dir. ¶ 144; Fama Dir. ¶ 150.

1383. Under Microsoft's Remedy, the TC has no internal deadline to ensure that a complaint is considered in a timely manner. Fama Dir. ¶ 150; McGeady Dir. ¶ 94; Ashkin Dir. ¶ 160; Richards Dir. ¶ 213. Even if the TC proceeds expeditiously, unless Microsoft accepts the TC's findings, an aggrieved party must undertake the time-consuming process of convincing the Plaintiffs to bring an enforcement action to have their claim redressed. McGeady Dir. ¶ 95; Barksdale Dir. ¶ 145; Tr. 2516:7-10 (Mace).

1384. For these reasons, aggrieved parties are less likely to file a complaint with the TC even if they were entitled to relief under the substantive provisions of Microsoft's Remedy. McGeady Dir. ¶¶ 94-95; Tiemann Dir. ¶ 79.

1385. Likewise, petitioning the Department of Justice or the Settling States also raises timeliness concerns, McGeady Dir. ¶ 95, notwithstanding Microsoft's claim that the Plaintiffs "can actually bring a claim to the Court within one day." Tr. 1436:4-6 (Webb). This has not been the case at least with respect to the Department of Justice's prior attempts to enforce the terms of a Final Judgment to remedy Microsoft's conduct. The Justice Department spent over a year investigating the underlying conduct before filing their motion for contempt on October 20, 1997. *See* Affidavit of Steven L. Holley, *United States v. Microsoft Corporation*, (Civ. No. 94-1564), at ¶ 6 ("On September 19, 1996, the DOJ issued a CID to Microsoft seeking information about the inclusion of various Internet-related technologies in Windows 95.").

1386. The time-consuming nature of the enforcement mechanisms contained in Microsoft's Remedy is of great concern because it will likely require the TC's assistance to resolve disputes. For example, under III.J.1 of Microsoft's Remedy, the TC may have to determine whether a particular disclosure would or would not compromise security. Tr. 6466:1-9 (Allchin). Since swift enforcement of the disclosure provisions is of critical importance, the time associated with the enforcement mechanisms in Microsoft's Remedy raise concern about the effectiveness of the underlying remedy.

1387. The membership restrictions imposed on the TC also detracts from the effectiveness of Microsoft's Remedy. As Microsoft has noted, one of the purposes of the TC is to aid the Plaintiffs in understanding the technical complexities that are sure to arise in many disputes. Tr. 7473:21-7474:2 (Rule). Unfortunately, the membership restrictions that apply to the TC prevent anyone who anticipates continued active involvement or employment in the computer industry from serving. McGeady Dir. ¶ 98. The result of these restrictions is the prohibition of those who possess the most relevant technical and/or industry expertise from

serving on the committee. *Id.* Because complainants are not assured of an informed forum to understand their grievance, they will be unlikely to voice their complaints under the enforcement mechanisms contained in Microsoft's Remedy. *Id.* ¶ 97.

D. States' Remedy 18 Meets the Court of Appeals' Objectives for Relief

1388. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

1389. States' Remedy 18 provides internal and external incentives for Microsoft to comply; enhances the speed with which violations are detected, investigated and remedied; reduces information asymmetries detrimental to enforcement; and eliminates time-consuming, protracted litigation by streamlining disputes in a manner that allows for timely and effective relief without burdening the demand on judicial resources. Remedy 18 will therefore prevent a recurrence of practices likely to result in monopolization in the future by creating an effective enforcement mechanism that ensures prompt dispute resolution.

E. Microsoft's Criticisms of States' Remedy 18

1390. Three concerns raised by Microsoft about the procedure set forth in States' Remedy 18.f can be resolved with simple modifications to the language in the remedy. First, as Remedy 18.f stands, the States are not required to screen complaints by third parties before they are submitted to the Special Master; rather, under provision 18.f.iv, the Special Master has 14 days to determine whether a formal investigation is warranted upon receipt of a complaint. Because the assurance of a quick response is critical, Remedy 18.f puts the Special Master under a short deadline to make this initial determination, with the opportunity to consult with the States and/or Microsoft as appropriate.

1391. To address any concern that the initial screening should be done by the States, the Court could add a section between 18.f.iii. and 18.f.iv. that provides: *"Within fourteen (14) days after the receipt of the complaint, the State chosen by the Plaintiffs to serve as the recipient of such complaints must inform the Special Master whether the Plaintiffs support further investigation of the complaint."* The Court also would modify 18.f.iv. to read: *"Within fourteen (14) days of being informed that the Plaintiffs support further investigation of the complaint*, the Special Master shall determine if an investigation is warranted."

1392. A second concern raised is that States' Remedy 18.f.ix could be read to allow non-parties to object to the Special Master's Report. Rule 53(e)(2) of the Federal Rules of Civil Procedure only allows parties to object to a Report by a Special Master. If the use of the word "complainant" in 18.f.ix. suggests that third parties have the right to object to the Special Master's Report (an interpretation contrary to the intent of the States), the Court could simply substitute "Plaintiffs" for "complainant" in 18.f.ix. Tr. 7449:13-18 (Shenefield).

1393. A third concern that has been raised is the failure of States' Remedy 18 to include an adequate dispute resolution procedure. While the Special Master, where appropriate, may undertake substantial efforts to mediate and resolve complaints, there is no formal procedure for dispute resolution in States' Remedy 18.f. While the States believe that ample opportunity for informal dispute resolution exists under Remedy 18, if the Court wished to include a more definite procedure for dispute resolution in 18.f., the Court could include the following provision. *"At any time after formal notice of the decision to investigate has been given, Microsoft, the Plaintiffs or the complainant may petition the Special Master for mediation. The Special Master, after having consulted with Microsoft, the Plaintiffs and complainant, will decide whether mediation is likely to aid in the resolution of the dispute. If the Special Master*

decides to proceed with mediation, the timelines for the procedures set forth in Section 18.f will be halted for up to twenty-eight (28) days to allow mediation to occur. Upon notice by the Special Master that the mediation process has ended, the procedures set forth in Section 18.f will apply from the day mediation began. The time during which the Special Master is considering the petition for mediation will apply to time deadlines set forth in Section 18.f."

1394. Assigning to the Special Master the decision to pursue alternative dispute resolution would prevent Microsoft from invoking dispute resolution solely as a method for delay. Tr. 7453:24-7454:23 (Shenefield).

1395. In addition to its specific criticisms, Microsoft contends that because its remedy is the result of a negotiated, collaborative effort, it will lead to fewer disputes in interpreting the substantive provisions at issue. However, given the complexity of the remedy proposed by Microsoft, and considering the past experience of the Department of Justice in seeking to enforce a prior collaboratively drafted and negotiated decree to address conduct by Microsoft, there is no guarantee that this will necessarily be the case. *See United States v. Microsoft Corp*., 980 F. Supp. 537, 541 (D.D.C. 1997) *rev'd* 147 F.3d 935 (D.C. Cir. 1998) (enforcement proceeding became entangled in a dispute over the meaning of the terms "separate product" and "integrated product").

1396. In fact, one of Microsoft's own expert witnesses may not completely agree with either Microsoft or the Department of Justice on which provisions of Microsoft's Remedy would prevent or stop each of the specific acts the Court of Appeals found to be anticompetitive. *See* Tr. 6661:15-6664:12 (Elzinga). More significantly, Microsoft and the Department of Justice do not agree in all instances on which provisions of Microsoft's Remedy would prevent or stop each of the acts found anticompetitive by the Court of Appeals, indicating, as acknowledged by Dr.

