

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

STATE OF NEW YORK, *et al.*,

Plaintiffs

v.

MICROSOFT CORPORATION,

Defendant.

Civil Action No. 98-1233 (CKK)

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FINAL JUDGMENT

MEMORANDUM OPINION

*“There is a remedy for all things but death”*¹

INTRODUCTION

Presently pending before the Court are two dueling remedy proposals seeking to redress the wrongs inflicted upon competition by Defendant Microsoft Corporation. These proposals were presented to this Court following the district court’s determination of liability for violation of the Sherman Act, a partial affirmance by the United States Court of Appeals for the District of Columbia Circuit, and an order of remand by the appellate court accompanied by instructions to impose a remedy. Upon review of the entire factual record in this case, the determinations of liability affirmed by the D.C. Circuit, the parties’ legal memoranda, and the relevant legal authority, the Court enters the following legal and discretionary conclusions and order of remedy. The Court bases such conclusions and remedy upon its findings of fact, entered below and in Appendix A.

I. PROCEDURAL HISTORY

On May 18, 1998, simultaneous with the filing of a complaint by the United States in a related case, a group of state plaintiffs filed a civil complaint alleging antitrust violations by Microsoft and seeking preliminary and permanent injunctions barring the company’s allegedly unlawful conduct.² *See Microsoft*, 253 F.3d at 47. In *United States v. Microsoft Corp.*, No. 98-

¹MIGUEL DE CERVANTES, *DON QUIXOTE*, Part 2, Book 5, Chapter 10 (1615).

²Despite the 1998 filing of the instant suit, the antitrust issues raised in this litigation commenced in the mid-1990s. *See United States v. Microsoft Corp.*, 253 F.3d 34, 49 (D.C. Cir. 2001) (*en banc*).

1232 (D.D.C.), the federal government brought claims pursuant to federal law, while in *State of New York, et al. v. Microsoft Corp.*, No. 98-1233 (D.D.C.), the Plaintiff States³ brought claims pursuant to both federal and state law. These two cases were consolidated, and following a bench trial in the consolidated cases, Judge Thomas Penfield Jackson concluded that Microsoft had violated §§ 1 and 2 of the Sherman Act, 15 U.S.C. §§ 1, 2, imposing liability for illegal monopoly maintenance, attempted monopolization, and unlawful tying. *United States v. Microsoft Corp.*, 87 F. Supp. 2d 30, 35 (D.D.C. 2000). Correspondingly, Judge Jackson held that Microsoft had violated the state antitrust laws analogous to §§ 1 and 2 of the Sherman Act in each of the nineteen plaintiff states and the District of Columbia.⁴ *Id.* at 54. To remedy these findings of liability, Judge Jackson ordered the division of Microsoft into two separate corporations. *United States v. Microsoft Corp.*, 97 F. Supp. 2d 59, 64 (D.D.C. 2000). Microsoft filed an appeal in both cases. On appeal, the D.C. Circuit deferred to Judge Jackson’s factual findings, *Microsoft*, 253 F.3d at 118, altered his findings of liability—affirming in part and reversing in part, and vacated the remedy decree, *id.* at 46.

The appellate court remanded the cases to this Court with instructions to hold a “remedies-specific evidentiary hearing,” *id.* at 103, and to “fashion an appropriate remedy” in

³The “Plaintiff States” for purposes of this opinion are the States of California, Connecticut, Florida, Iowa, Kansas, Minnesota, Utah, and West Virginia, the Commonwealth of Massachusetts, and the District of Columbia. Also plaintiffs in the suit, though their claims are not addressed in this Memorandum Opinion, are the States of New York, Ohio, Illinois, Kentucky, Louisiana, Maryland, Michigan, North Carolina, and Wisconsin.

⁴This suit was originally brought by twenty states and the District of Columbia. One state withdrew from the action prior to the issuance of liability findings by the District Court. Another state settled its claims in July of 2001. The claims of the States of New York, Ohio, Illinois, Kentucky, Louisiana, Maryland, Michigan, North Carolina, and Wisconsin were litigated through liability and have been conditionally settled as to the issue of remedy.

light of the revised liability findings, *id.* at 105. Following remand, pursuant to Court Order, the parties in the two consolidated cases entered into intensive settlement negotiations. *See United States v. Microsoft Corp.*, Nos. 98-1232 and 98-1233 (D.D.C. Sept. 28, 2001) (order requiring the parties to enter into settlement negotiations). The settlement negotiations did not resolve both cases in their entirety. However, the United States and Microsoft were able to reach a resolution in *United States v. Microsoft Corp.* in the form of a proposed consent decree. The settlement negotiations were partially successful with regard to the states' case, *State of New York, et al. v. Microsoft Corp.*; a portion of the plaintiffs in that case joined the settlement between the United States and Microsoft.⁵ Consequently, those states have elected not to proceed to a remedies-specific hearing in *State of New York, et al. v. Microsoft Corp.* The states which opted not to join the settlement between the United States and Microsoft have proposed a remedy distinct from that presented in the proposed consent decree.

Following expedited discovery, on March 18, 2002, an evidentiary hearing on the issue of the remedy commenced. The parties submitted the direct testimony in written format, while cross-examination and re-direct testimony were offered in open court. Over thirty-two trial days, the Court reviewed the written direct testimony and heard the live testimony of fifteen witnesses

⁵The so-called "Settling States" are the States of New York, Ohio, Illinois, Kentucky, Louisiana, Maryland, Michigan, North Carolina, and Wisconsin.

proffered by Plaintiffs⁶ and nineteen⁷ witnesses proffered by Microsoft.⁸ Of these witnesses, Plaintiffs offered expert testimony from Dr. Andrew Appel, Professor of Computer Science at Princeton University, whom the Court qualified as an expert in the field of computer science and software engineering. Plaintiffs' only other expert was Dr. Carl Shapiro, Professor of Business Strategy at the University of California at Berkeley. The Court qualified Dr. Shapiro as an expert in the field of economics. Microsoft presented expert testimony from Dr. John Bennett, a professor in the Department of Computer Science and Electrical Computer Engineering at the University of Colorado at Boulder, and Dr. Stuart Madnick, Professor of Information Technology at the Sloan School of Management and Professor of Engineering Systems in the Engineering Division of the Massachusetts Institute of Technology's School of Engineering. Both Drs. Madnick and Bennett were qualified by the Court as experts in the field of computer science. Microsoft also offered the expert testimony of Dr. Kenneth Elzinga, Professor of Economics at the University of Virginia, and of Dr. Kevin Murphy, Professor of Business

⁶Plaintiffs presented the testimony of thirteen fact witnesses: (1) Peter Ashkin, (2) James Barksdale, (3) John Borthwick, (4) Anthony Fama, (5) Richard Green, (6) Mitchell Kertzman, (7) Dr. Carl Ledbetter, (8) Michael Mace, (9) Steven McGeady, (10) Larry Pearson, (11) David Richards, (12) Jonathan Schwartz, and (13) Michael Tiemann; and two expert witnesses: (1) Dr. Carl Shapiro; and (2) Dr. Andrew Appel.

⁷One of these nineteen witnesses was James Thomas ("Tom") Greene, Senior Assistant Attorney General for the State of California, an adverse witness whose testimony Defendant presented in the form of videotaped deposition excerpts and the transcript thereof. Def. Ex. 1530 (Greene). When referring to Mr. Greene's testimony, the Court cites to the page number which appears on the deposition transcript.

⁸Defendant presented the testimony of fifteen fact witnesses: (1) Dr. James Allchin, (2) Linda Wolfe Averett, (3) Scott Borduin, (4) David Cole, (5) Heather Davisson, (6) Brent Frei, (7) William H. Gates, III, (8) James Thomas ("Tom") Greene, (9) Chris Hofstader, (10) Christopher Jones, (11) Will Poole, (12) W. J. Sanders, III, (13) Robert Short, (14) Gregg Sutherland, and (15) Richard L. Ulmer; and four experts: (1) Dr. John K. Bennett, (2) Dr. Kenneth G. Elzinga, (3) Dr. Stuart E. Madnick, (4) Dr. Kevin M. Murphy.

Economics in the Graduate School of Business at the University of Chicago. The Court qualified Drs. Elzinga and Murphy as experts in the field of economics.

At the outset of this phase of the proceeding, both parties proposed to offer expert testimony on the subject of decree enforcement from “legal experts.” In response to a request by Microsoft to exclude such testimony, *see generally* “Defendant Microsoft Corporation’s Motion in Limine to Exclude the Expert Report of John H. Shenefield Which Improperly Proffers a Legal Conclusion,” the Court raised a concern that the expert legal testimony, at least as framed by the parties, was improper. The Court also expressed the opinion that the “expert legal testimony” would be presented more appropriately by the attorneys in the form of oral argument. In response to the Court’s concern, the parties voluntarily withdrew their presentation of these expert witnesses and opted instead to present the information to the Court in the form of legal briefs and argument. *See* Trial Transcript (“Tr.”). at 1633-40, 1835-40.

II. LAW OF THE CASE

When issues have been resolved at a prior stage in the litigation, based upon principles of judicial economy, courts generally decline to revisit resolved issues. More than a mere rule-of-thumb, the “[l]aw of the case doctrine’ refers to a family of rules embodying the general concept that a court involved in later phases of a lawsuit should not re-open questions decided (i.e., established as the law of the case) by that court or a higher one in earlier phases.” *Crocker v. Piedmont Aviation, Inc.*, 49 F.3d 735, 739 (D.C. Cir. 1995). Similar to the law of the case doctrine is the “mandate rule,” a “‘more powerful version’ of the law-of-the-case doctrine, which prevents courts from reconsidering issues that have already been decided in the same case.” *Independent Petroleum Ass’n of Am. v. Babbitt*, 235 F.3d 588, 597 (D.C. Cir. 2001) (quoting

LaShawn A. v. Barry, 87 F.3d 1389, 1393 n.3 (D.C. Cir. 1996) (“[A]n even more powerful version of the [law-of-the-case] doctrine--sometimes called the ‘mandate rule’--requires a lower court to honor the decisions of a superior court in the same judicial system.”)). “Under the mandate rule, ‘an inferior court has no power or authority to deviate from the mandate issued by an appellate court.’” *Id.* (quoting *Briggs v. Pennsylvania R.R. Co.*, 334 U.S. 304, 306 (1948)).

In this case, the mandate of the appellate court requires this Court to fashion a remedy appropriately tailored to the revised liability findings. *Microsoft*, 253 F.3d at 105. Not surprisingly then, the starting place for this Court’s determination of an appropriate remedy is the appellate opinion in this case. As the sole issue remaining in the case concerns a remedy for Microsoft’s violation of § 2 of the Sherman Act, rather than a reassessment of liability, the relevant portions of the appellate opinion consist of that court’s discussion of § 2 liability. For background purposes, the Court shall summarize the pertinent portions of the appellate decision, placing the primary focus upon the appellate court’s determination of § 2 liability.

A. Court of Appeals Opinion

1. Market Definition

The appellate court began its opinion by examining Plaintiffs’⁹ § 2 Sherman Act claims and, specifically, whether the district judge had identified the proper market for purposes of assessing Microsoft’s monopoly power. The appellate court concluded that the district court had

⁹In referring to “Plaintiffs” in this context, the Court refers to those Plaintiff States which the Court identified in footnote 3. The Court notes, however, that the appellate court’s opinion applies not only to the claims brought by the “Litigating States” in this case, but to the claims brought by the so-called “Settling States” in this action and by the United States in *United States v. Microsoft*, No. 98-1232 (D.D.C.).

properly defined the relevant market as “the licensing of all Intel-compatible PC¹⁰ operating systems¹¹ worldwide.” *Microsoft*, 253 F.3d at 52 (quoting *Microsoft*, 87 F. Supp. 2d at 36). Having agreed with the district court’s definition of the relevant market, the appellate court adopted the district court’s determination that “circumstantial evidence proves that Microsoft possesses monopoly power.” *Id.* at 56. The appellate court further noted that “if we were to require direct proof [of monopoly power], . . . Microsoft’s behavior may well be sufficient to show the existence of monopoly power.” *Id.* at 57.

2. *Theory of Liability*

Integral to the appellate court’s adoption of the market definition was its simultaneous acceptance of Plaintiffs’ theory of Microsoft’s market dominance. Both the district and appellate courts noted that Microsoft’s lawfully-acquired monopoly is naturally protected by a “structural barrier,” known as the “applications barrier to entry.” *Id.* at 55. “That barrier . . . 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

¹⁰“PC” is short for “personal computer.” *United States v. Microsoft*, 84 F. Supp. 2d 9, ¶ 1 (D.D.C. 1999) (hereinafter cited as “*Findings of Fact*”).

¹¹The appellate court, relying upon the factual testimony presented to the district court, explained the functions of a PC operating system:

Operating systems perform many functions, including allocating computer memory and controlling peripherals such as printers and keyboards. 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.” For example, Windows contains an API that enables users to draw a box on the screen. Software developers wishing to include that function in an application need not duplicate it in their own code. Instead, they can “call”—i.e., use—the Windows API. Windows contains thousands of APIs, controlling everything from data storage to font display.

Microsoft, 253 F.3d at 53 (citations omitted).

to write for operating systems that already have a substantial consumer base.” *Id.* (citing *Findings of Fact* ¶¶ 30, 36). This barrier creates a “chicken-and-egg” or network effects situation, which perpetuates Microsoft’s operating system dominance because “applications will continue to be written for the already dominant Windows,¹² which in turn ensures that consumers will continue to prefer it over other operating systems.” *Id.* Because “[e]very operating system has different APIs,”¹³ applications written for one operating system will not function on another operating system unless the developer undertakes the “time consuming and expensive” process of transferring and adapting, known in the industry as “porting,” the application to the alternative operating system. *Id.* at 53.

Plaintiffs proceeded under the theory that certain kinds of software products, termed “middleware,”¹⁴ could reduce the “self-reinforcing cycle,” *Findings of Fact* ¶ 39, by serving as a platform for applications, taking over some of the platform functions provided by Windows and

¹²“In 1985, Microsoft began shipping a software package [for the PC] called Windows. The product included a graphical user interface, which enabled users to perform tasks by selecting icons and words on the screen using a mouse.” *Findings of Fact* ¶ 7. In 1995, Microsoft introduced an updated version of its Windows software known as “Windows 95.” *Id.* ¶ 8. Similarly, in 1998, Microsoft released “Windows 98.” *Id.* Since that time, Microsoft has continued to update, revise, and re-create its “Windows” PC operating system. Microsoft’s most current version of Windows is “Windows XP,” which is available in both a “Home” edition and a “Professional” edition.

¹³“APIs” are applications programming interfaces. As Judge Jackson explained: [An] operating system supports the functions of applications by exposing interfaces, called “application programming interfaces,” or “APIs.” These are synapses at which the developer of an application can connect to invoke pre-fabricated blocks of code in the operating system. These blocks of code in turn perform crucial tasks, such as displaying text on the computer screen. *Findings of Fact* ¶ 2. For a supplemental definition of “API,” see *infra* note 35.

¹⁴Such software takes the name “middleware” because “it relies on the interfaces provided by the underlying operating system while simultaneously exposing its own APIs to developers” and, therefore, is said to reside in the middle. *Findings of Fact* ¶ 28.

thereby “weaken[ing] the applications barrier to entry,” *id.* ¶ 68. One of middleware’s defining characteristics as a software product is its ability to “expos[e] its own APIs.” *Findings of Fact* ¶ 28. Eventually, reasoned Plaintiffs, if applications were written to rely on the middleware API set, rather than the Windows API set, the applications could be made to run on alternative operating systems simply by porting the middleware. Ultimately, by writing to the middleware API set, applications developers could write applications which would run on any operating system on which the middleware was preset. Plaintiffs focused their attention primarily upon two such middleware threats to Microsoft’s operating system dominance—Netscape Navigator¹⁵ and the Java technologies. *See Microsoft*, 253 F.3d at 53. The district and appellate courts accepted Plaintiffs’ theory of competition despite the fact that “neither Navigator, Java, nor any other middleware product could [at that time], or would soon, expose enough APIs to serve as a platform for popular applications.” *Id.*; *Findings of Fact* ¶¶ 28-29.

3. Four-Part Test for Liability

Having concluded that the district court properly identified the relevant market as the market for Intel-compatible PC operating systems and properly excluded middleware products from that market, the appellate court turned its attention to the issue of whether Microsoft responded to the threat posed by middleware in violation of § 2 of the Sherman Act. Specifically, the appellate court set out to determine whether Microsoft “maintain[ed], or attempt[ed] to . . . maintain, a monopoly by engaging in exclusionary conduct.” *Microsoft*, 253 F.3d at 58. The appellate court recounted that the district court answered that inquiry in the

¹⁵“Although certain Web browsers provided graphical user interfaces as far back as 1993, the first widely-popular graphical browser distributed for profit, called Navigator, was brought to market by the Netscape Communications Corporation (‘Netscape’) in December 1994.” *Findings of Fact* ¶ 17.

affirmative, finding Microsoft liable for violating § 2 of the Sherman Act:

by engaging in a variety of exclusionary acts . . . [s]pecifically . . . : (1) the way in which it integrated [Internet Explorer] into Windows; (2) its various dealings with Original Equipment Manufacturers (“OEMs”), Internet Access Providers (“IAPs”), Internet Content Providers (“ICPs”), Independent Software Vendors (ISVs), and Apple Computer; (3) its efforts to contain and to subvert Java technologies; and (4) its course of conduct as a whole.