Elzinga some difference in interpretation of Microsoft's Remedy. Tr. 6665:18-6667:18 (Elzinga).

1397. Other witnesses for Microsoft acknowledged that terms they claimed were unclear or ambiguous in the States' Remedy were also found in the same or nearly the same wording in Microsoft's Remedy. In some cases, key terms, such as "interoperate," are not defined at all in the Microsoft Remedy, which necessarily creates substantial room for interpretation and/or disagreement. Tr. 5794:24-5796:25 (Madnick); Tr. 7110:8-7111:9 (Bennett).

XXV. States' Remedy 19—Orders and Sanctions

A. Purpose of States' Remedy 19

1398. The purpose of States' Remedy 19 is to provide Microsoft with significant incentives to comply with the Final Judgment. Absent significant potential penalties for non-compliance, Microsoft will have significant financial incentives to either disregard or delay complying with the Final Judgment given the enormous monopoly profits it generates from Windows. This is particularly true here given the pace of change in the computer industry, where delayed relief may effectively result in no relief.

1399. Remedy 19 increases the likelihood that Microsoft does not view delay as a method of profit-maximizing behavior. Tr. 7460:13-7461:5 (Shenefield). By making clear in advance that knowing and repeated acts of non-compliance will have serious consequences for Microsoft, there is a significantly increased likelihood that Microsoft will fully and completely comply with terms of the Final Judgment in a timely manner. *Id.*

B. How States' Remedy 19 Achieves Its Intended Purpose

1400. Well-defined and meaningful sanctions above and beyond a finding of contempt are needed because non-compliance will undoubtedly be the profit-maximizing course for Microsoft.

1401. States' Remedy 19 provides the Court with two useful tools to aid in enforcing compliance with the Final Judgment and incenting Microsoft to be in full compliance at all times. If the Court determines that Microsoft "has knowingly committed an act of Material Non-Compliance," the Court has a range of sanctions that it can impose on Microsoft, including "licens[ing] its source code for the Microsoft software that is implicated." States' Remedy 19.c. If the Court determines that "Microsoft has knowingly engaged in a pattern or practice of Material Non-Compliance," it can impose additional sanctions, including ordering Microsoft to

pay civil penalties and considering proposals from the Plaintiffs or the Special Master as to additional appropriate sanctions including additional conduct remedies. *Id.* at 19.d. Of course, Microsoft is afforded the requisite due process, through notice and an opportunity to be heard as to why the alleged conduct does not amount to a "Knowing Act of Material Non-Compliance" or a "Pattern or Practice of Material Non-Compliance." *Id.* at 19.c-d.

1402. Expressly providing for significant sanctions in the Final Judgment informs both Microsoft and the computer industry at large that compliance with the Final Judgment is imperative. Barksdale Dir. ¶¶ 149-50. As the District Court found, the indirect effects of Microsoft's past anticompetitive conduct stifled innovation throughout the computer industry. *Microsoft*, 84 F. Supp. 2d at 112, Finding No. 412. To ensure that Microsoft cannot frustrate the purpose of the substantive remedies through non-compliance or the alternative avenue of delay in compliance, sufficient sanctions are needed. Barksdale Dir. ¶ 150.

1403. As a monopolist in a highly lucrative industry, Microsoft's natural economic incentives will be to delay compliance with the Final Judgment. Tr. 7487:5-20 (Shenefield). By imposing strong sanctions for non-compliance, Remedy 19 will help to realign Microsoft's economic incentives to reward compliance with the Final Judgment. Tr. 7460:13-7461:5 (Shenefield).

1404. Under States' Remedy 19.f, either at the behest of the Special Master, the Plaintiffs or *sua sponte*, the Court will review "evidence that Microsoft has brought or has threatened to bring a groundless claim of Intellectual Property infringement" for the purpose of hindering interoperability between non-Microsoft software and Windows and/or Microsoft middleware—one of the significant and primary purposes of the States' Remedies. Given that groundless intellectual property lawsuits have the potential to frustrate the goal of promoting

interoperability, Remedy 19.f provides the Court with the power to put an end to such conduct. Tr. 7463:23-7464:17 (Shenefield).

C. Microsoft's Remedy Has No Meaningful Sanctions for Non-Compliance

1405. There are no meaningful sanctions for non-compliance built into Microsoft's Proposed Remedy. Barksdale Dir. ¶ 146. The only sanction of any kind—a potential one-time, two-year extension of the term—is trivial and is triggered only in the event of "a pattern of willful and systematic violations." Microsoft's Remedy V.B. It will do little to reduce Microsoft's economic incentives for non-compliance, and in fact may only encourage Microsoft to engage in continued delay once it has been found to be in non-compliance since the two-year extension is a one-time sanction.

D. States' Remedy 19 Meets the Court of Appeals' Objectives for Relief

1406. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

1407. States' Remedy 19 provides significant sanctions for non-compliance. By creating incentives for Microsoft to promptly comply with its obligations under the Final Judgment, Remedy 19 will thus prevent a recurrence of practices likely to result in monopolization in the future.

E. Microsoft's Criticisms of States' Remedy 19

1408. Microsoft criticizes States' Remedy 19.c on the grounds that ordering Microsoft to license the source code of the software implicated by a finding of Material Non-Compliance will result in an unjustified, unreasonable and confiscatory taking of Microsoft's intellectual

property. This criticism, addressed in more detail in Section V.D (States' Remedies Will Not "Confiscate" Microsoft's Intellectual Property), has no merit.

1409. A "crown jewel" provision in a final judgment and/or consent decree is common in antitrust cases, and is particularly appropriate here given the enormous incentives that Microsoft will have to frustrate enforcement of the Final Judgment. Tr. 7460:9-7461:5 (Shenefield). Crown jewel provisions are necessary to realign the economic incentives of the defendant to comply fully and expeditiously with terms of the Final Judgment, and ordering mandatory licensing is a common and well-recognized antitrust remedy. *See United States v. Glaxo Group Ltd.*, 410 U.S. 52, 64 (1973) (cases cited therein).

XXVI. States' Remedy 20—Reporting of Certain Transactions

A. The Purpose of States' Remedy 20

1410. As detailed above, preserving the independence and viability of middleware platform threats and keeping open the distribution channels for those platform threats are important to this Court's unfettering the market from anti-competitive conduct, terminating the illegal maintenance of Microsoft's monopoly, and lowering the barriers to entry that represent the fruits of Microsoft's illegal conduct. *Microsoft*, 253 F.3d at 103.

1411. The record in the liability trial and in this proceeding demonstrates, as discussed below, Microsoft has used its vast financial resources and, absent an appropriate remedy, can continue to use those resources, to threaten the independence and viability of particular middleware platform threats and to hinder their distribution. An appropriate remedy—providing for the monitoring of certain of Microsoft's investment activity—is therefore necessary to "ensure that there remain no practices likely to result in monopolization in the future." *Microsoft*, 253 F.3d at 103 (quotation omitted).

1412. The liability trial demonstrated that Microsoft used direct cash investments in rivals, in part, in an effort to gain influence over, and thereby to control or deter, potential platform competition. After identifying RealNetworks as a platform threat, for example, Microsoft offered RealNetworks a cash investment if it would abandon its platform ambitions. Microsoft ultimately executed a stock purchase agreement with RealNetworks, in part, in exchange for what it believed to be a commitment from RealNetworks to cede control of its format to Microsoft. *Microsoft*, 84 F. Supp. 2d at 38, Finding No. 113; *see also* Richards Dir. ¶¶ 59, 204-05.

1413. Microsoft similarly made a cash investment in Apple Computer at the same time as it executed an anticompetitive agreement with Apple for the exclusive use of Internet Explorer

in exchange of the continuation of Mac Office. *Microsoft*, 84 F. Supp. 2d at 96, Finding No. 353.

1414. Microsoft also attempted to use a proposed cash investment in Netscape as part of the overall effort to prevent the platform competition presented by Netscape's Navigator. The liability record demonstrates that Microsoft offered Netscape a cash investment as part of its attempt to convince the company to give up its platform ambitions. As Findings of Fact 79-89 describe, Microsoft offered Netscape a "special relationship"—including special access to undisclosed APIs—if it agreed to focus on creating applications and abandoned its browser platform. As part of this relationship, Microsoft proposed "an equity investment as a natural extension" of the deal. GX 33 (meeting notes of Netscape's Andreessen); *see also* GX 35 (AOL email detailing Andreessen's account of that meeting).

1415. Second, Microsoft has used inducements to companies that constitute channels of distribution to block the distribution of various platform threats. Thus, Microsoft entered into deals with IAPs designed to restrict Netscape's access to the distribution channels that most efficiently lead to the acquisition of browser usage share. *Microsoft*, 253 F.3d at 103.

1416. Microsoft continues to use its financial strength in the same or similar ways as those identified by the District Court and Court of Appeals. Microsoft still makes substantial cash investments in companies, thereby securing control over the distribution channels needed by rival middleware to most efficiently gain usage share. For example, Microsoft has used cash investments to gain substantial influence over network operators (cable companies) in order, at least in part, to promote its interactive television middleware software and thereby limit distribution of competitive interactive television middleware that can serve as a platform for the

development of cross-platform applications. Kertzman Dir. ¶ 59; Tr: 2225:6-2226:20 (Kertzman).

1417. As explained above, although deployed using a server and a set top computer connected to a television, interactive television middleware is based on Java standards and most applications written to such software will in turn work on non-Windows PC operating systems. Tr. 2100:17-2101:17, 2103:16-2104:17, 2108:18-2110:6 (Kertzman). Given the vast number of users of cable televisions, interactive television middleware therefore has the potential to attract significant attention from application developers who seek the largest audience for their applications and whose applications will work on PC's using non-Window operating systems. Tr. 2100:17-2101:17; 2207:13-2209:20 (Kertzman). Cable companies are the channel of distribution for interactive television software—akin to the position OEMs enjoy for other categories of middleware. Kertzman Dir. ¶ 54; Tr. 2139:20-2140:1 (Kertzman). As a new entrant into the interactive television market, Microsoft initially had little influence over cable network operators. Even without a demonstrably effective interactive television middleware product, Microsoft has made substantial investments in various cable network operators ranging from several million dollars to over 5 billion dollars. Kertzman Dir. ¶ 55; PX 1750; PX 1751; PX 1753; PX 1754; PX 1756; Tr. 2224:25-2226:9 (Kertzman). As part of many of these investments, Microsoft secured either a guaranteed minimum usage of its middleware product for a given period of time or control over the technology advisory boards that would make selections of the middleware product to be used in that cable company's markets. Tr. 2172:5-2174:25; 2221:22-2222:15 (Kertzman). These investments served at least in part as "a vehicle by which Microsoft exerts control of the distribution channel" for interactive television middleware. Tr. 2141:12-13 (Kertzman).

1418. For example, after Microsoft acquired 29.9 percent of British cable company Telewest, the company suddenly cut off all contact with Liberate. Before Microsoft's investment, Liberate and Telewest were in the process of negotiating a long term contract. Liberate was unable to do business with Telewest until antitrust authorities in the European Union began an investigation into Microsoft's relationship with Telewest. Tr. 2164:20-2168:7 (Kertzman). Microsoft has also secured control over other companies through the successful formation of technical advisory boards controlled by Microsoft as part of an investment. Tr. 2221:4-2224:24 (Kertzman).

1419. Other States' Remedies seek, in part, to eliminate behavior similar to that targeted by Remedy 20. For example, Remedy 6 directly prohibits Microsoft from entering into exclusive contracts. Remedy 6, however, although important, cannot alone achieve this goal. Remedy 6 cannot protect middleware distribution channels closed by indirect action—namely by the pressure generated by investment influence. Moreover, the Plaintiffs cannot enforce Remedy 6 without knowledge of Microsoft's contracts. While the market may become aware of exclusive agreements to exclude rival software, it is unlikely to learn about the specifics of agreements that are part of longer-term general investments.

1420. Similarly, the Hart-Scott-Rodino Antitrust Improvements Act of 1976 ("HSR Act"), in part, seeks to eliminate harm similar to that prevented by Remedy 20, because it also requires Microsoft to provide notice to antitrust authorities of many investments. 15 U.S.C.A 18a (Supp. 2001). However, the HSR Act only requires Microsoft to report multimillion dollar investments of larger companies. The HSR Act alone will not provide the information necessary to monitor Microsoft's investments.

B. How States' Remedy 20 Achieves Its Intended Purpose

1421. Remedy 20 requires Microsoft to provide notice to the Plaintiffs of any investment in various segments of the computer, software, or financial industry sixty days prior to consummation of that transaction. The notice must contain the same basic information required by the HSR Act. In essence, this requires Microsoft to fill out a short report before each investment in enough time for the Plaintiffs to investigate that transaction before it closes.

1422. Remedy 20 requires Microsoft to report (a) direct or indirect acquisitions, (b) investments in entities, such as security purchases, and (c) Microsoft's exclusive license of intellectual property. It generally requires Microsoft to report acquisitions or cash investments, as well as transactions that are *de facto* acquisitions.

1423. Remedy 20 governs both Microsoft and its subsidiaries. This prevents Microsoft from skirting the rule's requirements by simply channeling its acquisitions through a subsidiary company. The text of the remedy reads:

> ***20. Reporting of Certain Transactions***.
>
> *a. Notice. For any direct or indirect acquisition (which term includes an acquisition of securities or of assets) or investment by Microsoft or any of its Subsidiaries and for any exclusive license of technology or other intellectual property to Microsoft or any of its Subsidiaries, Microsoft must provide the Plaintiffs with sixty (60) days' prior written notice of the consummation of such acquisition, investment or license transaction where such transaction involves (either as a direct or indirect acquiree, investee or licensor) a person (other than Microsoft or any of its Subsidiaries) whose business (or any part thereof) has been or could reasonably be classified under (or any of whose Subsidiary's businesses, or any part thereof, has been or could reasonably be classified under) any of the following North American Industry Classification System codes, and Microsoft did not own 33% or more of the securities of such person prior to December 1, 2001:*
>
> *i. 334 (computer and electronic product manufacturing);*
>
> *ii. 42143 (computer and computer peripheral equipment and software wholesalers);*

iii. 5133 (telecommunications);

iv. 5132 (cable networks and program distribution);

v. 52 (finance and insurance); or

vi. 5415 (computer systems design and related services).

b. Information. Accompanying such written notice shall be the same information that would be reported if the Hart-Scott-Rodino Antitrust Improvements Act of 1976 (the "HSR Act") were applicable to such transaction. Such information shall be treated as confidential to the extent that it would be so treated under the HSR Act.

1424. This remedy does not prohibit Microsoft from making any investment. Microsoft is free under the remedy to continue investing its funds in any way it decides. The remedy simply requires Microsoft to provide *notice* of the details of the investment to the nine state Attorneys General in this case. Those Attorneys General can then decide whether to act on the information provided by Microsoft either to enforce this agreement or other law.