Id. In order to review the district court’s findings on this point, the appellate court outlined a four-part test for determining whether particular conduct can be said to violate antitrust law. “First, to be condemned as exclusionary, a monopolist’s act must have an ‘anticompetitive effect.’ That is, it must harm the competitive *process* and thereby harm consumers.” *Id.* at 58 (emphasis in original). Second, the plaintiff must “demonstrate that the monopolist’s conduct harmed competition, not just a competitor.” *Id.* at 59. Third, “the monopolist may proffer a ‘procompetitive justification’ for its conduct.” *Id.* (quoting *Eastman Kodak Co. v. Image Technical Servs. Inc.*, 504 U.S. 451, 483 (1992)). If this justification stands unrebutted by the plaintiff, the monopolist may escape liability. Therefore, the fourth prong of the inquiry requires that the plaintiff “demonstrate that the anticompetitive harm of the conduct outweighs the procompetitive benefit.” *Id.* The appellate court stressed that, although evidence of intent is relevant “to understand the likely effect of the monopolist’s conduct,” when assessing the balance between the anticompetitive harm and the procompetitive effect, the trial court should focus on the “effect of [the exclusionary] conduct, not the intent behind it.” *Id.*

Using this framework, the appellate court addressed Microsoft’s challenge to each of the findings by the district court. The appellate court examined the district court’s four basic areas of findings with regard to § 2 liability in an order different from that of the district court. The Court presents these holdings, in the order addressed by the appellate court.

4. Original Equipment Manufacturer (“OEM”) Licenses

Commencing its analysis with the “[l]icenses [i]ssued to [o]riginal [e]quipment [m]anufacturers,”¹⁶ *id.* at 59, the appellate court focused upon three license provisions “prohibiting the OEMs from: removing any desktop icons, folders, or ‘Start’ menu entries; (2) altering the initial boot sequence; and (3) otherwise altering the appearance of the Windows desktop,” *id.* at 61 (citing *Findings of Fact* ¶ 213). Into the category of “otherwise altering the appearance of the Windows desktop,” the appellate court subsumed the automatic launch of an alternative user interface, the prohibition against the addition of icons and folders different in size and shape from those used by Microsoft, and the prohibition against the use of the “Active Desktop” feature¹⁷ to display third-party brands. *Id.* at 62; *see also Findings of Fact* ¶ 213. Of these license provisions, the appellate court concluded that, “with the exception of the one restriction prohibiting automatically launched alternative interfaces, all of the OEM license restrictions at issue represent uses of Microsoft’s market power to protect its monopoly, unredeemed by any legitimate justification.” *Id.* at 64. In commencing its next area of analysis, the appellate court noted with regard to the license restrictions imposed upon OEMs that they “have a significant effect in closing rival browsers out of one of the two primary channels of distribution.” *Id.*

5. Integration of Internet Explorer (“IE”) and Windows

The appellate court next turned its attention toward the “[i]ntegration of [Internet

¹⁶Manufacturers of PCs are known as “original equipment manufacturers” or “OEMs.” *Findings of Fact* ¶ 10.

¹⁷“The Active Desktop was a Microsoft feature that, if enabled, allowed the Windows user to position Web pages as open windows that appear on the background, or ‘wallpaper’ of the Windows desktop.” *Findings of Fact* ¶ 314.

Explorer (“IE”)]¹⁸ and Windows.” *Id.* At the outset of its analysis, the appellate court took a narrow view of the district court’s determination, noting that the district court’s “broad[]” condemnation of “Microsoft’s decision to bind ‘Internet Explorer to Windows with . . . technological shackles”” is supported by only three specific actions taken by Microsoft. *Id.* (quoting *Microsoft*, 87 F. Supp. 2d at 39). The appellate court identified these three as (1) “excluding IE from the ‘Add/Remove Programs’ utility”; (2) “designing Windows so as in certain circumstances to override the user’s choice of a default browser other than IE”; and (3) “commingling 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.” *Id.* at 64-65. Pursuant to its four part test for liability, the appellate court concluded that Microsoft could be held liable for the first and the third of these actions. *Id.* at 65-67. As to the second of these actions, the override of the user’s choice of default in certain circumstances, the court determined that Microsoft had proffered a procompetitive justification that went unrebutted by Plaintiffs, namely that the override was the result of “valid technical reasons” which justified the override in a “few out of the nearly 30 means of accessing the Internet.” *Id.* at 67 (quotation marks omitted). Finding that Plaintiffs had neither rebutted Microsoft’s procompetitive justification, nor demonstrated that the anticompetitive effect of the challenged act outweighed such justification, the appellate court held that “Microsoft may not be held liable for this aspect of its product design.” *Id.*

¹⁸Internet Explorer is Microsoft’s Web browser. *Findings of Fact* ¶ 17.

6. *Agreements with Internet Access Providers (“IAPs”)*

Directing its attention to Microsoft’s “agreements with various IAPs,”¹⁹ which the district court “condemned” as exclusionary, the appellate court identified five Microsoft actions specifically relied upon by the district court for this condemnation:

(1) offering IE free of charge to IAPs[;] . . . (2) offering IAPs a bounty for each customer the IAP signs up for service using the IE browser[;] . . . (3) developing the IE Access Kit (“IEAK”), a software package that allows an IAP to “create a distinctive identity for its service in as little as a few hours by customizing the [IE] title bar, icon, start and search pages,” *Findings of Fact* ¶ 249[;] . . . (4) offering the IEAK to IAPs free of charge, on the ground that those acts, too, helped Microsoft preserve its monopoly[,], [*Microsoft*, 87 F. Supp. 2d] at 41-42[;] . . . (5) agree[ing] to provide easy access to 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%. *See* [*Microsoft*, 87 F. Supp. 2d] at 42 (citing *Findings of Fact* ¶¶ 258, 262, 289).

Id. at 67-68. Grouping the first four of these actions together as “Microsoft’s inducements,” the appellate court held that these four actions merely “offer[ed] a consumer an attractive deal” and, therefore, could not be treated as anticompetitive. *Id.* at 68. In contrast, the appellate court agreed with the district court that Microsoft’s exclusive contracts with IAPs “are exclusionary devices, in violation of § 2 of the Sherman Act.” *Id.* at 71.

7. *Agreements with Internet Content Providers (“ICPs”), Independent Software Vendors (“ISVs”), and Apple*

The appellate court next considered Microsoft’s “dealings with ICPs, which develop websites; ISVs, which develop software; and Apple, which is both an OEM and a software developer.” *Id.* at 71. The “deals” at issue in this portion of the case are grants of “free licenses to bundle IE with [the ICPs’ and ISVs’] offerings” and the exchange of “other valuable

¹⁹“PCs typically connect to the Internet through the services of Internet access providers (‘IAPs’), which generally charge subscription fees to their customers in the United States.” *Findings of Fact* ¶ 15.

inducements for [ICPs’ and ISVs’] agreement to distribute, promote, and rely on IE rather than Navigator.” *Id.* (quoting *Microsoft*, 87 F. Supp. 2d at 42-43) (brackets and quotation marks omitted). The district court held these agreements to be anticompetitive in violation of § 2 of the Sherman Act because they had the effect of “directly induc[ing] developers to focus on [Microsoft’s] own APIs rather than ones exposed by Navigator.” *Id.* (quoting *Microsoft*, 87 F. Supp. 2d at 42-43) (quotation marks omitted).

At the outset of its analysis in this context, the appellate court concluded bluntly that “[w]ith respect to [Microsoft’s] deals with ICPs, the District Court’s findings do not support liability.” *Id.* In contrast, the appellate court sustained the district court’s finding of liability with regard to Microsoft’s agreements with ISVs because Plaintiffs made “a *prima facie* showing that the deals have an anticompetitive effect,” and Defendant did not successfully rebut this showing. *Id.* at 72. In particular, the appellate court found that the exclusive provisions in these so-called “First Wave Agreements” with ISVs foreclosed a substantial share of the market for Navigator. *Id.*

Turning its attention in this context finally to Microsoft’s relationship with Apple, the appellate court concluded that Microsoft’s agreement with Apple was exclusionary in violation of § 2 of the Sherman Act. *Id.* at 72-74. The appellate court recounted that in mid-1997, Microsoft and Apple entered into an agreement which obligated Microsoft to continue to release “up-to-date” versions of its office productivity software for Apple’s systems, Mac Office. *Id.* at 73 (citing *Findings of Fact* ¶¶ 350-52). The agreement further obligated Apple to make IE the default browser. *Id.* (citing *Findings of Fact* ¶¶ 350-52). Pursuant to this same agreement, Apple promised not to install Navigator during the “default installation,” and not to “position

icons for non[-]Microsoft browsing software on the desktop of new Macintosh PC systems or Mac OS upgrades.” *Id.* (quoting *Findings of Fact* ¶¶ 350-52). Similarly, the agreement prohibited Apple “from encouraging users to substitute another browser for IE, and state[d] that Apple [would] ‘encourage its employees to use IE.’” *Id.* (quoting *Findings of Fact* ¶ 352) (brackets omitted). The appellate court concluded that “[t]his exclusive deal between Microsoft and Apple ha[d] a substantial effect upon the distribution of rival browsers.” *Id.* Given the absence of a “procompetitive justification for the exclusive dealing arrangement,” the appellate court affirmed the district court’s finding of § 2 liability based upon Microsoft’s exclusive deal with Apple. *Id.* at 74.

8. Java

The appellate court grouped the next category of Microsoft conduct under the heading “Java” in reference to “a set of technologies developed by Sun Microsystems” (“Sun”). *Id.* The Java technologies are described as “another type of middleware posing a potential threat to Windows’ position as the ubiquitous platform for software development.” *Id.* (citing *Findings of Fact* ¶ 28). The appellate opinion recounts that the district court identified four steps taken by Microsoft to “exclude Java from developing as a viable cross-platform threat: (a) designing a [Java Virtual Machine (“JVM”)]²⁰ incompatible with the one developed by Sun; (b) entering into contracts, the so-called ‘First Wave Agreements,’ requiring major ISVs to promote Microsoft’s

²⁰“The Java technologies include: (1) a programming language; (2) a set of programs written in that language, called the ‘Java class libraries,’ which expose APIs; (3) a compiler, which translates code written by a developer into ‘bytecode’; and (4) a Java Virtual Machine (‘JVM’), which translates bytecode into instructions to the operating system. [*Findings of Fact*] ¶ 73. Programs calling upon the Java APIs will run on any machine with a ‘Java runtime environment,’ [‘JRE’] that is, Java class libraries and a JVM. *Id.* ¶¶ 73, 74.” *Microsoft*, 253 F.3d at 74. The terms “JRE” and “JVM” are sometimes used interchangeably to refer to the Java platform. The court uses the term JVM throughout this Memorandum Opinion for that purpose.

JVM exclusively; (c) deceiving Java developers about the Windows-specific nature of the tools it distributed to them; and (d) coercing Intel to stop aiding Sun in improving the Java technologies.” *Id.* Of these actions, the appellate court concluded that all but the first action were anticompetitive in violation of § 2. *Id.* at 74-78. With regard to the first enumerated action, the incompatible JVM, the appellate court held that because the incompatible JVM did not have an anticompetitive effect which outweighed the procompetitive justification for the design, it could not provide a basis for antitrust liability. *Id.* at 75.

Specifically, with regard to the First Wave Agreements, the appellate court observed that the district court had found the agreements, “although not literally exclusive . . . were exclusive in practice.” *Id.* at 75. Although the district court did not enter precise findings as to the effect of the First Wave Agreements upon rival Java distribution, the appellate court determined that “the record indicates that Microsoft’s deals with the major ISVs had a significant effect upon JVM promotion.” *Id.* In the absence of procompetitive justification, the appellate court imposed liability for this aspect of the First Wave Agreements. *Id.* at 76.

As to the Java developer tools, the appellate court’s imposition of liability focused not upon the fact that the tools created programs which were not cross-platform, but upon the fact that Microsoft deceived software developers about the Windows-specific nature of the tools. *Id.* at 76-77. The appellate court found that Microsoft’s deception was intentional and without procompetitive explanation. *Id.* at 77. As a result, the appellate court imposed liability for Microsoft’s deception. *Id.*

9. Intel

As noted above, the appellate court’s final imposition of liability arose out of a “threat”

by Microsoft directed at Intel. *Id.* at 77. “Intel is [a firm] engaged principally in the design and manufacture of microprocessors.” *Findings of Fact* ¶ 95. A segment of Intel’s business develops software, with the primary focus upon “finding useful ways to consume more microprocessor cycles, thereby stimulating demand for advanced Intel microprocessors.” *Id.* The appellate court recounted that in 1995, Intel was in the process of “developing a high performance, Windows-compatible JVM.” *Microsoft*, 253 F.3d at 77. Furthering its efforts to combat the cross-platform threat of Java to the Windows platform, Microsoft repeatedly “urged Intel not to help Sun by distributing Intel’s fast, Sun compliant JVM.” *Id.* Eventually, Microsoft “threatened Intel that if it did not stop aiding Sun . . . then Microsoft would refuse to distribute Intel technologies bundled with Windows.” *Id.* Intel capitulated after Microsoft threatened to support an Intel competitor, AMD, if Intel’s efforts with Java continued. *Id.*

The appellate court acknowledged Microsoft’s anticompetitive intent, as well as the anticompetitive effect of Microsoft’s actions toward Intel. *Id.* Microsoft did not offer a procompetitive justification for its treatment of Intel, but “lame[ly] characterize[d] its threat to Intel as ‘advice.’” *Id.* Rejecting the characterization of Microsoft’s threat as mere “advice,” the appellate court found the district court’s imposition of liability to be supported by both fact and law. *Id.* at 77-78. On this basis, the appellate court imposed § 2 liability for Microsoft’s threat to Intel.

Corresponding to the above-described imposition of liability pursuant to § 2 of the Sherman Act, the appellate court imposed liability upon Microsoft for violations of the relevant “state law counterparts of” the Sherman Act. *Id.* at 46. Beyond these findings, the appellate court did not find Microsoft liable for any additional antitrust violations. Specifically, the

appellate court reversed the district court's conclusion that Microsoft's "course of conduct" as a whole constitutes a separate violation of § 2. *Id.* at 78. In addition, the appellate court rejected the district court's finding of attempted monopolization and remanded the § 1 tying claim for further proceedings at the district court level.²¹ Plaintiffs opted not to pursue the tying claim on remand.²² Joint Status Report (Sept. 20, 2001) at 2.

10. *Vacating the District Court's Order of Remedy*

Following its review of the district court's conclusions with regard to liability, the appellate court considered the district court's choice of remedy. Over the objection of Defendant Microsoft, the district court decided to consider the merits of Plaintiffs' remedy proposal in the absence of an evidentiary hearing. *Microsoft*, 253 F.3d at 98-99; *see also Microsoft*, 97 F. Supp. 2d at 61. The district court did so based on the rationale that Microsoft's evidentiary proffers largely concerned "testimonial predictions about future events" which would be of little use to the court in identifying an "optimum remedy." *Microsoft*, 253 F.3d at 99 (quoting *Microsoft*, 97 F. Supp. 2d at 62). Based upon its finding of liability for illegal monopoly maintenance, attempted monopolization, and illegal tying, the district court entered a remedy "nearly identical to plaintiffs' proposal" mandating the divestiture of Microsoft Corporation into an "Operating Systems Business" and an "Applications Business." *Id.* at 99-100 (quoting *Microsoft*, 97 F.

²¹Plaintiffs' complaint also included a separate claim of "monopoly leveraging" under § 2 of the Sherman Act. Judge Jackson granted summary judgment in favor of Microsoft as to this claim on the grounds that the theory runs "contrary to both economic theory and the Sherman Act's plain language." *United States v. Microsoft*, 1998 WL 614485, at *27 (D.D.C. Sept. 14, 1998).

²²Plaintiffs' tying claim alleged that "Microsoft's contractual and technological bundling of the IE [W]eb browser (the 'tied' product) with its Windows operating system ('OS') (the 'tying' product) resulted in a tying arrangement that was per se unlawful." *Microsoft*, 253 F.3d at 84.

Supp. 2d at 64). The original decree entered by the district court, often referred to as the Initial Final Judgment (“IFJ”), also included a number of “interim restrictions on Microsoft’s conduct.” *Id.* at 100. The interim restrictions included, *inter alia*, mandatory disclosure “to third-party developers the APIs and other technical information necessary to ensure that software effectively interoperates with Windows,” *id.* (describing IFJ § 3.b), a prohibition on Microsoft’s ability to enter into contracts which oblige third parties to limit their “development, production, distribution, promotion, or use of, or payment for’ non-Microsoft platform-level software,” *id.* (quoting IFJ § 3.e), and a “Restriction on Binding Middleware Products to Operating System Products’ unless Microsoft also offers consumers ‘an otherwise identical version’ of the operating system without the middleware,” *id.* (quoting IFJ § 3.g).

The appellate court found three fundamental flaws in the district court’s order of remedy, each of which alone justified vacating the remedial decree. The appellate court first concluded that the failure to hold an evidentiary hearing in the face of disputed facts concerning the remedy violated the “cardinal principle of our system of justice that factual disputes must be heard in an open court and resolved through trial-like evidentiary proceedings.” *Id.* at 101. The appellate court rejected the district court’s conclusion that evidentiary proceedings would not be useful, noting that “a prediction about future events is not, as a prediction, any less a factual issue.” *Id.* at 102. Moreover, noted the appellate court, “drafting an antitrust decree by necessity ‘involves predictions and assumption concerning future economic and business events.’” *Id.* (quoting *Ford Motor Co. v. United States*, 405 U.S. 562, 578 (1972)).