1425. Any burden imposed on Microsoft by this remedy is minimal. Microsoft simply must provide sixty days notice before it proceeds with an investment, which should not delay the closing of potential transactions. Moreover, to the extent any investment or pattern of investments is routine and non-controversial, routine approval procedures can readily be established.

1426. The notice required by this remedy also is minimal. The remedy requires nothing more than the notice required by the HSR Act.

C. Microsoft's Remedy Fails to Address Microsoft's Use of Investments

1427. In contrast, Microsoft's Remedy has no companion provision. Microsoft's Remedy is absolutely silent about Microsoft's investments and provides no limits on its ability to use financial investments to close channels of distribution or otherwise destroy platform threats.

D. States' Remedy 20 Meets the Court of Appeals' Objectives for Relief

1428. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

1429. States' Remedy 20 will achieve the complementary objectives of unfettering the market from Microsoft's anticompetitive practices and preventing a recurrence of practices likely to result in monopolization in the future by preventing the use of a practice, the use of strategic investments to limit competition, that will predictably have the same adverse effects on potential platform threats as the conduct found anticompetitive.

E. Microsoft's Criticisms of States' Remedy 20

1430. Microsoft's sole criticism of extending application of the HSR Act is that it will prevent Microsoft from engaging in the normal transaction of its daily business. According to Mr.Gates, the remedy is worded so broadly as to require Microsoft to report:

(a) simple acquisitions of equipment 'assets' such as telephones, PC's , printers, and insurance policies,"
(b) routine purchases of financial instruments
(c) routine business transactions involving an exclusive technology, "no matter how small;" and
(d) investments by third parties in which Microsoft holds short term equity investments as part of its cash reserves

Gates Dir. ¶ 462.

1431. Once again, Microsoft's reading of the provision is unrealistic. No witness testifying on behalf of the Litigating States testified that Remedy 20 required the reporting described by Mr. Gates. In fact, Mr. Kertzman (who was asked during cross-examination whether Remedy 20 required Microsoft to report small routine transactions such as the acquisition of "two Dell computers") specifically disavowed Mr. Gates' misreading of Remedy

20. Tr. 2132:16-22 (Kertzman). The provision does not cover the acquisition of inventory in the normal course of business. Moreover, that routine acquisitions fall within this provision, routine procedures can be arranged for their approval.

1432. Remedy 20 is intended to govern only *actual* investments. Accordingly, there is no need to modify its language, but to the extent there is any doubt to the extent that one believed this provision was not clear, the addition of the following sentence would provide clarification: "*In no event shall this provision be read to require Microsoft to report the acquisition of inventory acquired in the normal course of its business*."

1433. Additionally, Remedy 20 will not subject Microsoft to undue burden in requiring the company to report all of its investments in the industries specified under Remedy 20. If this Court agrees that Microsoft would be overburdened by reporting small short-term investments, it can easily: insert after the word "investment" the phrase "*in an amount larger than 1% of the target company.*"

XXVII. States' Remedy 21—Effective Date, Term, Broad Interpretation, Costs and Fees

A. Purpose of States' Remedy 21

1434. There are four purposes of States' Remedy 21: to set a term for the final judgment; to set an effective date for that judgment; to offer guidance as to interpretation of the final judgment; and to provide that the States be awarded costs and fees, along with a procedure for facilitating the award.

B. Term

1435. The conduct at issue in this case dates back to at least 1995, seven years ago. *Microsoft*, 253 F.3d at 64 (quoting *Microsoft*, 84 F. Supp. 2d at 50, Finding No. 160); Tr. 4534:3-9 (Gates).

1436. Moreover, the current strength and likely durability of Microsoft's monopoly suggests that it will take a relatively long period of time for any of the remedies to impact the applications barrier to entry or competition more generally in the market for operating systems. Shapiro Dir. ¶ 203.

1437. Due to the critical role of expectations (by ISVs, IHVs, OEMs, and end users), and the fact that entry takes time and may well occur through a multi-stage process (such as cross-platform middleware followed by new operating systems, or an increased role for non-Windows server operating systems followed by the growth of non-Windows clients), the decree should last long enough to assure industry participants that Microsoft will not be able to again stifle entry (due to the expiration of the decree) for years to come after entry is attempted. For example, software developers are less likely to port their applications to a new operating system if Microsoft will be able, within a year or three, to enter into agreements with OEMs and ISVs discouraging them from distributing or supporting cross-platform middleware important to that

operating system. Five years is too short a time to give the assurances necessary for entry to become significantly less risky. Shapiro Dir. ¶ 204.

1438. The remedial order in this case must last for a significant number of years to be effective at facilitating entry, given that serious threats to this monopoly simply do not arise very often due to the network effects at play. Thus, notwithstanding the fact that the software industry as a whole moves at a rapid pace, if a major threat arises every five to ten years, a five-year decree is very unlikely to restore competition in any meaningful sense. Shapiro Dir. ¶ 205; Responsive Submission of John H. Shenefield on Behalf of the Litigating States Regarding the Proposed Enforcement and Compliance Mechanisms ("Shenefield Resp. Sub.") at 16; Tr. 3415:1-23 (Shapiro); Tr. 7459:11-7460:8 (Shenefield).

1439. Microsoft's own examples of "short" decrees include the six-and-a-half year term of the original 1995 Microsoft decree, the seven year term of the FTC consent decree signed by Digital Equipment Corp. *See* Microsoft Corporation's Response to Plaintiff Litigating States' Opening Submission Regarding the Proposed Enforcement and Compliance Mechanisms ("Microsoft Resp. Compliance Mem.") at 17.

1440. And the recent five-year AOL-Time Warner consent decree, cited repeatedly by Microsoft, Microsoft Compliance Mem. at 24, Microsoft Resp. Compliance Mem. at 17, is an inapposite example. For example, AOL, unlike Microsoft, was not found by a court (or even the FTC or an administrative law judge) to have violated the antitrust laws. *See* Shenefield Resp. Sub., at 16. In addition, the order involved a vertical merger case, not a monopolization case in which it had been found to have undertaken unlawful acts to exclude competitors from the market. Perhaps most importantly, unlike here, the FTC had in that case clearly identified

competitors and potential competitors that could mount a serious challenge to AOL's market power. *Id*.

1441. Further, a five-year term rewards delay because it allows defendants to take advantage of the slowness inherent in the enforcement process. In any event, it is undisputed that the standard term for antitrust consent decrees is ten years. Microsoft Resp. Compliance Mem. at 18. And only in the rarest cases has the term for antitrust consent decrees been shorter than ten years. Shenefield Resp. Sub., at 16-17 and n. 56.; Tr. 7459:11-7460:8 (Shenefield). The most recent conduct remedy imposed by a Court in a Section 2 case had a term of ten years. *See Image Technical Servs., Inc. v. Eastman Kodak, Co.*, 125 F.3d 1195, 1227-28 (9th Cir. 1997); Shenefield Resp. Sub., at 17, n. 56.

1. Effective Date

1442. Any final judgment must have an effective date, whether the date it is ordered or a later date.

2. Broad Interpretation / Costs and Fees

1443. Remedy 21.b makes clear that the purpose of the remedy is to restore the prospect of competition in the operating systems market. Given the potential for ambiguity in any final judgment, a statement of broad purpose will assist in providing guidance as to interpretation.