In addition to the failure to hold an evidentiary hearing, the appellate court faulted the district court for its “fail[ure] to provide an adequate explanation for the relief it ordered.” *Id.* at

103. Finding the trial court’s devotion of “a mere four paragraphs of its order to explaining its reasons for the remedy” insufficient, the appellate court observed that the initial remedy was not accompanied by an explanation of the manner in which the remedy would accomplish the objectives of a remedial decree in an antitrust case. *Id.* In this regard, the appellate court recited that “a remedies decree in an antitrust case must seek to ‘unfetter a market from anticompetitive conduct,’ *Ford Motor Co.*, 405 U.S. at 577, 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,’ *United States v. United Shoe Mach. Corp.*, 391 U.S. 244, 250 (1968).” *Id.* (internal citations in original).

Lastly, the appellate court concluded that the substantial modifications to the liability imposed by the district court merited a new determination of the remedy for the surviving antitrust violations. In particular, the appellate court noted that of the three original findings of liability, only liability for illegal monopoly maintenance in violation of § 2 of the Sherman Act had survived, and even this aspect of liability had been modified. *Id.* at 103-04. The appellate court determined that where “sweeping equitable relief is employed to remedy multiple violations, and some—indeed most—of the findings of remediable violations do not withstand scrutiny” the remedy decree must be vacated because there no longer exists a rational connection between the liability imposed and the remedy ascribed thereto. *Id.* at 105. Accordingly, the appellate court remanded the case for this Court to resolve any factual disputes surrounding a remedy and for this Court to exercise its “broad discretion” in imposing the “relief it calculates will best remedy the conduct . . . found to be unlawful.” *Id.*

11. Remand

The appellate court offered specific guidance to this Court regarding the inquiry to be undertaken following remand. In this regard, the appellate court focused most of its attention on the merits of a structural remedy, noting in particular that if, in fact, Microsoft is a “unitary company,” rather than the product of mergers and acquisitions, it is not scissile. *Id.* In addition, the appellate court reiterated its concern over the quantum of proof provided to support a causal connection between the exclusionary conduct and Microsoft’s persistence in the dominant market position. *Id.* at 107. Notably, however, the appellate court did not remark that this Court should consider whether or not to impose any remedy. Instead, the appellate court advised this Court to “consider which of the [original] decree’s conduct restrictions remain viable in light of [its] modification of the original liability decision,” *id.* at 105, and admonished that the remedy imposed should be carefully “tailored to fit the wrong creating the occasion for the remedy,” *id.* at 107 (“[W]e have drastically altered the scope of Microsoft’s liability, and it is for the District Court in the first instance to determine the propriety of a specific remedy for the limited ground of liability we have upheld.”).

B. District Court’s Findings of Fact and Surviving Conclusions of Law

As this Court noted above, the inquiry on remand is fundamentally constrained and guided by the conclusions of the appellate court. The appellate court’s conclusions, in turn, rely heavily upon the findings of fact entered by the district court following the liability trial. After a 76-day bench trial, *Microsoft*, 253 F.3d at 47, Judge Jackson entered 412 numbered paragraphs as his “Findings of Fact,” *see Findings of Fact*, 84 F. Supp. 2d 9. These findings provided the factual basis for the district court’s ensuing conclusions of law, issued some four months later.

See Microsoft, 253 F.3d at 48. In considering Microsoft’s challenge to the district court’s factual findings, the appellate court applied the usual deference to the district court’s factual conclusions and found no “clear error,” *see id.* at 118. Additionally, the appellate court held that the district court’s factual findings permitted meaningful appellate review. *Id.* In particular, the appellate court refused to reverse the district court’s factual findings relevant to the “commingl[ing] of browsing and non-browsing code.” *Id.* at 66. Faced with Microsoft’s continuing protestations that the district court’s commingling finding was clearly erroneous, the appellate court specifically denied Microsoft’s plea that it vacate Finding of Fact ¶ 159 “as it relates to the commingling of code.” *Id.*

Because all of the district court’s factual findings survived challenge on appeal, they comprise the law of this case and may be relied upon during the remedy phase of this proceeding. *Crocker*, 49 F.3d at 739. Indeed, it would make little sense to proceed to craft a remedy in the absence of substantial reliance upon the factual foundation which underlies the liability entered in this case. Hence, the factual findings of the district court, like the conclusions of the appellate court, comprise the foundation upon which this court must construct a remedy. Still, the Court remains mindful of the vital distinction between factual findings, however adverse, and legal conclusions.

A somewhat more complex problem is presented by the legal conclusions of the district court. Although exceedingly thorough in its analysis, the opinion of the appellate court did not specifically address at least one of the legal conclusions reached by Judge Jackson during the liability phase. In Part I.A.2.a.i of its opinion, the district court addressed the manner in which Microsoft battled the browser threat in the OEM channel of distribution. *Microsoft*, 87 F. Supp.

2d at 39. The district court concluded that “Microsoft’s campaign proceeded on three fronts”:

First, Microsoft bound Internet Explorer to Windows with contractual and, later, technological shackles Second, Microsoft imposed stringent limits on the freedom of OEMs to reconfigure or modify Windows 95 and Windows 98 Finally, Microsoft used incentives and threats to induce especially important OEMs to design their distributional, promotional and technical efforts to favor Internet Explorer to the exclusion of Navigator.

Id. In its review of the district court’s liability findings, in Part II.B.1 and 2 of its opinion, the appellate court addressed these findings in a different sequence, considering first the license restrictions Microsoft imposed upon the OEMs, *Microsoft*, 253 F.3d at 59-64, and second the binding or “integration” of IE and Windows, *id.* at 64-67. The appellate court concluded its analysis of the OEM channel with its discussion of integration, never squarely discussing the district court’s finding with regard to the use of “incentives and threats.” *See id.* at 59-67.

Microsoft acknowledges that the appellate court declined to address individually all of Judge Jackson’s specific findings of liability. Microsoft Proposed Conclusions of Law (hereinafter cited as “Microsoft Prop. Concl. of Law”) ¶ 79. Microsoft contends that the “acts condemned by Judge Jackson,” but not specifically addressed by the appellate court, “apparently were the basis for his conclusion that ‘Microsoft’s conduct as a whole . . . reinforces the conviction that [Microsoft] was predacious.’” *Id.* (quoting *Microsoft*, 87 F. Supp. 2d at 44) (emphasis omitted) (alteration by Microsoft). Drawing further upon this rationale, Microsoft argues that the appellate court’s reversal of the “course of conduct” liability determination implicitly reverses any of the district court’s liability findings not specifically addressed by the appellate court. *See id.*

While an attractive and simple resolution to a complex quandary, Microsoft’s reasoning is flawed. In conflating all of Judge Jackson’s remaining liability findings, Microsoft ignores the

express holding of the appellate court. The appellate court determined to reverse the “course of conduct” liability on the grounds that the district court had *failed to identify* the acts sufficient to support its finding of liability: “[T]he District Court did not point to *any* series of acts, each of which harms competition only slightly but the cumulative effect of which is significant enough to form an independent basis for liability.” *Microsoft*, 253 F.3d at 78 (emphasis added).

Tellingly, the appellate court enumerated “the *only specific acts*” relied upon by the district court in assessing liability on a “course of conduct” theory. *Id.* (emphasis added). In this vein, the appellate court recounted that “the only specific acts” identified by the district court, namely “Microsoft’s expenditures in promoting its browser,” were “not in themselves unlawful.” *Id.* “Because the District Court identifie[d] no other specific acts as a basis for ‘course of conduct liability,’” the appellate court reversed that liability determination. *Id.*

In light of the basis for the appellate court’s reversal on this point, it is antithetical to conclude that specific anticompetitive acts clearly described by the district court elsewhere in its conclusions of law are somehow reversed by the appellate court’s rejection of the “course of conduct” finding of liability. Indeed, if these findings of anticompetitive conduct could have been treated as the basis for the district court’s “course of conduct” liability finding, the appellate court would have considered such findings in reviewing the basis for the district court’s “course of conduct” liability determination. Because the appellate court declined to look beyond the particular acts enumerated by the district court in conjunction with its “course of conduct” analysis, there is no basis upon which this Court can conclude that, by reversing liability based upon a “course of conduct,” the appellate court implicitly reversed findings of anticompetitive conduct entered by Judge Jackson elsewhere in his opinion.

Although the Court rejects Microsoft’s argument in this regard as without rational support, the Court need not dwell long on the appropriate treatment of acts identified by the district court as anticompetitive but not addressed by the appellate court, as Plaintiffs do not rely on any of these acts. Although Plaintiffs contend that Microsoft simply did not appeal Judge Jackson’s finding of liability based upon the “incentives and threats” described in *Findings of Fact* ¶¶ 230-38, Plaintiffs assert that the clearly affirmed bases of liability are sufficient to guide this Court’s consideration of “the appropriate remedial provisions as to Microsoft’s relations with OEMs.” Plaintiffs’ Proposed Conclusions of Law (hereinafter cited as “Pl. Prop. Concl. of Law”) at 5. Plaintiffs argue that the Court may make its determination of an appropriate remedy in the absence of any reliance upon the “incentives and threats” liability finding entered by Judge Jackson.²³ Because Plaintiffs denounce any reliance upon Judge Jackson’s apportioning of liability for coercing OEMs with incentives and threats, neither will the Court rely upon such a finding of liability in its consideration of the appropriate remedy.

C. General Antitrust Law of Remedies

It has long been established that it is the job of the district court to frame the remedy decree in an antitrust case, and the district court has broad discretion in doing so. *Int’l Salt Co. v. United States*, 332 U.S. 392, 400-01 (1947). “The relief in an antitrust case must be ‘effective to redress the violations’ and ‘to restore competition.’” *Ford Motor Co.*, 405 U.S. at 573 (quoting *United States v. E. I. Du Pont De Nemours & Co.*, 366 U.S. 316, 326 (1961)). Not only should the relief ordered “cure the ill effects of the illegal conduct, and assure the public freedom

²³Beyond this single liability finding, which the Court raised with the parties, Plaintiffs have not directed the Court to other instances where the district court ascribed liability, and the appellate court’s treatment of that finding is unclear or absent.

from its continuance,” *id.* at 575 (quoting *United States v. United States Gypsum Co.*, 340 U.S. 76, 88 (1950)), “it necessarily must ‘fit the exigencies of the particular case,’” *id.* (quoting *Int’l Salt*, 332 U.S. at 401). Ultimately, the goal of a remedy in an equitable suit is not the “punishment of past transgression, nor is it merely to end specific illegal practices.” *Int’l Salt*, 332 U.S. at 401. Rather, the remedy should “effectively pry open to competition a market that has been closed by [a] defendant[’s] illegal restraints.” *Id.* Equitable relief in an antitrust case should not “embody harsh measures when less severe ones will do,” 2 PHILLIP E. AREEDA ET AL., ANTITRUST LAW ¶ 325a, at 246 (2d ed. 2000), nor should it adopt overly regulatory requirements which involve the judiciary in the intricacies of business management, *United States v. Paramount Pictures*, 334 U.S. 131, 163 (1948).

In crafting a remedy specific to the violations, this Court is empowered to enjoin not only the acts for which the defendant was found liable, but “other related unlawful acts,” lest “all of the untraveled roads to [restraint of trade] be left open and [] only the worn one be closed.” *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 395 U.S. 100, 133 (1969) (internal quotation marks and citations omitted). In this regard, the Court’s remedy “is not limited to prohibition of the proven means by which the evil was accomplished, but may range broadly through practices connected with acts actually found to be illegal.” *Gypsum Co.*, 340 U.S. at 88-89; *see also United States v. Bausch & Lomb Optical Co.*, 321 U.S. 707, 724 (1944) (“Equity has power to eradicate the evils of a condemned scheme by prohibition of the use of admittedly valid parts of an invalid whole.”). Notwithstanding this flexibility, the Court may not simply enjoin “all future violations of the antitrust laws.” *Zenith Radio*, 395 U.S. at 133. Rather, a remedy “should be tailored to fit the wrong creating the occasion for the remedy.” *Microsoft*, 253 F.3d at 107.

Moreover, the case law counsels that the remedial decree should be “as specific as possible, not only in the core of its relief, but in its outward limits, so that parties may know[] their duties and unintended contempts may not occur.” *Int’l Salt*, 332 U.S. at 400.

In reversing the district court’s original order of remedy in this case, the appellate court criticized the district court for failing to explain how the remedy would “unfetter a market from anticompetitive conduct,’ *Ford Motor Co.*, 405 U.S. at 577 . . . ‘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,’ [*United Shoe*, 391 U.S. at 250].” *Microsoft*, 253 F.3d at 103. In attempting to provide the explanation sought by the appellate court, this Court notes at the outset that the facts and circumstances of this case necessarily affect the extent to which this Court’s order of remedy will “accomplish those objectives.” *Id.* It bears repeating that the monopoly in this case was not found to have been illegally acquired, *see United States v. Microsoft*, 56 F.3d 1448, 1452 (D.C. Cir. 1995),²⁴ but only to have been illegally maintained. *See Microsoft*, 253 F.3d at 46. Moreover, the appellate court observed that “the District Court expressly did not adopt the position that Microsoft would have lost its position in the OS market but for its anticompetitive behavior.” *Id.* at 107 (citing *Findings of Fact* ¶ 411). In this regard, the “causal connection between Microsoft’s exclusionary conduct and its continuing position in the operating systems market” was established “only through inference.” *Id.* at 106-07. Given these circumstances, as the parties concede, it does not seem to be a valid objective for the remedy in this case to actually “terminate” Microsoft’s monopoly. Rather, the

²⁴In that case, which is often recognized as the precursor to this case, the appellate court noted that “[t]he government did not allege and does not contend—and this is of crucial significance to this case—that Microsoft *obtained* its alleged monopoly position in violation of the antitrust laws.” *Microsoft*, 56 F.3d at 1452 (emphasis in original).

proper objective of the remedy in this case is termination of the exclusionary acts and practices related thereto which served to illegally maintain the monopoly.

The fact that the “causal connection between Microsoft’s exclusionary conduct and its continuing position in the operating systems market” was established “only through inference,” *id.*, has given rise to significant disagreement between the parties as to Plaintiffs’ burden on remand. In its appeal, Microsoft “urge[d]” the circuit court to “reverse on the monopoly maintenance claim, because plaintiffs never established a causal link between Microsoft’s anticompetitive conduct, in particular its foreclosure of Netscape’s and Java’s distribution channels.” *Id.* at 78. Relying heavily on the treatise on antitrust law authored by Phillip E. Areeda and Herbert Hovenkamp, the appellate court determined that liability in this case could be established through an inference of causation. *Id.* at 79 (citing 3 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 651c, at 78 (rev. ed. 1996)). Applying this “rather edentulous test for causation” the appellate court identified two relevant inquiries, the satisfaction of which would result in liability:

(1) whether as a general matter the exclusion of nascent threats is the type of conduct that is reasonably capable of contributing significantly to a defendant’s continued monopoly power and (2) whether Java and Navigator reasonably constituted nascent threats at the time Microsoft engaged in the anticompetitive conduct at issue.

Id. at 79-80. On the record from the district court, the appellate court readily concluded that both inquiries had been satisfied and that liability must be imposed. *Id.*

The appellate court noted, however, that Microsoft’s “concerns over causation have more purchase in connection with the appropriate remedy.” *Id.* at 80. In particular, the appellate court noted that the strength of the causal connection is to be considered “in connection with the appropriate remedy issue, *i.e.*, whether the court should impose a structural remedy or merely

enjoin the offensive conduct at issue.” *Id.* Again relying upon Areeda and Hovenkamp, the appellate court focused on the structural remedy that had been imposed by Judge Jackson and identified a relationship between the evidence of causation and the imposition of such a “radical” remedy:

As we point out later in this opinion, divestiture is a remedy that is imposed only with great caution, in part because its long-term efficacy is rarely certain. Absent some measure of confidence that there has been an actual loss to competition that needs to be restored, wisdom counsels against adopting radical structural relief. *See* 3 AREEDA & HOVENKAMP, ANTITRUST LAW ¶ 653b, at 91-92 (“[M]ore extensive equitable relief, particularly remedies such as divestiture designed to eliminate the monopoly altogether, raise more serious questions and require a clearer indication of a significant causal connection between the conduct and creation or maintenance of the market power.”).

Id. (internal citation omitted). Later in the opinion, the appellate court again quoted from Areeda and Hovenkamp, highlighting the need for “a clearer indication of a *significant causal connection* between the conduct and the creation or maintenance of the market power” where the remedy is structural relief. *Id.* at 106 (quoting 3 AREEDA & HOVENKAMP, ANTITRUST LAW ¶ 653b, at 91-92) (emphasis added by appellate court). The appellate court instructed that in the absence of “a sufficient causal connection between Microsoft’s anticompetitive conduct and its dominant position in the OS market . . . the antitrust defendant’s unlawful behavior should be remedied by ‘an injunction against the continuation of that conduct.’” *Id.* (quoting 3 AREEDA & HOVENKAMP, ANTITRUST LAW ¶ 650a, at 67).