1444. Remedy 21.c provides a timetable and procedure for the orderly payment of costs and fees.

C. How States' Remedy 21 Achieves Its Intended Purpose

1445. States' Remedy 21 achieves its purpose with the simple straightforward provisions set forth below:

21. Effective Date, Term, Broad Interpretation, Costs and Fees.

a. *Effective Date. This Final Judgment shall take effect 30 days after the date on which it is entered.*

b. *Term. This Final Judgment shall, subject to any extension pursuant to Section 1, expire at the end of ten years from the date on which it takes effect.*

c. *Broad Interpretation. All of the provisions of this Final Judgment, whether substantive, regulatory or procedural, will be interpreted broadly consistent with its remedial purpose of restoring the prospect of competition to the operating systems market.*

d. *Costs and Fees. Plaintiffs shall be awarded reasonable costs and fees. The Plaintiffs shall submit a motion for costs and fees, with supporting documents as necessary, no later than forty-five (45) days after the entry of this Final Judgment.*

D. Failings in the Companion Provision in Microsoft's Remedy

1446. Microsoft's Remedy does not contain any guidance as to interpretation or provide a mechanism regarding the payment of fees and costs. Microsoft's Remedy does not explicitly provide for an effective date and is therefore presumably effective from the date on which it is entered. It therefore does not provide the useful notice period reflected in States' Remedy 21.

1447. Microsoft's Remedy provides for a five year term. *See* Microsoft's Remedy V.A. This is shorter, by several years, than the period that has elapsed since even the onset of Microsoft's anticompetitive conduct. *See Microsoft*, 253 F.3d at 64 (quoting *Microsoft*, 84 F. Supp. 2d at 50, Finding No. 160); Tr. 4534:3-9 (Gates). It also departs from the standard ten-year term of an antitrust decree, which is not justified in this case.

E. States' Remedy 21 Meets the Court of Appeals' Objectives for Relief

1448. As the Court of Appeals held, a remedies decree in an antitrust case must seek to unfetter a market from anticompetitive conduct, terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation and ensure that there remain no practices likely to result in monopolization in the future. *Microsoft*, 253 F.3d at 103.

1449. Microsoft has held a dominant position in the operating system market for more than thirteen years. *Microsoft*, 84 F. Supp. 2d at 19, Finding No. 35. As noted previously, the conduct at issue in this case dates back to at least 1995, seven years ago. *Microsoft*, 253 F.3d at 64 (quoting *Microsoft*, 84 F. Supp. 2d at 50, Finding No. 160); Tr. 4534:3-9 (Gates). In order to unfetter the market from the anti-competitive conduct, a term that exceeds the length of time since the onset of the anticompetitive conduct, but is shorter that the period of market dominance, is reasonable.

1450. Given the network effects and the formidable applications barrier to entry present in the software industry, competitive threats to Microsoft's monopoly do not arise every day and, when they do, they will likely take significant time to have an impact on the market. In light of these market realities there is no reason for an effective forward-looking remedy to depart from the standard 10-year term of antitrust decrees.

F. Microsoft's Criticisms of States' Remedy 21

1451. Microsoft's criticism of States' Remedy 21 is that the ten-year term is excessive given the pace of change in the software industry. Gates Dir. ¶ 463; Murphy Dir. ¶ 242. As discussed above, the marketplace realities, including the significant applications barrier to entry facing any competing technology, do not warrant departure from the ten-year term typically imposed in anti-trust cases. Moreover, if changes in technology render the decree unnecessary or detrimental to competition, Microsoft may petition the Court to have the Final Judgment lifted. *See* States' Remedy 18.g.

XXVIII. Definitions of Middleware

1452. The remedies proposed by the States and Microsoft both contain definitions of "Microsoft Middleware Product." *See* States' Remedy 22.x; Microsoft's Remedy VI.K. The parties' competing remedy proposals also contain other middleware-related definitions. *See* States' Remedy 22.w (definition of "Middleware"); Microsoft's Remedy VI.J (definition of "Microsoft Middleware"); Microsoft's Remedy VI.M (definition of "Non-Microsoft Middleware"); Microsoft's Remedy VI.N (definition of "Non-Microsoft Middleware" Product). The scope of these definitions determines the substantive impact of a number of the parties' remedy proposals.

A. Definitions Used by the Court of Appeals and District Court

1453. Both the Court of Appeals and the District Court have addressed the definition of "middleware." The definitions that they adopt are consistent with the more expansive view of middleware set forth in the definitions in the States' Remedy. As recognized by the States' definition, both Courts held that cross-platform middleware can consist of any class of software products that can reduce the applications barrier to entry by lowering the costs associated with porting an application to multiple operating systems. *See Microsoft*, 253 F. 3d at 53-54; *Microsoft*, 84 F. Supp. 2d at 17-18, Findings Nos. 28-29.

1454. The Court of Appeals defined "middleware" to be "software products that expose their own APIs." *Microsoft*, 253 F.3d at 53. The Court of Appeals further observed that "[b]ecause of this, a middleware product written for Windows could take over some or all of Windows's valuable platform functions—that is, developers might begin to rely upon APIs exposed by the middleware for basic routines rather than relying upon the API set included in Windows. If middleware were written for multiple operating systems, its impact could be even greater. The more developers could rely upon APIs exposed by such middleware, the less

expensive porting to different operating systems would be. Ultimately, if developers could write applications relying exclusively on APIs exposed by middleware, their applications would run on any operating system on which the middleware was also present." *Id.*

1455. The District Court similarly spoke in broad terms about the definition of middleware in its Findings of Fact, describing it as software that "relies on the interfaces provided by the underlying operating system while simultaneously exposing its own APIs to developers." *Microsoft*, 84 F. Supp. 2d at 17, Finding No. 28. The District Court further found that middleware technologies "have the potential to weaken the applications barrier to entry." *Id.* at 28, Finding No. 68; *see also* Appel Dir. ¶¶ 34, 38-50 (defining middleware as software that exposes one or more of its own APIs to provide services to other software, and describing how middleware facilitates porting applications to numerous operating systems).

1456. In particular, the District Court found that Microsoft was broadly concerned "that the APIs exposed by middleware technologies would attract so much developer interest, and would become so numerous and varied, that there would arise a substantial and growing number of full-featured applications that relied largely, or even wholly, on middleware APIs. The applications relying largely on middleware APIs would potentially be relatively easy to port from one operating system to another. The applications relying exclusively on middleware APIs would run, as written, on any operating system hosting the requisite middleware." *Microsoft*, 84 F. Supp. 2d at 28, Finding No. 68.

1457. As discussed in the District Court's detailed findings, Microsoft was concerned by threats posed by a variety of cross-platform middleware products, including electronic mail and calendaring software, *Microsoft*, 84 F. Supp. 2d at 30, Findings Nos. 78, 120 (Microsoft concerns about the threat posed by Lotus Notes); Intel's Native Signal Processing Software

("NSP"), *id.* at 30, 34, Findings Nos. 78, 97; and multimedia creation, delivery and playback software, *id.* at 30, 36-38, Findings Nos. 78, 104, 111 (Microsoft concerns about Apple's and RealNetworks' multimedia software).

1458. In sum, although the District Court recognized that Microsoft devoted special attention to thwarting the threat posed by two types of middleware—namely, Netscape's Navigator browser and the Java technologies—the District Court also found that "Microsoft was concerned with middleware as a category of software; each type of middleware contributed to the threat posed by the entire category." *Microsoft*, 84 F. Supp. 2d at 28, Finding No. 68.