In effect, the appellate court appears to have identified a proportionality between the strength of the evidence of the causal connection and the severity of the remedy. Accordingly, the “[m]ere existence of an exclusionary act does not itself justify full feasible relief against the monopolist to create maximum competition.” *Id.* (quoting 3 AREEDA & HOVENKAMP,

ANTITRUST LAW ¶ 650a, at 67). Similarly, because structural relief is “designed to eliminate the monopoly altogether,” 3 AREEDA & HOVENKAMP, ANTITRUST LAW ¶ 653b, at 91, “wisdom counsels against adopting radical structural relief” in the “absen[ce of] some measure of confidence that there has been an actual loss to competition that needs to be restored,” *Microsoft*, 253 F.3d at 80. Instead, the court crafting a remedy must assess the strength of the causation evidence that established liability and tailor the relief accordingly. *Id.* at 107.²⁵

While the appellate court’s discussion of causal connection in Parts II.C and V.F of its opinion remains instructive on the issue of remedy, it bears emphasizing that the appellate court was largely concerned in those portions of its opinion with the propriety of a structural remedy of dissolution. Because Plaintiffs have not persisted in their request for a structural remedy of dissolution, for the most part, this Court examines the existing causal connection through a different lens than that anticipated and addressed by the appellate court.²⁶ Nevertheless, the Court’s determination of the appropriate remedy in this case reflects, among other considerations, the strength of the evidence linking Defendant’s anticompetitive behavior to its

²⁵Relying upon the appellate court’s discussion of causation, Microsoft has argued that Plaintiffs have not satisfied the requirements of antitrust standing (“causation”) and “antitrust injury” and must do so in this remanded proceeding in order to obtain any remedy. As explained in great detail in the Court’s Memorandum Opinion dated June 12, 2002, these issues were, of necessity, addressed in conjunction with the finding and affirmance of liability by the district court and appellate court. *See State of New York, et al. v. Microsoft Corp.*, No. 98-1233, slip op. *passim* (D.D.C. June 12, 2002). In setting up this straw-man argument, Microsoft ignores the distinction between the establishment of some type of causation, which is fundamental to a finding of liability and an assessment of the strength of the causal connection between the anticompetitive behavior and the maintenance of the monopoly for purposes of crafting a remedy. Only the latter of these inquiries is presently before the Court.

²⁶As the parties’ arguments reflect, it is unclear whether the appellate court intended only for this court to re-examine the existing evidence relevant to the “causal connection” in conjunction with crafting a remedy, or whether Plaintiffs were to be given an opportunity to supplement the evidence relating to causation.

present position in the market.

The appellate court also noted a “practical” difficulty facing this Court relevant to the issue of remedy. *Microsoft*, 253 F.3d at 48. The appellate court appropriately observed at the outset of its review the “problematic” fact that over six years, now seven, “have passed since Microsoft engaged in the first conduct plaintiffs allege to be anticompetitive.” *Id.* at 49. This span of time is an “eternity in the computer industry,” which is characterized by rapid change. *Id.* The appellate court further acknowledged that the “dramatic” changes that can occur in the computer industry in such a short period of time “threaten[] enormous practical difficulties for courts considering the appropriate measure of relief in equitable enforcement actions.” *Id.* The appellate court recognized that in such cases “[c]onduct remedies may be unavailing . . . because innovation to a large degree has already rendered the anticompetitive conduct obsolete (although by no means harmless).” *Id.* At a minimum, opined the appellate court, such complexities demand an “evidentiary hearing on remedies—to update and flesh out the available information.” *Id.*

The parties and the Court undertook the lengthy process of precisely such an evidentiary hearing and endeavored to update and flesh out the relevant factual information. Notwithstanding these substantial efforts and the benefits derived therefrom, as the appellate court certainly anticipated, there remain difficulties inherent in crafting conduct remedies an “eternity” after commencement of the relevant conduct. Aware, though undeterred, by these difficulties, the Court, in the exercise of its discretion, has arrived at an appropriate remedy for Microsoft’s illegal behavior. Ever-mindful of the complexities identified by the appellate court and guided by the words of the Immortal Bard that “it is excellent [t]o have a giant’s strength,

but it is tyrannous [t]o use it like a giant,”²⁷ the Court sets forth its findings of fact, order of remedy, and justification therefor.

III. SCOPE OF THE REMEDY

On December 7, 2001, Plaintiffs and Defendant simultaneously filed their competing proposals for a remedy in this case. In response to Plaintiffs’ proposal and the discovery which ensued, Microsoft filed a motion in limine seeking “to exclude all evidence concerning server operating systems, hand-held devices, television set-top boxes and Web services.” Def. Mot. in Limine to Exclude Testimony on Products Unrelated to the Limited Ground of Liability Upheld by the Ct. of Appeals at 1. Microsoft argues, *inter alia*, that these devices and products fall outside of the monopoly market and are unrelated to the conduct found to be anticompetitive and, therefore, are inappropriate for consideration and coverage by the remedy in this case. *Id.* All of the Microsoft conduct which was found to be exclusionary in violation of § 2 of the Sherman Act was directed at “preventing the effective distribution and use of products that might threaten that monopoly.” *Microsoft*, 253 F.3d at 58. The type of products at which Microsoft directed this conduct were identified by the district court as “middleware,” with a specific focus on the Navigator and the Java technologies. Having reserved ruling on Microsoft’s motion and permitted the parties to further develop the relevant facts, the Court now addresses as a threshold matter the manner in which Plaintiffs propose to treat “middleware” in the remedial phase of this case.

Ordinarily, the Court might conclude rather swiftly that products which fall outside of the relevant market are inappropriate for discussion and consideration by the Court in conjunction

²⁷WILLIAM SHAKESPEARE, *MEASURE FOR MEASURE*, act 2, sc. 2.

with the crafting of a remedy for illegal monopoly maintenance. The Court does not do so in this case because the theory of liability pursuant to which Plaintiffs' prevailed involved Microsoft's response to a type of product which did not fall within the monopoly market, but nevertheless posed a potential threat to Microsoft's monopoly. Accordingly, the Court pauses to examine the monopoly market, the products which were excluded from that market, and the relationship of middleware to this market.

The definition of the relevant product market is a necessary element of a monopolization charge. *See United States v. Grinnell Corp.*, 384 U.S. 563, 570 (1966); *Microsoft*, 253 F.3d 51. As noted above, the monopoly market in this case is the market for Intel-compatible PC operating systems. *See Microsoft*, 253 F.3d at 51. Microsoft objected to this market definition, arguing that the district court had defined the market too narrowly, improperly excluding "three types of products: non-Intel compatible operating systems (primarily Apple's Macintosh operating system, Mac OS), operating systems for non-PC devices (such as handheld computers and portal [W]ebsites), and 'middleware' products, which are not operating systems at all." *Id.* at 52. The appellate court summarily rejected Microsoft's challenge with regard to the exclusion of the first two types of products, observing that Microsoft had not challenged the key district court findings of fact which determined that the products were not likely to perform the functions of a PC anytime in the near future. *Id.* The appellate court considered more carefully Microsoft's argument with regard to the exclusion of middleware from the market, but ultimately concluded, *id.* at 54, that middleware did not meet the test of "reasonable interchangeability," *id.* at 53.

Microsoft subsequently challenged as inconsonant the exclusion of middleware from the

market and Plaintiffs' theory of liability that Microsoft's suppression of the middleware threat could amount to illegal monopoly maintenance in violation of § 2. *Id.* at 54. The appellate court rejected this contention based upon the distinction between the level of competitive threat relevant to establishing a market definition and the level of competitive threat relevant to the imposition of § 2 liability. *Id.* "Nothing in § 2 of the Sherman Act limits its prohibition to actions taken against threats that are already well-developed enough to serve as present substitutes." *Id.* The appellate court observed, in this regard, that because middleware was merely a *nascent* threat, *id.*, it may simultaneously *threaten* to "become a viable substitute for Windows" and yet, remain outside of the relevant monopoly market because it is "not *presently* a viable substitute for Windows." *Id.* (emphasis added). Based upon this analysis, the appellate court affirmed the district court's identification of the relevant market and determined that Microsoft possessed monopoly power in that market. *Id.* at 54-58.

Notably, the district court in the liability phase provided only a general definition of what exactly constitutes "middleware," defining the term largely through example and the identification of key attributes, rather than absolute characteristics. As the district court pointed out in its *Findings of Fact*, Navigator had "three key middleware attributes that endow[ed] it with the potential to diminish the applications barrier to entry." *Findings of Fact* ¶ 69. The Navigator browser was a complement to Windows, rather than a substitute operating system and, therefore, had the potential to gain widespread use. *Id.* Additionally, Navigator exposed "a set (albeit a limited one) of APIs" which provided platform capabilities, and "it ha[d] been ported to more than fifteen different operating systems." *Id.* Similarly, the Java technology exposed its own APIs and, thus, enabled applications written in Java to be ported with relative ease. *Id.* ¶

74. Java had the potential to achieve the necessary ubiquity because it could be, and ultimately was, distributed along with Navigator. *Id.* ¶ 76. It is noteworthy that the district court regarded the potential of Navigator and Java to “hasten the demise of the applications barrier to entry” as a “combined effort” resulting from the “symbiosis” between the two technologies, which exceeded the potential independently held by either of the technologies. *Id.* ¶ 77. Although they played, at best, an extremely limited role in the liability findings, mention was made of the potential threats to Microsoft’s monopoly by (1) Lotus Notes, which presented “a graphical interface that was common across multiple operating systems; . . . exposed a set of APIs to developers; and, like Navigator, . . . served as a distribution vehicle for Sun’s Java runtime environment,” *id.* ¶ 78; (2) Intel’s Native Signal Processing software, “which interacted with the microprocessor independently of the operating system and exposed APIs directly to developers of media content,” *id.*; and (3) 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,” *id.*

Drawing from this rather amorphous definition, as noted above, Plaintiffs identify a broad new set of technologies which they believe merits treatment by the remedy in this case. Plaintiffs appear to recognize that it is insufficient to simply identify other technologies that the district court excluded from the monopoly market and argue that these technologies are relevant to the remedy in this case on those grounds alone.²⁸ Instead, Plaintiffs attempt to establish a nexus between the newly identified technologies and the acts for which Microsoft was found

²⁸The technologies identified by Plaintiffs in this phase of the proceeding include products which, like middleware, were excluded from the monopoly market, but which, unlike middleware, did not play a role in the attribution of liability to Microsoft for exclusionary conduct. *Microsoft*, 253 F.3d at 52.

liable. To establish this nexus, Plaintiffs propose that the newly identified technologies are “middleware,” *see* States’ Proposed Remedy (“SPR”) § 22.w, or are software that poses a platform threat similar to that posed by middleware. Such a nexus, argue Plaintiffs, justifies imposition of a remedy for Microsoft’s antitrust violations that broadly addresses these newly identified technologies, despite their virtual absence from the liability phase. Not surprisingly, Microsoft vehemently disagrees with the proposition that the technologies identified by Plaintiffs are sufficiently like Navigator and Java such that these technologies should be addressed by the Court’s remedy in this case. As a result, the Court’s consideration of the relevance of these newly identified technologies to the remedy in this case turns predominantly upon whether the particular technology can be viewed as a kind of middleware, or at least as a “nascent” threat which is similar to the middleware threats addressed during the liability phase.

In the following section, the Court examines factually the various middleware and middleware-related definitions proposed in the parties’ two remedies. To provide the necessary background to this discussion, the Court commences the discussion with a brief examination of the case law relied upon by Plaintiffs that is specifically relevant to the scope of the remedy. The Court next addresses and renders factual findings regarding the treatment of middleware under the two competing remedy proposals, as these definitions play a significant role in defining the scope of the remedy. The Court then examines the new technologies identified by Plaintiffs, as well as the theories advanced by Plaintiffs to relate these technologies to the theory of liability in this case. Following the entry of factual findings on these topics, the Court applies the relevant case law and, in the exercise of its discretion, reaches appropriate conclusions regarding the inclusion or exclusion of these technologies from the scope of the remedy. The

Court's determination with regard to these technologies then informs the Court's assessment of the appropriate treatment of middleware in the remedy. Lastly, the Court addresses, both factually and legally, other attempts by Plaintiffs to broaden the scope of the remedy in this case, as well as Microsoft's opposing view, which advocates a severe narrowing of the scope of the remedy in this case.

From this analysis the Court ultimately concludes that Plaintiffs' proposed definition of "middleware" is inconsonant with the treatment of the term during the liability phase of this case. Plaintiffs include in their definition of "middleware" almost any software product, without regard to the potential of the product to evolve into a true platform for other applications. In addition, the Court observes that Plaintiffs' middleware definition, because of its use throughout their proposed remedy, renders various provisions of Plaintiffs' remedy ambiguous and, therefore, unenforceable. A further flaw in Plaintiffs' treatment of middleware is the inclusion of technologies which fall outside of the relevant market and which do not pose a threat to Microsoft's monopoly similar to the threat posed by nascent middleware. While the Court does not fault Plaintiffs' general approach in looking beyond the relevant market to search for the new nascent threats, the Court is unable to conclude that Plaintiffs have established that all of these technologies have the capacity to increase competition within the relevant market.

Notwithstanding the Court's rejection of Plaintiffs' "middleware" definition, the Court concludes that one of the technologies identified by Plaintiffs, server/network computing, has the capacity to function in a role akin to middleware, and thereby increase competition in the relevant market. Accordingly, the Court determines to address this technology in a portion of the remedy where the Court need not corrupt the definition of "middleware" in order to do so.

A. Legal Authority Related to Scope of the Remedy

“The determination of the scope of the decree to accomplish its purpose is peculiarly the responsibility of the trial court.” *Gypsum*, 340 U.S. at 89. Plaintiffs premise their theory with regard to the appropriate scope of the remedy for Microsoft’s antitrust violations on Supreme Court precedent that instructs that an appropriate remedy in antitrust cases typically exceeds “a simple proscription against the precise [unlawful] conduct previously pursued,” *Nat’l Soc’y of Prof’l Eng’rs v. United States*, 435 U.S. 679, 698 (1978), because “a mere prohibition of the precise scheme would be ineffectual to prevent restraints,” *Bausch & Lomb*, 321 U.S. at 727. See Pl. Supp. Mem. in Opp’n to Def. Mot. in Limine to Exclude Testimony on Products Unrelated to the Limited Ground of Liability Upheld by the Ct. at 37. Indeed, the Supreme Court has long held that in order to “cure the ill effects of the illegal conduct, and assure the public freedom from its continuance,” the remedial decree imposed by the Court in this case should “range broadly through practices connected with acts actually found to be illegal.” *Gypsum*, 340 U.S. at 88-89. Yet despite unquestionable legal authority which indicates that the Court may address conduct beyond the precise parameters of that found to violate the antitrust laws, Plaintiffs advocate an extraordinarily expansive view of the conduct that can be encompassed by a remedy in this case.

Plaintiffs rely chiefly upon four cases in which the Supreme Court sanctioned behavioral remedies that governed conduct beyond the parameters of the antitrust violation. The earliest of the cases heavily relied upon by Plaintiffs is *International Salt Co. v. United States*, 332 U.S. 392 (1947). In that case, the defendant, engaged in the commerce of salt and related products, owned patents “on two machines for utilization of salt products.” *Id.* at 394. The defendant

distributed the machines principally through leases. *Id.* The terms of the equipment leases required the lessees to purchase from the defendant “all unpatented salt and salt tablets consumed in the leased machine.” *Id.* Discussing whether this aspect of the leases impermissibly restrained trade, the Supreme Court concluded that although the patents conferred upon the defendant a “right to restrain others from making, vending or using the patented machine . . . the patents confer no right to restrain use of, or trade in, unpatented salt.” *Id.* at 395-96. As a result, the defendant was held liable for the violation of antitrust law. *Id.* at 396. To redress the liability finding, the defendant proposed a decree that enjoined it from refusing to license, lease, or sell any machine on the grounds that a licensee, lessee, or purchaser had used or planned to use salt not manufactured by defendant. *Id.* at 399 n.8. The government, however, sought and obtained a decree that, *inter alia*, directed the defendant to lease or sell the salt utilization machines generally to any applicant on non-discriminatory terms and conditions, *id.* at 398 n.7, notwithstanding the fact that the record did not reflect any “threat [by the defendant] to discriminate after the judgment of the Court is pronounced,” *id.* at 399.

In response to the defendant’s challenge to the decree on the grounds that “the injunction should go no farther than the violation or threat of violation,” the Supreme Court explained:

We cannot agree that the consequences of proved violations are so limited. The fact is established that the appellant already has wedged itself into this salt market by methods forbidden by law. The District Court is not obliged to assume, contrary to common experience, that a violator of the antitrust laws will relinquish the fruits of his violation more completely than the court requires him to do. And advantages already in hand may be held by methods more subtle and informed, and more difficult to prove, than those which, in the first place, win a market. When the purpose to restrain trade appears from a clear violation of law, it is not necessary that all of the untraveled roads to that end be left open and that only the worn one be closed. The usual ways to the prohibited goal may be blocked against the proven transgressor and the burden put upon him to bring any proper claims for relief to the court’s attention.

Id. at 400. With this statement, the Supreme Court made clear that once liable for an antitrust violation, a defendant may be restricted in its business so as to force a relinquishment of the fruits of the anticompetitive conduct. It is this surrender which is to assist the courts in “pry[ing] open to competition a market that has been closed by defendants’ illegal restraints.” *Id.* at 401. Notably, however, despite the language regarding “relinquishment” of illegally obtained “fruits,” the remedy affirmed by the Court in *International Salt* did not mandate a divestiture of the defendant’s assets or a structural division of the defendant, but merely regulated the terms pursuant to which the defendant could engage in its business of leasing or selling the salt machines. *Id.* at 398 n.7.

The following year, in *United States v. Paramount Pictures*, 334 U.S. 131 (1948), the Supreme Court reiterated its view that the equitable powers of the courts to remedy antitrust violations may justify “uproot[ing] all parts of an illegal scheme—the valid as well as the invalid—in order to rid the trade or commerce of all taint” of the anticompetitive actions. *Id.* at 148. The underlying facts of that case concerned, among a number of other restraints, agreements between movie distributors and exhibitors, known as “clearances,” which were “designed to protect a particular run of a film against a subsequent run.”²⁹ *Id.* at 144-45. The district court in that case concluded that these agreements while not *per se* unlawful, could constitute unreasonable restraints of trade in some instances. *Id.* at 146-47. On the facts before it, the district court imposed liability upon the defendants for “a conspiracy to restrain trade by imposing unreasonable clearances.” *Id.* at 147. Having affirmed the finding of liability on this

²⁹“A clearance is the period of time, usually stipulated in license contracts, which must elapse between runs of the same feature within a particular area or in specified theatres.” *Id.* at 144 n.6.

point, the Supreme Court examined the remedial decree provision that placed the burden on the defendant distributor to prove the legality of any clearance that was subsequently challenged. The Supreme Court concluded that the remedy imposed by the district court was appropriate because the district court “could . . . have eliminated clearances completely for a substantial period of time, even though . . . they were not illegal per se.” *Id.* at 148. The Supreme Court observed in this regard that “[t]hose who have shown such a marked proclivity for unlawful conduct are in no position to complain that they carry the burden of showing that their future clearances come within the law.” *Id.*

With these two rulings, the Supreme Court confirmed that a remedy in an antitrust case seeks not only to eliminate illegal conduct, but to address the effects of that conduct upon the marketplace. Pursuant to this view, therefore, it may be appropriate in some instances that a remedy address some legal conduct which, by its relation to the illegal and anticompetitive conduct, perpetuates the antitrust violator’s restraint on trade. At the same time, however, nothing in these two cases indicates that an antitrust violator should be subject to an outright denial of the ability to continue to do business and to compete with other participants in the market and in other markets.

Plaintiffs next direct the Court to the Supreme Court’s holding in *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 395 U.S. 100 (1969). In that case, the Supreme Court considered antitrust claims relating to various unlawful “patent pools,” including those in Canada, England, and Australia. *Id.* at 105. The trial court found liability relating to all of the “patent pools” and entered “injunctive relief against further participation in any arrangement to prevent Zenith from exporting electronic equipment into *any foreign market.*” *Id.* at 107 (emphasis added). The

Supreme Court agreed with the court of appeals that there was insufficient evidence to support a claim for money damages relating to the Australian and English markets, *id.* at 126-28 (England), 129 (Australia), but agreed with the district court that defendant and another entity “were conspiring to exclude Zenith and others from the Canadian market,” *id.* at 131. Accordingly, the Supreme Court concluded that, “[j]udged by the proper standard, the record before [it] warranted the injunction with respect to Canada.” *Id.* Notwithstanding this conclusion, the Court went on to “reinstate the injunction entered by the District Court insofar as it more broadly barred [the defendant] from conspiring with others to restrict or prevent Zenith from entering any other foreign market.” *Id.* at 132. The Court explained:

In exercising its equitable jurisdiction, “(a) federal court has broad power to restrain acts which are of the same type or class as unlawful acts which the court has found to have been committed or whose commission in the future unless enjoined, may fairly be anticipated from the defendant’s conduct in the past.” . . . We see no reason that the federal courts, in exercising the traditional equitable powers extended to them by § 16, should not respond to the “salutary principle that when one has been found to have committed acts in violation of a law he may be restrained from committing other related unlawful acts.”

Id. at 132-33 (quoting *NLRB v. Express Publishing Co.*, 312 U.S. 426, 435, 436 (1941)). It is from this passage that Plaintiffs appear to derive their familiar refrain that the remedy imposed by this Court should reach the conduct found to violate the antitrust laws, as well as conduct which is “the same or similar” to such illegal conduct. Importantly, however, as the *Zenith Radio* Court expressed the rule, the related acts must also be “unlawful” or of the “same type or class” in order to warrant injunction. *Id.* In this regard, the *Zenith Radio* case does not support so broad a reading as to say that clearly lawful practices may be enjoined simply because they will weaken the antitrust violator’s competitive position.

Finally, Plaintiffs call to this Court’s attention the Supreme Court’s holding in *National*

Society of Professional Engineers v. United States that an injunction that “goes beyond a simple proscription against the precise conduct previously pursued . . . is entirely appropriate.” 435 U.S. at 698. In that case, upon finding that an association’s canon of ethics prohibiting competitive bidding by its members was unlawful *per se*, the district court enjoined the association “from adopting any official opinion, policy statement, or guideline stating or implying that competitive bidding is unethical.” *Id.* at 697. The Supreme Court affirmed liability and rejected the defendant’s contention that the provision should be struck down because of its potential, if broadly read, to “block legitimate paths of expression on all ethical matters relating to bidding.” *Id.* at 698. Quoting from *International Salt*, the Supreme Court noted that the “transgressor” could “bring any proper claims for relief [from the remedy] to the court’s attention,” *id.* (quoting 332 U.S. at 400) (quotation marks omitted), should the defendant “wish[] to adopt some other ethical guideline more closely confined to the legitimate objective of preventing deceptively low bids,” *id.* at 699 (quoting the court of appeals opinion in that case) (quotation marks omitted).

These four cases, argue Plaintiffs, comprise a “rich body of case law” which supports their expansive view of the remedy. Pl. Supp. Mem. in Opp’n to Def. Mot. in Limine to Exclude Testimony on Products Unrelated to the Limited Ground of Liability Upheld by the Ct. of Appeals at 40. The Court does not agree that this body of law, though it may be “rich,” can withstand the heavy burden heaped upon it by Plaintiffs. Undoubtedly Plaintiffs are correct that there is ample precedent to support the imposition of conduct remedies which go beyond the specific acts found to be anticompetitive, as the Supreme Court stated in a more recent summary of its own body of law on the subject:

The suggestion that antitrust violators may not be required to do more than return the market to the status quo ante is not a correct statement of the law. In *United States v. Paramount Pictures, Inc.*, 334 U.S. 131, we sustained broad injunctions regulating motion picture licenses and clearances which were not related to the status quo ante.

Ford Motor Co., 405 U.S. at 573 n.8 (citations and quotation marks omitted). Plaintiffs' remedy, however, extends this precedent well beyond its clear and logical application. In each of the cases relied upon by Plaintiffs, to the extent that the remedy imposed exceeded the specific anticompetitive conduct, the restrictions were closely related to the anticompetitive conduct. As the Court explains in detail below, in this case, the scope of Plaintiffs' proposal exceeds most rational extensions of injunctive relief for the anticompetitive conduct. While some of the areas of expansion proposed by Plaintiffs are closely related to the circumstances which gave rise to liability in this case, the majority of practices that Plaintiffs seek to enjoin in relation to alleged "bad" acts by Microsoft do not fall squarely within the category of "acts which are of the same type or class" as those found to violate the antitrust laws. *Zenith Radio*, 395 U.S. at 132.

B. Findings of Fact Related to Scope of the Remedy

1. Introduction

"[A] 'full exploration of facts is usually necessary in order (for the District Court) properly to draw (an antitrust) decree' so as 'to prevent future violations and eradicate existing evils.'" *United States v. Ward Baking Co.*, 376 U.S. 327, 330-31 (1964) (quoting *Associated Press v. United States*, 326 U.S. 1, 22 (1945)). The Court observes at the outset of its examination of the evidence in this case that, in the present context, the ability of the Court to render findings of fact, in the ordinary sense, is rather limited. As the appellate court itself observed, "drafting an antitrust decree by necessity 'involves predictions and assumptions concerning future economic and business events.'" *Microsoft*, 253 F.3d at 102 (quoting *Ford*

Motor Co., 405 U.S. at 578). Whether or not this Court accepts a particular factual prediction often rests upon whether the witness has identified a sound basis in fact or logic to justify the prediction. Where no such basis has been identified, unless self-evident to the Court, the Court may accord little weight to the prediction. Similarly, because of the predictive nature of the testimony, much of the factual testimony is meaningless unless such testimony is considered together with the accompanying argument regarding the intended use of the testimony. The Court observes in this regard that, quite often, Plaintiffs' arguments are presented primarily through the testimony of their witnesses. Recognizing the importance of addressing these intertwined factual and legal assertions, the Court sets forth this testimony as a part of its factual discussion. In many instances, however, the Court neither credits nor rejects these intertwined assertions in its factual discussion because the Court ultimately finds the argument based thereon to be unpersuasive or irrelevant.

The Court further observes that, in this proceeding, factual testimony often resembles that which would otherwise appear to be a legal or discretionary conclusion. This convergence is understandable given that issues of fact and law tend to lose their already faint distinctions in the context of any discussion regarding what constitutes an appropriate or sufficient remedy. Nevertheless, in rendering its separate factual findings pursuant to Rule 52 of the Federal Rules of Civil Procedure, the Court has endeavored to draw the necessary distinction between predictive factual assertion and legal conclusion.

Prior to entering factual findings, the Court pauses to address the role played by Microsoft's competitors in this proceeding. It is both understandable and expected that Plaintiffs would turn to industry participants to develop the factual record regarding the impact of

Microsoft's illegal conduct upon competition, to identify any new technologies which may be relevant to the issue of remedy, and to explain the relation of such technologies to the monopoly market. Undoubtedly, testimony from industry participants played a role during the liability phase, as such participants are most likely to have the relevant factual knowledge. *See Microsoft*, 87 F. Supp. 2d 34; *Findings of Fact*, 84 F. Supp. 2d 9. Thus, to the extent that Microsoft's competitors have offered testimony explaining various technologies and the impact of potential remedial provisions, their testimony is often useful to the Court. Nevertheless, where such testimony reveals a self-interest in a particular remedial provision which is not balanced by a particular benefit to competition as a whole or to other participants in the industry, the Court, of necessity, considers with caution the views of these industry participants. The Court takes careful note of those remedial proposals which advance the interests of particular competitors and takes pains to ensure that the remedy in this case is not a vehicle by which such competitors can advance their own interests. *See Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 458-59 (1993); *Cargill, Inc. v. Monfort of Colo., Inc.*, 479 U.S. 104, 110 (1986); *see also Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.*, 429 U.S. 477, 488 (1977). Any other result would run contrary to antitrust law and principles of equity.

The Court has considered the evidence submitted by the parties, made determinations as to its relevancy and materiality, assessed the credibility of the testimony of the witnesses, both written and oral, and ascertained the probative significance of the documentary and visual evidence presented. Based upon the Court's consideration of the entire record in this case and all of the reasonable inferences to be drawn therefrom, the Court sets forth the following factual findings. The Court sets forth additional factual findings in Appendix A.

2. *Treatment of Middleware*

Plaintiffs and Defendant have proposed detailed injunctive relief as the remedy in this case. *See* Pl. Ex. 1509 (hereinafter “States’ Proposed Remedy” or “SPR”); Def. Ex. 1020 (hereinafter “Second Revised Proposed Final Judgment” or “SRPFJ”). Integral to understanding the two remedies proposed in this case is a preliminary understanding of the manner in which the two remedies treat middleware. In simple terms, the treatment of middleware in the two remedies plays a significant role in defining the scope of products which will receive various protections under the terms of the respective remedies. For example, both proposed remedies impose restrictions upon Microsoft’s ability to retaliate against companies which sell or support third-party middleware. *See, e.g.*, SPR § 8; SRPFJ § III.A. In addition, both proposed remedies address the middleware portions of Microsoft’s operating system, imposing certain requirements upon Microsoft with regard to its product design related to these portions of its operating system. *See, e.g.*, SPR § 2.c; SRPFJ § III.H. By way of further example, both proposed remedies require Microsoft to provide certain kinds of technical information with regard to the interaction between its operating system and its software products which are treated as Microsoft middleware. *See, e.g.*, SPR § 4; SRPFJ § III.D. By addressing middleware of various types, both remedies intend to increase the ability of third-party middleware to provide platform capabilities which rival the platform function of the Windows operating system.

a. “Middleware” and Related Definitions in Microsoft’s Proposal

Despite these similarities in addressing the treatment of middleware, the two remedy proposals adopt rather distinct and divergent approaches to defining the term. Microsoft’s proposed remedy does not actually use the term “middleware” standing alone, but instead

addresses primarily two types of software: “Microsoft Middleware Products” and “Non-Microsoft Middleware Products.” As is quite apparent from the terminology, Microsoft’s remedy proposal draws a distinction between middleware technology incorporated into Microsoft’s own products and the middleware capabilities of third-party software products. Somewhat counter-intuitively, “Microsoft Middleware Products” and “Non-Microsoft Middleware Products,” as defined in the SRPFJ, do not mirror each other, meaning that “Microsoft Middleware Products” are *not* defined as the Microsoft versions of “Non-Microsoft Middleware Products.” *See* SRPFJ § VI.K, N. This unexpected relationship between the two definitions results from the different uses of the definitions in specific portions of Microsoft’s remedy proposal.

The term “middleware,” as used in the liability phase of this case, was not limited to precise types of functionality, but instead encompassed products displaying certain “key” attributes that “endow” the technology with the “potential to diminish the applications barrier to entry.” *Findings of Fact* ¶ 69. In other words, the middleware in need of protection was characterized as the software products which “Microsoft feared . . . because they facilitated the development of user-oriented software that would be indifferent to the identity of the underlying operating system.” *Findings of Fact* ¶ 78. The liability findings of this case primarily concern Microsoft’s efforts to compete with two specific middleware products: (1) the Navigator Web browsing software from Netscape and (2) Sun’s Java technologies. *See Microsoft*, 253 F.3d at 53. Plaintiffs established that Navigator and Java, because they were cross-platform—meaning they ran on multiple PC operating systems—had the potential to develop into software development platforms that would attract the attention of applications developers. *See id.* The

district and appellate courts accepted Plaintiffs' theory that, if a sufficient number of ISVs wrote applications that drew on capabilities provided by these middleware platforms, consumers would have less interest in running applications on Windows and might use non-Microsoft operating systems under their Web-browsing and/or Java software layer, such that the Windows base could be replaced with some other operating system that would support the middleware. *Id.* at 55; *Findings of Fact* ¶¶ 28-29. In this regard, the surviving liability determinations turn largely on Microsoft's efforts to thwart Netscape's ability to distribute Navigator and Sun's ability to distribute Java in the primary channels of distribution. *See Microsoft*, 253 F.3d 59-78.

The potential competitive significance of Navigator and Java turned on the key attributes of those programs which, together, held the potential to provide an easily portable software development platform.³⁰ *Findings of Fact* ¶¶ 69-77. First, the software provided a complement to Windows, rather than a replacement. *Id.* ¶¶ 69-70, 73-74. In addition, Navigator and Java exposed a set of APIs which provided a platform so that developers, relying on the platform capabilities of the programs, could write multiple types of applications to run on Navigator and Java. *Id.* ¶ 69, 74. Finally, Navigator and Java both ran on Windows, as well as other PC operating systems, such that reliance on Navigator and Java's API set would render applications instantly portable to multiple operating systems. *Id.* Adding to this potential was the newly emerging popularity of the Internet and Internet browsing software, which provided a significant purchasing incentive to first-time PC buyers. *Id.* ¶ 70.

i. "Non-Microsoft Middleware" in the SRPFJ

Given the defining trait of running on multiple operating systems, "middleware," as the

³⁰A "platform" is software that provides functionality upon which ISVs can call during the creation of their own software programs. *See Gates* ¶ 52.

term was utilized during the liability phase, most frequently refers to third-party, non-Microsoft software. Microsoft's own software products are unlikely to behave as true middleware because Microsoft, as the monopolist, has little interest in creating an alternative platform which is portable from Microsoft's operating system to a non-Microsoft operating system. Still, because Microsoft software products often provide a functionality similar to that provided by a third-party middleware product, such software is often treated as Microsoft middleware. Microsoft's remedy proposal therefore uses the term "Non-Microsoft Middleware" to make clear the reference to third-party software. "Non-Microsoft Middleware" is defined in the SRPFJ as:

a non-Microsoft software product running on a Windows Operating System Product that exposes a range of functionality to ISVs through published APIs, and that could, if ported to or made interoperable with, a non-Microsoft Operating System, thereby make it easier for applications that rely in whole or in part on the functionality supplied by that software product to be ported to or run on that non-Microsoft Operating System.