B. A Single Middleware Product Does Not Need To Provide an API Set that Replaces the Win32 API Set in Order to Merit Protection

1459. Neither the Court of Appeals nor the District Court held that a middleware product need expose a range of APIs equivalent to, or even close to, the range of APIs exposed by Windows in order to assist in lowering the applications barrier to entry—and consequently merit protection under a Final Decree.

1460. The District Court found and the Court of Appeals affirmed that "neither Navigator, Java, nor any other middleware product could now, or would soon, expose enough APIs to serve as a platform for popular applications, much less take over all operating system functions. *Microsoft*, 253 F.3d at 53 (citing *Microsoft*, 84 F. Supp. 2d at 17-18, Findings Nos. 28-29). Yet, the District Court concluded that Microsoft's anticompetitive conduct directed towards Netscape and Java violated antitrust law. And the Court of Appeals agreed, expressly noting that § 2 of the Sherman Act covers nascent threats to competition like middleware, even though the middleware at issue did not presently threaten Windows such that it warranted inclusion in the relevant market. *Id.* at 54.

1461. In discussing the threat posed by RealNetworks' multimedia software, the District Court observed that "[i]n 1997, senior Microsoft executives viewed RealNetworks' streaming software with the same apprehension with which they viewed Apple's playback software—as a competitive technology that could develop into *part of a middleware layer* that could, in turn, become broad and widespread enough to weaken the applications barrier to entry." *Microsoft*, 84 F. Supp. 2d at 37-38, Finding No. 111 (emphasis added). Thus, the District Court recognized that middleware that could become "part of a middleware layer" also was a threat to Microsoft because it too could erode the applications barrier to entry.

1462. Plaintiffs' computer science expert Dr. Appel concurred. Specifically, he testified that "[a] single piece of middleware need not provide a complete set of APIs in order to help serve as an alternative platform for an application. Several pieces of middleware combined together can jointly serve as a platform for applications." Appel Dir. ¶ 43.

C. The Differences in the Competing Definitions of Middleware

1463. The parties' dispute as to the appropriate scope and definition of middleware for purposes of a Final Judgment relates significantly to their competing definitions of "Microsoft Middleware Product."

1464. Microsoft limits its definition of "Microsoft Middleware Product," as it relates to software that exists today, to five Microsoft middleware products that represent five categories of middleware: (1) Internet Explorer (internet browser); (2) Microsoft's Java Virtual Machine (JVM software); (3) Windows Media Player (multimedia client software); (4) Windows Messenger (instant messaging software); and (5) Outlook Express (email client software). *See* Microsoft's Remedy VI.K.1.

1465. The States' definition of "Microsoft Middleware Product", as it relates to software that exists today, comprises fourteen categories of middleware: (1) internet browsers; (2) email

client software; (3) media creation, delivery and playback software; (4) instant messaging software; (5) voice recognition software; (6) digital imaging software; (7) directories; (8) Exchange; (9) calendaring systems; (10) systems and enterprise management software; (11) Microsoft Office; (12) handheld computing device synchronization software; (13) directory services and management software; and (14) the Common Language Runtime component of the .NET framework and Compact Framework. *See* States' Remedy 22x.i. In addition, the States' definition of "Middleware" also includes network operating systems. *Id.* 22.w.

D. Areas of Agreement Between the Parties

1466. The parties agree that "Microsoft Middleware Product" should encompass the following software categories: (1) internet browsers; (2) email client software; (3) media creation, delivery and playback software; and (4) instant messaging software. Moreover, there appears to be little disagreement that the Common Language Runtime component of the .NET Framework, and the Compact Framework, should be included within the definition of middleware because the CLR, and the APIs or class libraries it exposes to developers, provide a software platform on top of Windows. *See* Appel Dir. ¶ 76 & n.5 (quoting deposition testimony of Microsoft Group Vice President Jim Allchin); *id.* ¶ 74; Schwartz Dir. ¶ 76 & Fig. 2. Indeed, Microsoft's own witnesses conceded that the .NET Framework is, from a platform development standpoint, analogous to and competes with the Java middleware platform. Allchin Dir. ¶ 64.

E. Areas of Disagreement Between the Parties

1467. There are nine categories of software that remain in dispute. States' computer science expert Dr. Appel testified that all of the categories of software identified in States' Remedy 22.x.i fall within the definition of middleware commonly used in the industry and adopted by the Court of Appeals and District Court. Appel Dir. ¶ 72. Microsoft has not rebutted this testimony. Specifically, Microsoft has offered no evidence that the software products

enumerated in the States' definition of "Microsoft Middleware Products" (1) do not expose APIs that ISVs can write to, and (2) could not form part of a middleware layer that could, in turn, become broad and widespread enough to weaken the applications barrier to entry.

1. Handheld Computing Synchronization Software and Calendaring Systems Software

1468. Handheld computing synchronization software is software that runs on a PC and exposes APIs so that it can communicate with and interoperate with handheld computing device software, and that allows the two computing devices effectively to synchronize information and data back and forth with one another. Calendaring systems software, which Microsoft provides as part of its Outlook package of software (a broader suite of software than just Outlook Express), is another type of software that runs on both PC clients and handheld devices. Synchronization typically occurs between a handheld device and a PC by placing the handheld device in a "cradle" that is connected to a PC. However, wireless synchronization, in which a handheld and a PC exchange data via a server over the Internet, is increasingly becoming a popular mode of synchronization. Mace Dir. ¶¶ 25-26.

1469. Handheld computing devices today compete directly with Windows PCs for those consumers who do not need the ability to create or edit lengthy documents, and who primarily need to manage information and data, including email and calendaring information. Handheld devices compete most directly with laptop PCs and, as handheld technology continues to improve in the coming years, it is anticipated that handhelds will offer increased competition to PCs as handheld devices become more capable and able to offer functionality today performed on the PC. Handheld devices also offer a software platform that competes with Windows for ISVs. Mace Dir. ¶¶ 12-18; Shapiro Dir. ¶¶ 187-91. As a competing platform for ISV development and interest, handheld operating systems like the Palm OS also have the potential to

lower the applications barrier to entry. Finally, handheld devices that interoperate with PCs running a non-Microsoft operating system make those PCs more valuable to consumers and thus more competitive with Windows PCs. Tr. 474:21-475:6 (Barksdale).

1470. Microsoft has acknowledged the competitive threat posed by handheld computing devices; indeed, Microsoft argued—albeit unsuccessfully—that handheld devices posed a sufficient threat to Windows PCs that they should be included within the relevant market for antitrust liability purposes. *Microsoft*, 253 F.3d at 52. And, although the District Court found that handheld devices presently did not qualify for inclusion within the relevant market, the Court did find that "[i]t is possible that, within the next few years, those consumers who otherwise would use an Intel-compatible PC system solely for storing addresses and schedules, for sending and receiving E-mail, for browsing the Web, and for playing video games might be able to choose a complementary set of information appliances over an Intel-compatible PC system without incurring substantial costs." *Microsoft*, 84 F. Supp. 2d at 15-16, Finding No. 23.

1471. Today, one of the most significant uses of handheld devices is storing and managing a variety of information and data, including calendaring information that consumers also keep on their PCs. Accordingly, handheld devices must be able to interoperate with Windows PCs if they are to have any commercial viability. Mace Dir. ¶¶ 24-26, 30.