SRPFJ § VI.M. "Non-Microsoft Middleware," as that term is defined in the SRPFJ, captures the essence of the middleware threats which were discussed during the liability phase. *See id.* In fact, the definition of "Non-Microsoft Middleware" expands beyond the middleware discussed at the liability phase in that it does not require that the software products already run on multiple PC operating systems, only that they have the potential, *if ported* to such operating systems, to serve as platforms for applications. *See id.*

The term "Non-Microsoft Middleware" is noteworthy for the breadth of its coverage of software products without limitation as to specific types of functionality. Consistent with the liability phase, these software products are principally limited by the requirement that they run on Microsoft's monopoly product—Windows, while exposing a range of functionality through published APIs. *Id.* "Non-Microsoft Middleware" is utilized in significant portions of

Microsoft's remedy proposal and is the term which most often identifies the products which will receive some form of protection under Microsoft's remedy proposal. For example, § III.A of the SRPFJ prohibits Microsoft, *inter alia*, from retaliating against OEMs for supporting in any way "Non-Microsoft Middleware." *Id.* § III.A. Likewise, § III.C of Microsoft's remedy proposal restricts Microsoft's ability to impose license restrictions upon OEMs with regard to the installation and display of icons, shortcuts, and menu entries for "Non-Microsoft Middleware." *Id.* § III.C. Therefore, under the umbrella of "Non-Microsoft Middleware," Microsoft's remedy proposal affords coverage or protection to a wide variety of third-party software products.³¹

ii. "Non-Microsoft Middleware Product" in the SRPFJ

Microsoft's proposed remedy also uses the term "Non-Microsoft Middleware Product," which is defined similarly to "Non-Microsoft Middleware," but adds a requirement that "at least one million copies" of the product "were distributed in the United States within the previous year." SRPFJ § VI.N. Some of Plaintiffs' witnesses contended that the definition of "Non-Microsoft Middleware Product" is in discord with the use of the term "middleware" during the liability phase because it requires some degree of popularity for the product before it is covered by the definition as a middleware product. Specifically, Plaintiffs' witnesses pointed to the "one-million-copies" threshold mark in the "Non-Microsoft Middleware Product" definition and argued that it excludes the kinds of nascent threats which are most similar to the products toward which Microsoft was found to have directed its illegal conduct. *See, e.g.,* Ashkin ¶ 169; Richards ¶ 139. To the contrary, the one-million-copies threshold is consistent with the

³¹For example, pursuant to the definition of "Non-Microsoft Middleware," products competitive with Microsoft Office would receive protection from various types of adverse action by Microsoft, notwithstanding the fact that Microsoft Office is a product which has always been separate and distinct from Microsoft's operating system.

treatment of middleware in the liability phase of this proceeding. The one-million-copies distribution requirement in the definition of “Non-Microsoft Middleware Products” is reflective of the treatment of middleware threats in this case because the district and appellate courts did not merely focus on *any* software with the potential to serve as a multi-purpose platform, but specifically focused upon middleware which could “gain widespread use based on its value as a complement to Windows.” *Findings of Fact* ¶ 69; *see also id.* ¶¶ 72 (describing Navigator’s widespread adoption after its release), 76 (describing Java’s inclusion in Navigator). The products upon which Judge Jackson focused in imposing liability were not merely middleware, but were middleware *threats*, because of their popular use, platform capabilities, and their ensuing ability to reduce the applications barrier to entry. *Findings of Fact* ¶¶ 69-78.

Additionally, it is noteworthy that the term “Non-Microsoft Middleware Product” is utilized in only one section of Microsoft’s proposed remedy, § III.H. This portion of Microsoft’s remedy proposal requires Microsoft to configure its operating system products so as to permit the removal of end-user access to, and certain “automatic invocations”³² of “Microsoft Middleware Products,” as well as “Non-Microsoft Middleware Products.” SRPFJ § III.H.1. This portion of the SRPFJ also provides for the replacement of “Microsoft Middleware Products” with “Non-Microsoft Middleware Products” in very specific instances. *Id.* § III.H.2. Because this portion of Microsoft’s proposed remedy requires Microsoft to undertake the redesign of its own product, Jones ¶ 119, the one-million-copies threshold relieves Microsoft of the obligation to redesign its product to accommodate a particular piece of software with extremely limited use. Elsewhere in Microsoft’s remedy proposal, where there is no burden

³²The term “automatic invocations” refers generally to the launching of a particular piece of software functionality without the direct invocation of such software by the user.

upon Microsoft to redesign its product, the one-million-copies distribution threshold does not apply. *See, e.g.*, SRPFJ § III.A, C.

To emphasize the limited relevance of the one-million-copies threshold, the Court reiterates that Microsoft’s remedy proposal primarily utilizes the term “Non-Microsoft Middleware,” which does not incorporate any minimum threshold for distribution, in its extension of protection to products well beyond the types of products that were addressed during the liability phase. This lack of a threshold leads to the inclusion in the remedy of virtually any nascent “middleware” technology, regardless of its popularity or promise of success. Therefore, the key distinction between the two definitions is rooted in the liability determination, as well as practical considerations attendant to the imposition of design obligations upon Microsoft.

iii. “Microsoft Middleware Product” in the SRPFJ

In contrast to the broad definitions of “Non-Microsoft Middleware” and “Non-Microsoft Middleware Products,” the term “Microsoft Middleware Product” is defined according to a specific set of existing Microsoft functionalities, as well as future Microsoft functionality. The existing set of functionalities which are included in “Microsoft Middleware Product” are those provided by Internet Explorer, Microsoft’s Java Virtual Machine, Windows Media Player, Windows Messenger, Outlook Express, and their successors in Windows. SRPFJ § VI.K.1. The future technologies captured by the definition of “Microsoft Middleware Product” encompass software included in Windows that provides the functionality of Internet browsers, email client software, networked audio/video client software, and instant messaging software. *Id.* § VI.K.2. Other future technologies captured in the definition of “Microsoft Middleware Product” are those functionalities which are both distributed as part of Windows and distributed separately

from Windows by Microsoft, trademarked by Microsoft, and which compete with third-party middleware products. *Id.*

“Microsoft Middleware Product” extends well beyond the Microsoft counterparts to the two non-Microsoft technologies which were primarily at issue in the liability phase of this case (Java and Navigator) to include media playback technology, which was addressed briefly during the liability phase, *Findings of Fact* ¶ 78, and to govern the Microsoft counterparts to other well-recognized potential middleware threats to Windows’ dominance, such as email client software and instant messaging software. *See* SRPFJ § VI.K. The term “Microsoft Middleware Product,” as defined in the SRPFJ, focuses upon software technologies which have been incorporated or “integrated” into the Windows operating system, in reflection of the fact that the two technologies principally at issue during the liability phase were mirrored by Microsoft technologies that had been incorporated into Windows. *See Findings of Fact* ¶¶ 133, 155, 397-98. The focus on technologies incorporated into Windows further reflects the fact that Microsoft software technologies that have never been part of Windows fall outside of Microsoft’s monopoly product, which, of course, is the focus of this proceeding.

iv. “Microsoft Middleware” in the SRPFJ

In portions of Microsoft’s proposed remedy, there is a need to identify the specific code in Windows. Hence, Microsoft’s remedy proposal uses the term “Microsoft Middleware,” which is largely reflective of the definition of “Microsoft Middleware Product,” but which is further limited to the *code* separately distributed and trademarked or marketed as a major version of the Microsoft Middleware Product. SRPFJ § VI.J. The term “Microsoft Middleware” is used sparingly in Microsoft’s remedy proposal, with its most significant and prominent use arising in

conjunction with a provision that requires Microsoft to disclose very specific APIs and related technical information. Section III.D of Microsoft’s proposed remedy requires Microsoft to disclose all of the interfaces relied upon by “Microsoft Middleware” to obtain services from Windows. *Id.* § III.D. Because “Microsoft Middleware” is defined as functionality included in or “integrated” into Windows, § III.D requires that Microsoft draw distinctions between portions of Windows in order to identify the APIs relied upon by one portion—the middleware portion—to obtain services from the remaining portion of Windows. *See id.* §§ III.D, VI.J. In order to distinguish between these two portions of Windows that coexist within the same piece of software, the definition of “Microsoft Middleware” identifies the relevant software by its code. The separate distribution requirement, along with the requirement that the distributed software is a “major version of [the] Microsoft Middleware Product,” ensures that the code is easily distinguishable from the remainder of Windows. *Id.* § VI.J; Tr. at 5166 (Jones) (“We look at those components and we basically . . . we draw a lasso around them and look at everything going out and everything coming in.”).

Plaintiffs’ witnesses disagreed with these limitations, arguing that because the determinations to distribute separately and to market as a major version or trademark rest in Microsoft’s discretion, Microsoft has the ability to manipulate and control which code falls within the definition. *See, e.g.,* Ledbetter ¶ 153; Tr. at 1160-61 (Tiemann). These arguments fail to recognize the need for precision in identifying a distinction between “Microsoft Middleware” and the remainder of Windows. Plaintiffs do not offer an alternative method for identifying the specific code that constitutes “Microsoft Middleware,” or some similar portion of Windows, nor do Plaintiffs establish that such precision is unnecessary. Rather, Microsoft presents ample

evidence that, without a method by which to identify the specific code to be treated as the middleware portion of Windows, it cannot undertake the disclosure obligations which would be required by § III.D of Microsoft's remedy proposal (nor by § 4 of Plaintiffs' remedy proposal). *See* Appendix A, Part VI. By providing a mechanism by which to identify the specific pieces of Windows code which constitute the relevant middleware portion of Windows, Microsoft's definition identifies the otherwise imperceptible boundary between "middleware" and "operating system." Although the definition of "Microsoft Middleware" proposed in the SRPFJ is noticeably more circumscribed than the equivalent definition in Plaintiffs' proposed remedy, discussed *infra*, these limitations serve to provide bright lines by which Microsoft can determine what portions of Windows code are affected by the remedy.³³

Plaintiffs' witnesses further criticized Microsoft's method for identifying these portions of code on the ground that Microsoft retains too much power to control which code falls within the definition of "Microsoft Middleware." *See, e.g.*, Kertzman ¶ 68; Ledbetter ¶ 153; Richards ¶ 87; Shapiro ¶ 195. These criticisms ignore the economic forces which countervail the likelihood that Microsoft will manipulate its products to exclude specific code from the definition. For example, Plaintiffs' witnesses specifically noted that Microsoft may simply opt not to distribute code separately. *See, e.g.*, Kertzman ¶ 68; Ledbetter ¶ 153. Microsoft often distributes separately certain technologies which are included in new releases of Windows because such distribution enables users of previous Windows versions to take advantage of the latest improvements to these technologies. *See* Jones ¶ 61; Poole ¶ 76. Such distribution benefits

³³Indeed, Judge Jackson relied upon the separate distribution of browser functionality in the Windows 95 Service Pack to identify the separation between Microsoft's browsing functionality and its operating system functionality. *Findings of Fact* ¶ 190.

Microsoft, as it permits Microsoft to continually improve the quality of its products, even after they are sold, and to expand the user base of new technology without waiting for consumers to purchase an entirely new operating system. Therefore, if Microsoft determines not to distribute separately certain portions of code, it will deny itself the benefits of such distribution. Likewise, if Microsoft should choose to distribute a product which is not a major version of Internet Explorer, Microsoft's Java Virtual Machine, Windows Media Player, Windows Messenger, or Outlook Express, and Microsoft chooses not to trademark the separate distribution in an effort to avoid inclusion in the definition of "Microsoft Middleware," *see* SRPFJ § VI.J and K, Microsoft will sacrifice the advantage gained by having a trademarked product in the marketplace. Plaintiffs have not offered credible evidence indicating that Microsoft is likely to sacrifice the advantages of trademarking and separate distribution in order to circumvent the terms of the remedy in this case.³⁴ Accordingly, the Court accords Plaintiffs' complaint little weight.

b. "Middleware" and Related Definitions in Plaintiffs' Proposal

Plaintiffs' remedy proposal takes an entirely different approach to middleware. Unlike the Microsoft remedy proposal, which draws a sharp distinction between third-party software products which are middleware and Microsoft products which compete with that middleware, Plaintiffs' remedy proposal utilizes the term "middleware," standing alone, to identify both Microsoft and non-Microsoft software. Plaintiffs also incorporate the term "middleware" into the definition of another term in their remedy proposal—"Microsoft Middleware Product." Because of this incorporation, the terms "middleware" and "Microsoft Middleware Product" in Plaintiffs' remedy proposal overlap substantially.

³⁴Were Microsoft to make a practice of doing so in a manner which thwarted the objective of the remedy in this case, Plaintiffs could petition the Court for relief on this point.

i. “Middleware” in the SPR

Reflective of their complaint that Microsoft’s treatment of middleware is too narrow, Plaintiffs’ remedy proposal incorporates into “middleware” a far broader set of products and functions. Plaintiffs define “middleware” as

software . . . that operates directly or through other software within an Operating System or between an Operating System (whether or not on the same computer) and other software (whether or not on the same computer) by offering services via APIs or Communications Interfaces to such other software, and could, if ported to or made Interoperable with multiple Operating Systems, enable software products written for that Middleware to be run on multiple Operating System Products.

SPR § 22w. As a result, middleware, according to Plaintiffs’ definition, is virtually any block of software code which exposes even a single API.³⁵ Bennett ¶¶ 30, 35-36; Madnick ¶ 136; Tr. at 4592-93, 4889 (Gates); Def. Ex. 1530 at 61 (Greene).

Very small blocks of software code can be considered to be separate pieces of middleware pursuant to Plaintiffs’ proposed remedy. As a result, individual files or even parts of files within Windows may be said to be middleware. *See* Gates ¶ 165; Tr. at 6042-43 (Madnick). For each action mandated or restricted by Plaintiffs’ proposed remedy where the term “middleware” appears, *see, e.g.*, SPR §§ 2.c, 5, 10, 11,³⁶ or is incorporated into the definition of

³⁵One particularly helpful definition of “API” explains:

An API, in effect, is a doorway between programs that can be used for specified purposes. For example, a PC operating system will generally control how images are displayed on the PC’s computer screen. By exposing an API, the operating system may enable other programs also to display images on the computer screen without the need to replicate all of the code of the operating system that performs this function.

Ledbetter ¶ 32.

³⁶These portions of Plaintiffs’ remedy proposal refer to “non-Microsoft middleware,” which is not itself a defined term in Plaintiffs’ remedy proposal. As a result, non-Microsoft takes its plain meaning and merely serves to modify the defined term “middleware.” *See* SPR §§ 2.c, 5, 10.

another term, *see, e.g.*, SPR § 22.x, such obligations apply to very small blocks of software code, rather than to software code that is generally regarded as a software product. In this regard, Plaintiffs' definition of "middleware" is described as highly "granular," Gates ¶ 165; Madnick ¶ 152, as it separates middleware into extraordinarily fine "grain." *See* Bennett ¶¶ 30, 35-36.

Rather than focus on the platform potential of software, Plaintiffs focus exclusively upon the ability of a piece of software to expose even a single API. Nearly any software can expose a few APIs, yet not all software that exposes a few APIs carries the potential to serve as a platform for applications, let alone the potential to evolve into a platform that can dissipate the applications barrier to entry protecting Microsoft's PC operating system monopoly. *See* Bennett ¶¶ 30, 35-36; Madnick ¶¶ 136-39; Tr. at 841-42 (Ashkin); Tr. at 619-20 (Richards). Plaintiffs fail to adduce evidence sufficient to establish that these various pieces of software, which often lack robust platform capabilities but expose at least one API, have the capacity to lower the applications barrier to entry, and thereby promote competition in the monopolized market. As a result, to label such software as "middleware" is not consistent with the manner in which middleware was discussed during the liability phase of this case. Rather, the relevant middleware is the software that runs on desktop versions of Windows and other PC operating systems and carries the potential to serve as a general-purpose development platform. It is this platform trait which makes the software a middleware threat because the platform capability of the middleware competes with the platform capability of Windows. More importantly, because Plaintiffs' definition of "middleware" is over-inclusive and does not reflect the presence of a genuine platform threat, the Court cannot find that remedial provisions which address virtually any software which exposes one or more APIs will benefit competition in the relevant market.

ii. “Microsoft Middleware Product” in the SPR

As noted above, Plaintiffs’ remedy proposal utilizes the term “Microsoft Middleware Product” to refer to a class of Microsoft software. Plaintiffs’ remedy proposal provides two different ways in which a particular piece of software may fall within the parameters of a “Microsoft Middleware Product.”³⁷ The first part of the definition of “Microsoft Middleware Product” enumerates an expansive list of functionalities, each of which alone constitutes a separate “Microsoft Middleware Product.” SPR § 22.x.i. The latter portion of the definition requires that, in order to be a “Microsoft Middleware Product,” the product must be middleware (according to Plaintiffs’ definition) that is or has been distributed by Microsoft separately from Windows within the past three years and provides a functionality similar to that provided by the middleware of a Microsoft competitor. *Id.* § 22.x.ii.

³⁷Section 22.x of Plaintiffs’ remedy proposal provides:

“Microsoft Middleware Product” means

- i. Internet browsers, e-mail client software, media creation, delivery and playback software, instant messaging software, voice recognition software, digital imaging software, directories, Exchange, calendaring systems, systems and enterprise management software, Office, Handheld Computing Device synchronization software, directory services and management software, the Common Language Runtime component of the .Net framework, and Compact Framework, whether provided in the form of files installed on a computer or in the form of Web-Based Software, or
- ii. Middleware distributed by Microsoft that –
 - (1) is, or in the three years preceding this Judgment has been, distributed separately from an Operating System Product, any successors thereto, or
 - (2) provides functionality similar to that provided by Middleware offered by a Microsoft competitor.

SPR § 22.x. Oddly, this definition does not specify that the software products listed in subpart “i” must be *Microsoft* software products. The Court presumes, however, that Plaintiffs intended that such products would be Microsoft products given that the term is “Microsoft Middleware Product.” Subpart “ii” does not suffer from a similar infirmity, as it specifies that the products must be “Middleware *distributed by Microsoft.*” *Id.* § 22.x.ii (emphasis added).

Addressing first the list of functionalities proffered in the definition of “Microsoft Middleware Product,” the Court finds that the functionalities which are included in the definition of “Microsoft Middleware Product” expand far beyond those provided by the middleware principally addressed by the district court during the liability phase. Plaintiffs have not presented evidence regarding the platform capabilities of many of the functionalities listed in their definitions of “middleware” and “Microsoft Middleware Product.” With regard to those few functionalities that Plaintiffs did address during the evidentiary hearing, the Court is not satisfied that Plaintiffs have presented evidence to establish that even these functionalities possess platform potential akin to that possessed by Navigator and Java. *See* Elzinga ¶ 135; Gates ¶¶ 147-49; Madnick ¶¶ 136-39, 212; Tr. at 841-42 (Ashkin); Tr. at 3307 (Shapiro).

With regard to the latter portion of the definition of “Microsoft Middleware Product,” the Court finds that the incorporation of Plaintiffs’ definition of “middleware” into this portion of the definition renders “Microsoft Middleware Products,” like “middleware,” to be virtually any portion of a Microsoft software product that exposes even a single API and is presently distributed separately or has been distributed separately from Windows by Microsoft within the past three years. *See* Bennett ¶¶ 30, 35-36; Madnick ¶ 145. Once again, the fact that a software product or a piece of a software product exposes APIs does not itself equate with a conclusion that the software product holds the potential to serve as a platform for applications, let alone the potential to evolve into a platform with the capacity to reduce the applications barrier to entry. *See* Bennett ¶¶ 30, 35-36; Madnick ¶¶ 136-39; Tr. at 841-42 (Ashkin); Tr. at 619-20 (Richards). As a result, there is no basis for a finding that inclusion in the remedy of any separately distributed Microsoft software product which exposes just a single API will enhance competition

in the monopolized market.

Aside from Plaintiffs' inclusion in the most fundamental definitions of the proposed remedy software products and portions thereof which have not been shown to possess the potential to erode the applications barrier to entry, Plaintiffs' definitions of "middleware" and "Microsoft Middleware Product" suffer from even greater infirmities when the use of the definitions in the remedy proposal is examined. Plaintiffs' remedy proposal, like Microsoft's proposal, mandates the disclosure of APIs and related technical information relied upon by some form of Microsoft middleware technology to interoperate with the Windows operating system. *Compare* SPR § 4, with SRPFJ § III.D. However, Plaintiffs' remedy proposal, in defining "Microsoft Middleware Product" through the identification of a particular functionality, is insufficiently precise to provide Microsoft with notice as to what portions of its Windows product are implicated in the provision.

For example, "media creation, delivery and playback software" is identified as a kind of "Microsoft Middleware Product."³⁸ SPR §§ 4, 22.x.i. Will Poole, a Microsoft Vice President responsible for the Windows New Media Platforms Division, pointed out that it is very difficult to try to "draw a box around the components of Microsoft's . . . multimedia software" because "many different areas of the operating system handle multimedia content." Poole ¶ 83. As Mr. Poole attested, it is unclear whether "the basic APIs that enable an application or the operating system to play an 'alert' sound . . . are part of Microsoft's 'media creation, delivery and playback

³⁸In contrast, Microsoft's proposed remedy, in the context of discussing API disclosures, identifies the particular Microsoft middleware technology as specific software *code*. SRPFJ §§ III.D; VI.J. From these identifications of the code for middleware technology present in Windows, Microsoft is able to identify the APIs relied upon by the middleware to obtain functionality from the remainder of the Windows operating system.

software.” *Id.*³⁹ Plaintiffs have not established that there is any clear definition or consensus in the industry, or even within Microsoft, as to what portions of Windows would constitute “media creation, delivery, and playback software” and what would be considered to be simply part of the “operating system” functionality, *i.e.*, “Microsoft Platform Software.”⁴⁰ As a result, the definition of “Microsoft Middleware Product” provided in Plaintiffs’ remedy is ambiguous, leaving Microsoft without clear guidance, and the Court with compliance issues, as to what is expected for compliance with the API disclosure portion and other portions of Plaintiffs’ proposed remedy.⁴¹

3. *New Technologies*

Plaintiffs have also identified certain technologies which, prior to this remedy proceeding, had not been addressed by the district and appellate courts in detail in conjunction with this case. Plaintiffs identify these technologies as the new frontier in “middleware platform threats” and, therefore, seek to include these technologies in the definition of “middleware” and related definitions. In the paragraphs below, the Court examines four categories of technologies in order to determine if Plaintiffs’ proposal to encompass these technologies within the remedy is appropriate: (1) network and server-based applications; (2) interactive television middleware

³⁹One of Microsoft’s computer science experts, Dr. Stuart E. Madnick, described a similar problem with regard to the inability to identify the precise code implicated in other portions of Plaintiffs’ remedy proposal. *See id.* ¶ 164 (discussing § 12 of Plaintiffs’ remedy proposal).

⁴⁰“Microsoft Platform Software” is defined in Plaintiffs’ remedy proposal as “a Windows Operating System Product or Microsoft Middleware Product or any combination of a Windows Operating System Product and a Microsoft Middleware Product.” SPR § 22.y.

⁴¹Another example of the failure of Plaintiffs’ definition of “Microsoft Middleware Product” is addressed in Appendix A, Part X.B.

and set-top boxes; (3) handheld devices; and (4) Web services.

a. Server/Network Computing

In large computing networks, PCs are often known as “clients,” and the large computers used to store data and run centralized applications are known as “servers.” Madnick ¶¶ 42-43. Traditionally, the majority of software applications have been located on the PC, but in the network context, applications may reside on the server. Ledbetter ¶¶ 16-17, 21. Applications residing on the server call upon server operating systems to provide functionality, which is ultimately executed “for” a client PC. *Id.* ¶ 50. Most client computers are PCs that run some version of the Windows operating system. Madnick ¶ 44. The operating systems used on servers, however, are more diverse, such that it is common to have a heterogeneous network, meaning a network “contain[ing] a combination of clients and server operating systems from different vendors.” Short ¶ 22; *see also* Ledbetter ¶ 64; Madnick ¶ 44. Heterogeneous networks are the norm, rather than the exception. Madnick ¶ 53; *see also* Ledbetter ¶ 64.

Heterogeneous networks have the ability to function because server operating systems are capable of “interoperat[ion]” with clients running a variety of operating systems. Ledbetter ¶ 49. In general terms, when two devices or systems have the ability to “interoperate” they can exchange information and use the information that has been exchanged. Ledbetter ¶ 65; Madnick ¶ 46. The concept of interoperability encompasses a continuum; it is not an absolute standard. Madnick ¶ 46, Tr. at 7108-09 (Bennett); Tr. at 5782-83 (Madnick); Tr. at 5477 (Short); *see also* Ledbetter ¶¶ 65-66; Tiemann ¶ 179. For this reason, interactions among computer systems may be classified in terms of how “tightly” or “fully” they interoperate. Madnick ¶¶ 55, 61; *see also* Ledbetter ¶ 66; Madnick ¶ 119; Short ¶ 16.

Clients and servers in a homogeneous network interoperate differently than clients and servers in a heterogeneous network. Madnick ¶¶ 61-68. For two computers to interoperate, they must have compatible software installed. Therefore, interoperation is most easily accomplished by computers in the same “hardware-software platform family.” Madnick ¶ 61. For example, “a Sun workstation and a Sun server, both running Solaris on SPARC processors” can be said to be in the same “hardware-software platform family” and, therefore, share many “common points of reference” such as file systems and interfaces, making interoperation relatively straightforward and easy to accomplish. *Id.* When the client and server versions of the operating systems are built on a common base of code, with a very high degree of overlap, applications that run on the client version generally will run on the server version of the same operating system. *Id.* ¶ 64. In these homogeneous contexts, the client version of the operating system generally includes “built-in” or “native” software that enables the client computer to connect to a server running the same operating system. *Id.* ¶ 64.

In the more common model, a heterogeneous network, interoperation is more complex because of basic differences between types of hardware and operating systems. *Id.* ¶ 65. For example, “the Mac OS, NetWare, variants of Unix, and Windows all store files in different ways and track different file characteristics.” *Id.* There are a variety of methods used to overcome differences between client and server capabilities. One such method is the identification of a common “language” or a communications “protocol”⁴² which both pieces of the network understand or support “natively,” meaning without the addition of software code. *See* Madnick

⁴²A protocol is a method of communicating information across a network. Morse Code, a series of dots and dashes that represent letters of the alphabet, is an example of a very simple protocol, albeit in a different context. Gates ¶ 101.

¶¶ 68-71; *see also* Short ¶¶ 36-38. Another method involves adding software to the server to make the client computer “think” it is communicating in a homogeneous network. Madnick ¶¶ 68-75; *see also* Short ¶¶ 44-49. The software added to the server, if interoperating with a Windows client for example, will enable the server to provide services to the Windows client in the same manner as would a Windows server. Madnick ¶¶ 73-74. Yet another method of interoperation in a heterogeneous network involves the addition of software code to the client which enables the client to communicate more effectively with the server. *Id.* ¶¶ 68, 76-82; *see also* Short ¶¶ 39-43. When software is added to the client computer to enable interoperation, the client software relies on the client operating system’s APIs in the same manner as an ordinary application. Madnick ¶ 80.

In each of these configurations, successful interoperation can be achieved. Nevertheless, because of the complexity of modern software, perfect interoperation between different types of hardware and software products (a heterogeneous network) is largely aspirational. *Id.* ¶¶ 88-89, 97; *see also id.* ¶¶ 46, 82; Gates ¶ 305. Said otherwise, even with these methods of facilitating interoperation, it is rare that the result will be identical to what would have been achieved in a homogeneous network, because the features of the various pieces of the network will handle functionality in different ways. *See* Madnick ¶ 82.

Server operating systems expose APIs for use by applications and, on behalf of those applications, call on PC (client) operating systems to provide basic functions of the PCs connected to the network. Ledbetter ¶ 47. Software developers are increasingly writing programs that rely, or “call,” on APIs exposed by server operating systems such that the server operating system provides the “platform” for applications. *Id.* ¶¶ 47-48; Green ¶ 76; Tr. at 1508-

09 (Ledbetter). Ultimately, the application running on the server operating system will run “for” the client PC in a manner similar to that which would exist if the application were running directly *on* the client. Tr. at 1507 (Ledbetter); *see also* Ledbetter ¶¶ 47-48; Tiemann ¶ 127.

Dr. Carl S. Ledbetter, Senior Vice President, Engineering/Research and Development, and Chief Technology Officer for Novell, Inc.,⁴³ Ledbetter ¶ 1, testified on behalf of Plaintiffs that because most server operating systems are capable of interoperating “effectively with a variety of client PC operating systems and other different server operating systems . . . applications written to invoke the APIs of a network operating system (instead of the APIs of a particular PC operating system) can be shared among client PCs that do not themselves employ the same operating system.” *Id.* ¶ 49. Dr. Ledbetter theorized that the brand of PC operating system will decrease in importance as software developers begin to write programs for APIs exposed by server operating systems, rather than for the APIs exposed by PC operating systems. *Id.* ¶ 50. Based upon this view, Dr. Ledbetter predicted that “[s]erver operating systems, if they are a platform for enough applications and if they function efficiently with non-Microsoft client PCs, could enable consumers to receive the applications they want using desktop PCs that run non-Microsoft operating systems.” *Id.* With this prediction, Dr. Ledbetter invoked the potential of server/network computing to challenge the applications barrier to entry in a manner similar to that of Navigator and Java, as discussed throughout the liability phase. Ledbetter ¶ 50; *see also* Tiemann ¶ 131; Shapiro ¶ 172.

Central to the success of server/network computing is the ability of heterogeneous networks to interoperate successfully. Within these heterogeneous networks, Windows

⁴³Novell, Inc. is a “provider of network computing software.” Ledbetter ¶ 1.

operating systems account for the vast majority of PC clients, while a wide mix of server operating systems are utilized, with most servers employing two or more different server operating systems. Madnick ¶ 53; *see also* Gates ¶¶ 92-94; Short ¶ 28. Client-to-server interoperation is enabled by disclosure of the interfaces exposed by Windows clients that are required by a non-Windows server to make its functionality available to those clients. Short ¶ 34. In this regard, the “tools” of client-to-server interoperation are APIs, communications protocols, and related technical information. Tr. at 5486 (Short).

b. Set-Top Boxes and Interactive Television Software

A set-top box is a limited-function computer attached to a television for purposes of enabling interactive television technologies. Kertzman ¶ 4. In terms of functionality, interactive television technology generally involves the provision of a range of more traditionally television-oriented services, such as the ability to order “video-on-demand,” an on-screen television guide, and the ability to interact with particular television programs, as well as a range of functionality typically associated with personal computer use, such as email, Internet access, instant messaging, and the provision of streaming audio and media through a personal computer media player. Kertzman ¶ 3. The set-top box is linked, at present, to a server usually located at the cable or satellite television provider. *Id.* ¶ 4. The server software residing at the cable company powers the majority of the interactive television content, sending commands to the set-top “clients.” *Id.* ¶ 23. These servers also download a small piece of software to each client as it connects to the server. *Id.*⁴⁴ At present, interactive television software has not been

⁴⁴For ease of reference, the Court will refer to the software which powers interactive television, including the server-resident software and the “small piece” of software residing on the set-top box, as “interactive television software.”

deployed to the personal computer. Tr. at 2091-92 (Kertzman). Rather, the software is currently distributed to companies like cable, satellite, and telephone companies that provide multichannel television programming to consumers for use on set-top boxes and is not distributed to traditional OEMs as that term has been used in this litigation. *See id.*

Mitchell Kertzman, the Chief Executive Officer of Liberate Technologies, a company which supplies interactive television software, Kertzman ¶ 1, testified that interactive television software exposes APIs, enabling it to serve as a platform for a number of applications typically associated with the personal computer, such as email, instant messaging, and streaming audio and video. *Id.* ¶ 29. Mr. Kertzman testified that his company's interactive television software is cross-platform and, hence, can run on multiple operating systems. *Id.* ¶ 28. Mr. Kertzman asserts that because of its platform capabilities interactive television software has the potential to pose a "platform threat" to Windows.⁴⁵ Kertzman ¶ 33. This platform threat, theorizes Mr. Kertzman, will result from the ability of the interactive television software to attract developers to write applications for the platform it provides, which can be ported to any operating system. In this regard, Mr. Kertzman does not distinguish precisely between whether the "platform" is provided by the portion of the software which runs on a server or the portion of the software which is downloaded to the client set-top box. *See* Tr. at 2111-13 (Kertzman).

Interactive television has yet to achieve significant popularity, despite the fact that its "take off" has been predicted for many years. Tr. at 2115 (Kertzman). Given that interactive

⁴⁵Mr. Kertzman theorizes that there is presently a "convergence," Kertzman ¶ 37, underway between the PC and set-top box such that "[t]he lines between set-tops and PCs are blurring as set-tops acquire more computing functionality and the PC acquires more television functionality" and the two will ultimately be a "unified device," *id.* ¶ 81. *See generally id.* ¶¶ 37-40.

television software, to date, has not been deployed on the PC, Mr. Kertzman's predictions regarding the potential of interactive television software to "threaten" Windows are almost entirely speculative.

c. Handheld Devices

The term "handheld devices" is a largely descriptive term which refers to a category of computing devices that perform many of the functions of an ordinary personal computer but are much smaller, such that they are "hand held." *See* Mace ¶ 13. This category can also include so-called "smart phones," which are devices that combine the PC-like capabilities of handheld devices and mobile telephone technology. *Id.* ¶ 21. Handheld devices have been "commercially successful" since approximately 1996, when the original "Palm Pilot" handheld device was introduced by Palm, Inc. ("Palm"). *Id.* ¶ 8. As six years have passed since handheld devices achieved "commercial success[]," *id.*, the technology is not nascent. A handheld device's core use is to manage a user's personal information, such as calendar and address book functions, electronic mail, and Internet browsing. *Id.* ¶¶ 12, 24. Because the capabilities of handheld devices generally overlap with those of a personal computer, the vast majority of handheld device users "synchronize" information contained in their handheld device with information contained in their personal computer or on a server. *Id.* ¶¶ 25-26. Through synchronization, the handheld device automatically merges its information with information stored on a PC or server. *Id.* ¶ 25. Handheld devices have already gained widespread popularity. Palm manufactures the most popular operating systems for handheld devices, with a United States market share of approximately eighty percent. Tr. at 1900 (Mace).

Testifying on behalf of Plaintiffs, Michael Mace, Chief Competitive Officer of

PalmSource, Inc., a wholly owned subsidiary of Palm,⁴⁶ Mace ¶ 1, attested that he anticipates that the continued advancement of the handheld device will result in the replacement of the personal computer by the handheld device. *Id.* ¶ 15. Mr. Mace explained that he has seen “interest among PC software developers in converting their software” to run on the Palm operating system for handheld devices, *id.* ¶ 17, and that there are more than 13,000 software programs available to run on the Palm operating system alone. *Id.* ¶ 12. In this regard, Mr. Mace emphasized that although, in his view, the PC is not “obsolete,” he believes that “handheld sales are already starting to reduce the growth of PC sales, and . . . they will eventually replace many personal computers.” *Id.* ¶ 18. Mr. Mace did not offer any testimony regarding plans to port handheld device operating systems to personal computers, nor did he testify that handheld device synchronization software has any platform capabilities.