1472. Handheld synchronization software, like the middleware threats posed by Java and Navigator, offers the potential for increasing the competitive viability of competing computer operating systems. Shapiro Dir. ¶ 187. For example, the Palm OS today runs on over 21 million handheld devices created by a variety of hardware manufacturers. Mace Dir. ¶ 10. More than 13,000 software programs run on the Palm OS, making it one of the largest software platforms after Windows. Mace Dir. ¶ 12. As such, it provides a platform threat that has the

potential to lower the applications barrier to entry. *See supra* Section III.D ("Hand-Held Devices").

1473. If Microsoft is able to discriminate against manufacturers of competing handheld devices by making synchronization between Windows PCs and Microsoft handheld devices (*e.g.*, Pocket PC) more effective or seamless, or by hindering interoperability with third parties by the non-disclosure of information relating to the synchronization software used on Windows, Microsoft can effectively thwart the competitive threat to Windows posed by manufacturers of competing handheld operating systems. Mace Dir. ¶¶ 30-32, 80; Shapiro Dir. ¶ 191-93. By contrast, a remedy that ensures that the protections afforded middleware are also afforded handheld synchronization software will create an environment where competition between PCs and handheld devices can take place on the merits. Mace Dir. ¶¶ 93, 96.

2. Microsoft Office

1474. Microsoft Office is a suite of business productivity software that exposes many APIs that ISVs use to develop software that runs on top of Office. Tiemann Dir. ¶ 94; McGeady Dir. ¶ 42. Because it is by far the leading suite of business productivity software, including Microsoft Word, Excel, Outlook and PowerPoint, it is one of the most important middleware platforms for business software. In fact, there are entire books written about how to use Office as a software platform. Appel Dir. ¶ 81.

1475. Office is one of the most widely used and most profitable software applications in the world, accounting for revenues to Microsoft that are comparable to Windows' revenues. *Microsoft*, 84 F. Supp. 2d at 43, Finding No. 132. As such, Office serves as a enormous barrier to entry for any competing operating system. Indeed, its importance is such that the States' Remedy includes a proposal that would mandate Microsoft to auction off a license so that a third party could attempt to port Office to a non-Microsoft operating system.

1476. Because Office is so widely used, and because it exposes rich APIs for ISVs to write applications to, Office is appropriately included within the definition of Microsoft Middleware Product to ensure the effectiveness of any remedy, including particularly the disclosure remedies. Appel Dir. ¶¶ 81-87; *see supra* Section X.C.2d ("The APIs Used by Microsoft Office are Not Required to be Disclosed under Microsoft's Remedy").

3. Network Operating Systems, Directories, Directory Services and Management Software, Systems and Enterprise Management Software, Microsoft Exchange

1477. Software that resides on network servers and exposes APIs for use by applications, such as network operating systems, directories, directories services and management software, systems and enterprise management software, and Microsoft Exchange (Microsoft's email server platform) are middleware worthy of protection. All of these categories of software perform classic middleware functions—they expose APIs to other software applications (in this case, applications that run on networks) and they receive services from desktop operating systems. Tr. 1776:9-1779:12 (Ledbetter). As such, these forms of middleware perform the same platform functions as middleware residing on a PC, and provide a platform that competes with the Windows PC platform. Ledbetter Dir. ¶ 46; Tr. 1776:9-1779:12 (Ledbetter); PX 1530 at Tr. 68:12-69:20 (Greene Deposition Transcript). Indeed, even Mr. Gates concedes that network operating systems could become a general purpose software development platform. Gates Dir. ¶ 149.

1478. Server operating systems expose APIs for use by applications. The "migration" of applications written to run on desktop PCs to applications written to run on network servers demonstrates that server operating systems provide the same platform function as middleware residing on a PC. To the extent that server operating systems interoperate across multiple PC operating systems, and can support significant applications, they can reduce the applications

barrier to entry by making software accessible across a wider variety of PC operating systems. Ledbetter Dir. ¶¶ 47-50; Tr. 1776:9-1779:12 (Ledbetter).

1479. Similarly, server-based directory services software provides integral functionality to PCs operating on a network. Directory services provide necessary authentication and authorization functions allowing network computing environments to operate securely and effectively. Directory software also exposes APIs that are relied upon by software applications written to run on network computing environments. Ledbetter Dir. ¶¶ 51-55. As such, it is middleware worthy of protection.

1480. Finally, Microsoft Exchange, the server side software that interoperates with Microsoft's client side email software, such as Outlook Express, also is middleware. McGeady Dir. ¶ 44. Including Microsoft Exchange within the definition of middleware is important to ensure interoperation between Windows and non-Microsoft handheld devices. Mace Dir. ¶ 80.

4. Voice Recognition Software and Digital Imaging Software

1481. Voice recognition software and digital imaging software are two relatively new and potentially dynamic software applications that expose APIs to other software. These nascent middleware applications are currently being developed and will certainly be platforms in the future. Ashkin Dir. ¶ 169. Voice recognition and digital imaging software could erode the applications barrier to entry to the extent that it becomes an important and highly demanded category of software that, if ported to multiple operating systems, makes competing operating systems more competitive. Tiemann Dir. ¶ 124 (cross-platform middleware, including digital imaging software and voice recognition software, makes Linux a more viable operating system); Tr. 3346-3349 (Shapiro). Thus, voice recognition software and digital imaging software are properly included in the States' definition of "Microsoft Middleware Product." States' Remedy 22.x.

XXIX. The Testimony of Microsoft's Expert Witnesses is Entitled to Little Weight

1482. Microsoft offered testimony from two expert economists (Kevin Murphy and Kenneth Elzinga) and two expert computer scientists (Stuart E. Madnick and John K. Bennett). Cross-examination of these witnesses revealed a number of reasons why their opinions should be given little weight.

1483. Both of Microsoft's economic experts, Drs. Murphy and Elzinga, are relative newcomers to the economics surrounding the software industry. Both only began to write about the software industry in 1998. Tr. 3941:3-3942:21 (Murphy); Tr. 6691:4-15 (Elzinga).

1484. Moreover, Dr. Murphy is not even a specialist in antitrust economics. Dr. Murphy's academic specialty is labor economics, particularly focusing on income inequality, unemployment, and economic growth. Tr. 3939:18-3940:14 (Murphy). His testimony in this case represents a foray into an area of economics outside of his particular specialty.

1485. Of additional concern, Microsoft paid for what little research Microsoft's economic experts have conducted concerning the software industry. Microsoft commissioned both Dr. Murphy's and Dr. Elzinga's 1998 software industry papers after it hired them as consultants. Tr. 3941:3-3942:21 (Murphy); Tr. 6693:5-25 (Elzinga). Dr. Murphy agreed that the bulk of his published research on the software industry has been commissioned and paid for by Microsoft. Tr. 3941:13-17 (Murphy). Similarly, Dr. Elzinga's major papers on the software industry were all funded by the Microsoft corporation. PX 2442, 2444. Dr. Elzinga has also served as an expert witness on behalf of Microsoft in two other antitrust cases. Tr. 6703:16-6704:6 (Elzinga).

1486. The conclusions reached by both Dr. Murphy and Dr. Elzinga in their Microsoft-funded software papers are in line with the positions Microsoft has taken in this litigation—

including positions rejected by the Court of Appeals. PX 2442 (Microsoft does not have monopoly power in the PC market); 2444 (the remedies entered by the District Court in 1999 were bad for consumers; those remedies were proposed to antitrust authorities, including the DOJ, by Microsoft's competitors); Tr. 3943:25-3945:3 (Murphy) (entry into an initially monopolized market can in fact reduce consumer welfare; multiproduct monopoly can lead to better design incentives than the non-cooperative pricing that prevails under competition).

1487. Microsoft's paid consultants with little background in the industry contrast poorly with the States' economist, Dr. Shapiro—who possesses extensive experience and a long running independent academic interest in the economic issues surrounding network industries and software. Shapiro Dir. ¶¶ 1-3. Dr. Shapiro's pioneering work on network effects, written some seventeen years ago, is in fact cited by the Court of Appeals. *Microsoft*, 253 F.3d at 49, citing Michael L. Katz & Carl Shapiro, Network Externalities, Competition and Compatibility, 75 Am. Econ. Rev. 424 (1985).

1488. The testimony of Microsoft's expert computer scientists, Drs. Madnick and Bennett, also share certain attributes that caution against giving significant weight to their testimony. First, Drs. Madnick and Bennett have both appeared on Microsoft's behalf in numerous prior legal proceedings. Tr. 5727:4-5728:19 (Madnick) (serving as an expert witness on behalf of Microsoft in four cases within the last three years); Bennett Dir. ¶ 13 (serving as an expert witness in three cases on behalf of Microsoft).

1489. Second, while both were put forth by Microsoft as blanket rebuttal witnesses, offering their opinion on a wide range of topics—such as the feasibility of a number of provisions in the States' Remedy—neither expert did the necessary study and investigation to support their opinions. For example, Dr. Madnick testified that States' Remedy 1 is infeasible.

Madnick Dir. ¶¶ 166-203. However, Dr. Madnick admitted that he reviewed the source code for Windows XP for only 8-10 hours and spent only 3-4 hours using Windows XP Embedded to arrive at this determination. Tr. 5745:18-20, 5975:18-21 (Madnick).

1490. Dr. Bennett engaged in a similarly cursory review. In his testimony concerning States' Remedy 1, Dr. Bennett admitted that he had spent 30-50 hours reviewing the source code for Windows XP Professional and some 25 hours working with Windows XP Embedded. Tr. 6955:16-6956:1 (Bennett). Yet it is far from clear what use Dr. Bennett made of his review of these two products. He acknowledged that his review of the Windows XP Professional source code and of Windows XP Embedded did not change any of his opinions. Tr. 6954:24-6955:12 (Bennett). In coming to his conclusions on Remedy 1, Professor Bennett made no efforts to determine (nor was he generally aware of) what software Microsoft had "bound" into the operating system; did not undertake any tests or experiments to determine what functionality is degraded or impaired if Internet Explorer is removed from the operating system; and made no effort to remove IE from Windows XP and replace it with another browser—while at the same time testifying that "[g]iven enough work, anything is possible with software." Tr. 6070:7-13, 6972:4-6985:13, 7004:4-8, 7040:1-2 (Bennett). With respect to Windows XP Embedded, Dr. Bennett did not make any empirical record—or even any notes—of the operating system components he had chosen to build his "runtimes," Tr. 6957:11-6959:10 (Bennett); did not attempt to see if Windows XP Embedded could run applications, Tr. 6960:11-13 (Bennett); and did not perform any "substantive" testing or evaluation of the XP Embedded runtimes, Tr. 6960:14-16 (Bennett).

1491. During cross-examination, Dr. Madnick admitted not to have remembered materials relevant to his direct testimony and failed to investigate issues pertinent to the

testimony he offered. *See* Tr. 5761:25-5763:10 (testified that server interoperability was not addressed during the liability phase of the case but admitted that he did not study the liability phase record in great depth); Tr. 5784:15-5785:21 (testified that he had reviewed competitors' complaints regarding interoperability but could not identify a single complaint when asked); Tr. 5841:15-22 (did not investigate whether Microsoft's recent disclosures regarding Kerberos would be sufficient to allow non-Microsoft servers to interoperate with Microsoft's .NET Passport for purposes of user authorization); Tr. 5844:3-19 (could not name a single protocol that was required to be disclosed under III.E of Microsoft's Remedy); Tr. 5946:12-5947:17 (testified that Microsoft's developers own use of internal APIs did not give Microsoft applications a significant advantage but admitted not to have investigated any of these instances); Tr. 5999:4-6000:1 (not aware of and did not investigate Microsoft's internal testing procedures).

1492. Finally, on cross-examination, Drs. Madnick and Bennett both gave testimony that raises questions about the weight to be given to their opinions. For example, Dr. Madnick gave conflicting testimony on his use of the Court of Appeals' definition of "middleware." During his first day of testimony, Dr. Madnick asserted that in formulating his opinions, he had accepted and used the Court of Appeals definition of middleware. *See* Tr. 5883:14-25; 5885:17-5886:13; 5887:1-7; 5888:20-5889:14; 5899:5-10; 5902:12-17 (Madnick). However, when he returned the following day, Dr. Madnick stated that the Court of Appeals definition of "middleware" was not in any way relevant to his testimony. Tr. 6037:4-25 (Madnick); *see* Tr. 5967:14-5968:19 (Madnick).

1493. In his direct testimony, Dr. Bennett noted that many of his opinions were based on information that he had received from Microsoft in the week prior to submitting his direct testimony. *See* Bennett Dir. ¶¶ 40, 48, 51, 60, 130. However, on cross-examination, it became

readily apparent that—other than the information he received from Microsoft, which information he had not really probed—Dr. Bennett did not engage in any independent evaluation or investigation to support these opinions. For example, while testifying about the "intractable" and "unreasonable" testing and support burden imposed by the States' Remedy (*see* Bennett Dir. ¶¶ 39-58, 81-82, 88-89, 119-20), Dr. Bennett admitted not to have investigated or considered information beyond what was relayed to him by Microsoft. *See* Tr. 7052:6-7055:25, 7066:23-7074:19 (Bennett).

1494. The States' computer science expert, Dr. Appel, contrasts starkly with the troubling attributes of Microsoft's expert computer scientists. First, unlike Drs. Madnick and Bennett, who have served repeatedly as experts on behalf of Microsoft, this case represents the first time that Dr. Appel has ever been retained as an expert. Appel Dir. ¶ 23. He chose to serve as an expert on behalf of the States' because of his firm belief in the importance of the issues presented in the case and because of his considerable relevant expertise to assist in explaining a number of the case's technical issues. *Id.*

1495. Second, Dr. Appel provided testimony based on careful a review of some of the key products at issue in this case. Over a period of a several *weeks*, Dr. Appel undertook an analysis, with the support of two technical assistants, of the Windows XP operating system source code to support his testimony concerning the scope of the disclosures required under the States' Remedy. Appel Dir. ¶¶ 3, 24.o, 106, Exhibit F (providing a detailed summary of the procedures used in reviewing the code and the results obtained); Tr. 2968:7-24, 3219:6-3220:17 (Appel). Dr. Appel also studied and reviewed Windows XP Embedded in confirming his opinions on the feasibility of Microsoft complying with States' Remedy 1. Appel Dir. ¶¶ 9, 24.n, 136-38, Exhibits G, H, & I; Tr. 2967:22-2968:6, 3212:7-3215:8 (Appel).

1496. Third, Dr. Appel's testimony was based on the same definition of middleware that was used by the Court of Appeals. Appel ¶ Dir. 38. That definition represents one of the key computer science questions at issue in this case, and Dr. Appel ensured that his understanding of, and testimony on, the question of middleware was consistent with the understanding expressed by the District Court's Findings of Fact and the Court of Appeals decision. *Id.* ¶ 38.

1497. For all the foregoing reasons, the testimony of Microsoft's expert economists and computer scientists is entitled to little weight, and the Court should credit the more reasoned testimony of the States' experts.

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