Microsoft recently entered into the handheld market with the “Pocket PC.” *Id.* ¶ 19. Mr. Mace expressed concern over Microsoft’s entry into the market. *See id.* ¶ 35. Mr. Mace testified at length regarding Palm’s inability to reach an agreement with Microsoft regarding “cooperative access to Microsoft’s .NET technologies.” *Id.* ¶ 70; *see generally id.* ¶¶ 55-72. In this regard, Mr. Mace accused Microsoft of “manipulat[ing]” .NET and raised an additional concern “about what other things Microsoft could do to interfere with our business.” *Id.* ¶ 74. In particular, Mr. Mace asserted that “Microsoft software standards could be manipulated to degrade the performance of our products or disable them.” *Id.* ¶ 76. To support this contention, Mr. Mace described a series of unsuccessful negotiations between Microsoft and Palm surrounding the availability of the .Net platform for the Palm operating system. *Id.* ¶¶ 55-72. The negotiations

⁴⁶Palm sells both hardware and software for handheld devices. Mace ¶ 9.

failed because Palm perceived that the terms Microsoft sought to impose would threaten to turn Palm customers into Microsoft customers if ISVs began to write to Microsoft technology supported by Palm, rather than the Palm operating system. *Id.*

Palm was intimately involved in the inclusion of handheld device-related software in Plaintiffs' proposed remedy and stands to benefit competitively from such inclusion. Tr. at 1866-90 (Mace). For example, in his direct testimony, Mr. Mace recounted Palm's desire that IE be converted to run on the Palm operating system, and Microsoft's refusal to do so. Mace ¶¶ 87-89. Palm views this litigation as a means by which to gain access to the source code for IE and thereby create a version of IE for the Palm operating system. Tr. at 2480-84, 2491 (Mace).

d. Web Services

Web services are almost universally viewed as the new frontier in computing, providing a new computing paradigm. Allchin ¶ 14. Because "Web services" are new and emerging, and in many ways are still largely conceptual, there are multiple understandings within the industry as to what constitutes "Web services." The intangible nature of Web services, combined with the substantial disagreement about the precise parameters of the same make it extremely difficult to define the term. Based upon the evidence provided by the parties in this proceeding, the Court can only characterize Web services in somewhat general terms.

The concept of Web services concerns the exchange of information and functionality from one computing device to another through a defined set of industry standard interfaces. *See* Allchin ¶ 41; Gates ¶ 40; Tr. at 2792 (Schwartz). By using Web services built on one of a number of standard protocols, applications connected to each other via the Internet or other networks can share data, as well as invoke functionality supplied by one another—interoperate—

without regard as to how they were built or on which operating system they are running. Allchin ¶ 42; *see also* Def. Ex. 1398 (Anne Thomas Manes, Enabling Open, Interoperable, and Smart Web Services[:] *The Need for Shared Content*, (Sun Microsystems, Inc.) March 2001). Web services are server-based applications that can be accessed directly by other software programs, as well as by the consumer through a variety of devices, including the PC, cellular phone, and handheld device. Allchin ¶¶ 43-44, 65; Borthwick ¶ 73. Interoperability from server to server, and between servers and non-PC devices, is considered by many to be fundamental to the functioning of Web services. Allchin ¶¶ 53, 64; Schwartz ¶ 164; *see also* Richards ¶ 98.

The term “Web services” does not refer merely to “services delivered across the Web” or otherwise related to the Internet.⁴⁷ Allchin ¶¶ 41, 43-44. As a result, Web-browsing software is not integral to the functioning of Web services because many Web services will involve direct communications between devices or programs and will not be accessed by an end user at all. *Id.* ¶¶ 43-45. In this sense, Web-browsing software of the type addressed during the liability phase will play no role in the creation, delivery, or use of many Web services. *Id.* However, Web browsers can play a limited role in that they often provide the user interface to Web services. *Id.* ¶¶ 44-45.⁴⁸

Microsoft has given the name “.NET” to its “emerging platform for Web services.” *Id.*

⁴⁷Dr. James Allchin, Group Vice President for Platforms at Microsoft, Allchin ¶¶ 1, 13, provided an example of Web services: “[T]he Web services model permits an automobile manufacturer’s computer system to communicate via the Internet with a piston supplier’s computer to place new orders without any human intervention. There is no Web-browsing software involved at all.” Allchin ¶ 43.

⁴⁸Because of the limited relationship between Web-browsing software and Web services, the Court’s discussion and conclusions regarding Web services are unrelated to the manner in which the Court’s remedy will address Web-browsing software. The Court’s remedy treats Web-browsing software as middleware. *See infra* Parts III.C.5, III.B.2.a.

¶ 43. Microsoft's .NET vision encompasses software for building, deploying, operating, integrating, and consuming Web services. *Id.* ¶ 49. William H. Gates, III, Microsoft's Chairman of the Board and Chief Software Architect, Gates ¶ 1, characterized Microsoft's efforts in the Web services area as a "bet the company" initiative. Tr. at 4562 (Gates). On behalf of Microsoft, Dr. Allchin described the "core" of .NET as "XML," a format for describing data. *Id.*

¶ 55. Additional industry standards such as SOAP, WSDL and UDDI "collectively round out the underpinnings for .NET." *Id.* ¶ 57. These standards, in Microsoft's view, will enable the ready interoperation of a wide variety of computing devices. *Id.* ¶¶ 51, 54, 61-62.

Not surprisingly, Microsoft is not alone in having a vision for Web services. Microsoft's .NET initiative and Sun's Java platform represent competing and "fundamentally different" visions of the ideal way to develop and deliver distributed business applications. *Id.* ¶ 64; *see also* Schwartz ¶ 57. Microsoft's .NET Framework is one element of Microsoft's .NET initiative. Allchin ¶ 67. Visual Studio.NET is a set of tools that software developers can use to write software programs that will run within Microsoft's .NET Framework. *Id.* ¶ 68.

The Chief Strategy Officer for Sun Microsystems, Inc., Jonathan Schwartz, testifying on behalf of Plaintiffs, Schwartz ¶ 1, theorized that "[i]f the most popular applications are delivered as Web services, instead of [as] stand-alone PC applications, the applications barrier protecting Windows could be substantially eroded." *Id.* ¶ 36. Mr. Schwartz further testified that Web services, in his view, have the capacity to challenge the popularity and the necessity of the PC. In this regard, Mr. Schwartz theorized that the increasing residence of Web service components "on servers that can be accessed with a variety of client devices" renders Microsoft's desktop operating system less necessary to the ability to run the desired applications. *Id.* ¶ 37; *see also*

id. ¶ 38; Borthwick ¶ 74.

John Borthwick, a Vice President at America Online Inc. (“AOL”) Advanced Services, Borthwick ¶ 1, articulated a fear that Microsoft will use its present monopoly position in the market for Intel-compatible PC operating systems to “tilt end-users towards Microsoft’s services” and thereby induce software developers “to develop their [W]eb services to conform exclusively to the .NET platform.” *Id.* ¶ 77; *see also id.* ¶¶ 76-85; Schwartz ¶¶ 111-12; 126. Mr. Borthwick’s fear in this regard engenders a prediction that “as users become dependent on Microsoft’s [W]eb services, Microsoft can ensure that they remain dependent on Windows XP and its subsequent updates” by “interfer[ing] with interoperation between its own platform software and rival servers, operating systems and hand-held devices” so as to ultimately “force users to purchase new iterations of Windows XP if they wish to access [W]eb services through their PCs.” Borthwick ¶ 85; *see also id.* ¶¶ 98, 101, 103. Mr. Borthwick’s concerns were echoed almost verbatim by Mr. Schwartz of Sun Microsystems. *See* Schwartz ¶ 126 (“[B]y widely distributing its .NET platform with its ubiquitous operating system and other products . . . Microsoft has the power potentially to tip the market for Web services platform in favor of .NET”). In essence, both Messrs. Schwartz and Borthwick expressed concern that Microsoft has the power “to use its Windows operating system to thwart platform competition in the market for [W]eb services.” Borthwick ¶ 103; *see also id.* ¶¶ 108; 114; Schwartz ¶ 134. Mr. Schwartz built upon Mr. Borthwick’s fear by asserting that, in addition to Microsoft’s dominance in the market for PC operating systems, Microsoft’s “presence in the server software market allows it to exert control over servers hosting or running Web services in ways that will protect the position of Windows.” Schwartz ¶ 129.

C. Conclusions Regarding Scope of the Remedy

Plaintiffs' best theory to justify inclusion of the above-described products or devices in an appropriate remedy is to identify them as types of "middleware," which have the capacity to serve as alternative platforms, running on top of the operating system, in the same way as Java or Navigator. With limited exceptions, Plaintiffs are unsuccessful at pounding these square pegs into the round holes of liability in this case. Plaintiffs' search for middleware threats of the same type or class as Navigator and Java takes them outside of the realm of software applications written for PCs, to include software which is running predominantly on non-PC devices. This fundamental aspect of the theory is not itself flawed, so long as the technologies have the potential to interact with the PC operating system in such a way as to function as "middleware," consistent with the use of that term in the liability phase. Microsoft has steadfastly maintained that none of these technologies is a proper subject of the remedy in this case because they are not truly "middleware" as that term was used in the liability phase. Therefore, argues Microsoft, these technologies are unrelated to the findings of liability affirmed by the appellate court and have no place in this proceeding.⁴⁹

Although "precedents . . . uphold equity's authority to use quite drastic measures to achieve freedom from the influence of the unlawful restraint of trade," such measures are justified only where "the required action reasonably tends to dissipate the restraints." *Bausch & Lomb*, 321 U.S. at 726. The Court finds that, of the new "middleware" or "platform threat" technologies identified by Plaintiffs, only one of the four—server/network computing—has been

⁴⁹Despite this position, Microsoft has addressed at least one area of technology, servers and network computing, in one provision of its proposed remedy. *See* SRPFJ § III.E (mandating the disclosure of communications protocols).

shown to presently have a reasonable possibility of “dissipat[ing] the restraints” on trade imposed by Microsoft. *Id.* Although this technology does not function precisely as “middleware” has throughout this proceeding, the platform threat it poses to Microsoft’s dominance in the monopoly market is both real and similar to the threats posed by Navigator and the Java technologies. *Zenith Radio*, 395 U.S. at 132. In contrast, the theories of dissipation of the restraints on trade which Plaintiffs utilize to justify inclusion in the remedy of the remaining three of these four technologies, in their present state,⁵⁰ are fundamentally flawed.

1. Server/Network Computing

Plaintiffs offer a strong, though still imperfect, argument for the inclusion of protection for technologies relating to network and server-based applications. Plaintiffs neither allege nor present evidence that these technologies will function as middleware in the traditional manner—meaning that the software physically resides on the PC and functions as a platform for other applications. *See supra* Part III.B.2.a. Therefore, these technologies lack one of the defining characteristics of middleware as it has been discussed in this case thus far.

Notwithstanding this fact, networks and server-based technologies do have the capacity to function in a manner similar to that of traditional middleware by providing a layer between the operating system and the top-level applications. *See id.*; *see also supra* Part III.B.3.a.

In this model, personal computers, known in this context as “clients,” are linked electronically to a central computer known as a “server” such that they form a “network.” The server runs a “server operating system” which exposes its own APIs and, therefore, is capable of

⁵⁰Notwithstanding this conclusion, as the Court discusses, *infra* Part III.C.2, if interactive television software evolves as Plaintiffs predict, it will be protected by portions of the Court’s remedy.

supporting software applications such that a user can access the application through the client PC. *See supra* Part III.B.3.a. Plaintiffs argue that in this configuration the server operating system plays the role of traditional middleware because it provides a platform for applications other than the PC operating system. Because server operating systems have the ability to interact or “interoperate” with multiple PC operating systems, an application written to a single server operating system can then be present for use by a client PC without regard to the type of PC operating system on the client. *Id.* In this scheme, the server operating system parallels and, indeed, resembles the more traditional middleware that was the focus of liability because it provides a platform for applications, as discussed *supra* Part III.B.2.a.

Given the Court’s conclusion that servers should be included, the remedy in this case will provide substantial protection for server/network computing by requiring Microsoft to disclose technical information relating to communications protocols which are “natively” supported by Windows. *See infra* Part IV.E.2. The disclosure of this information will significantly advance the ability of non-Microsoft server operating systems to interact with client PCs running Windows. Such assistance is appropriate as it looks toward the new model of the “platform threat” and seeks to ensure that the ill effects of Microsoft’s conduct are not felt in this related area of the industry. *See Nat’l Soc’y of Prof’l Eng’rs*, 435 U.S. at 698; *Paramount Pictures*, 334 U.S. at 148.

In addition, because server operating systems provide a platform which “competes” with Microsoft’s PC operating system to host applications for the PC, much in the way traditional middleware provides a platform and, thereby, competes with Microsoft’s PC operating system, the Court’s remedy affords vendors of server operating systems some protection from retaliatory

action by Microsoft. *See infra* Part IV.D. Likewise, the Court’s remedy provides similar protection against Microsoft retaliation for software vendors who write software which runs “on” server operating systems “for” use on a PC. *Id.* This curtailing of Microsoft’s conduct with respect to server/network computing addresses conduct closely related to the retaliatory conduct for which Microsoft has been held liable, so as to ensure that the “untraveled roads” toward illegal maintenance of a monopoly are not “left open.” *Int’l Salt*, 332 U.S. at 400.

2. *Set-Top Boxes and Interactive Television Software*

In some respects, interactive television software can be likened to the middleware platform threats discussed earlier in this case, such as Navigator, because the technology offers a somewhat “new” capability, interactive television functionality and simultaneously serves as a platform for other functionalities such as email and Web browsing. *See supra* Part III.B.3.b. At present, however, unlike the middleware threat posed by Navigator, interactive television software does not reside on the PC, but instead is present predominantly on the server, with a small portion on the television set-top box. *Id.* Therefore, Plaintiffs’ view of interactive television software as a “middleware platform threat” is based upon the presumption that the functionality presently residing on the set-top box will someday be ported from the set-top box⁵¹ to run on desktop personal computers. This presumption is the fundamental flaw in Plaintiffs’ argument.

The potential “threat” posed by interactive television software is almost entirely hypothetical. *Id.* There is insufficient evidence for the Court to conclude that interactive

⁵¹The Court focuses, in this section, upon the platform potential of that portion of the software which resides on the set-top box. The platform potential of the portion of set-top software which runs on a server can be subsumed into the more general analysis of the capabilities of network computing. *See supra* Parts III.B.3.a, III.C.1.

television software will be ported in the near future. *Id.* Similarly, there is insufficient evidence to support a conclusion that, if ported, such software will gain significant popularity. *Id.* As a result of this dearth of evidence, the Court concludes that the remedy in this case may be effective and appropriate without extending its protections to interactive television software as it exists today.

The Court observes, however, that should interactive television software develop in the manner predicted by Plaintiffs, it will likely be protected by portions of the remedy imposed by the Court which protect “Non-Microsoft Middleware.” In other words, if interactive television software someday runs on Windows, which it does not presently do, and exposes a range of functionality through APIs, it will receive all of the protections afforded “Non-Microsoft Middleware” in the remedial decree imposed by the Court. Similarly, such technology will be eligible for treatment as a “Non-Microsoft Middleware Product,” provided that it obtains a measurable level of popularity as software running on Intel-compatible personal computers to warrant treatment as a middleware platform threat. *See supra* Part III.B.2.a.ii; *infra* Part III.C.5. The Court further observes that if Microsoft were to respond to interactive television technology in a manner similar to its response to the previous middleware platform threats, namely by incorporating such technology into Windows and trademarking the same, interactive television software could receive the protection afforded by the limitations on Microsoft’s conduct relative to “Microsoft Middleware” imposed by the Court’s remedy described below.⁵²

⁵²Treatment as “Non-Microsoft Middleware” affords protections against retaliation and with regard to OEM installation of an icon, shortcut, or menu entry. Treatment as a “Non-Microsoft Middleware Product” would, in specifically defined instances, enable interactive television software to be invoked in place of the Microsoft technology which would otherwise launch automatically.

If the Microsoft counterpart to interactive television software falls within the definition of

3. *Handheld Devices*

In contrast to server/network computing, or even Plaintiffs' predictions regarding interactive television software, the technology associated with handheld devices has not been shown to have the potential to function in a manner similar to middleware consistent with the liability phase. *See supra* Part III.B.3.c. Plaintiffs advance four theories pursuant to which handheld devices pose a "platform threat to the Windows operating system." Pl. Prop. Findings of Fact ¶ 147. The Court rejects each of these theories as either logically flawed or unsupported by the evidence.

Relying predominantly upon Mr. Mace's prediction that handheld devices will eventually replace the personal computer, Plaintiffs first argue that this potential substitution of handheld devices in place of personal computers can be characterized as a "platform threat." *Id.* Even if the Court accepts Mr. Mace's prediction regarding the future success of the handheld device, Plaintiffs' theory that this replacement represents a "platform threat," as that phrase has been used throughout this proceeding, is flawed. The theory of the "platform threat" posed by middleware posits that the middleware has the potential to erode the applications barrier to entry such that the brand of the underlying operating system is of less importance. In contrast, Plaintiffs' first theory regarding the competitive significance of the handheld device does not envision a world in which the brand of the PC operating system lacks significance, but instead envisions a world in which the PC itself and, therefore, the operating system on which it runs

"Microsoft Middleware," at some point in the future, Microsoft will be required to disclose the APIs and related technical information for interfaces that are relied upon by the Microsoft version of the interactive television software to receive services from the remainder of Windows. *See infra* Part IV.E.

lacks significance.⁵³

Direct competition between the handheld device and the personal computer does not establish that competition will increase in the market for Intel-compatible personal computer operating systems. Such competition instead provides only the possibility that sales of personal computers, and therefore, the number of personal computers running the Windows operating system, will decline. Plaintiffs have not offered evidence which shows that Microsoft's share of the market for Intel-compatible personal computer operating systems will simultaneously decline, or that a decline in PC sales generally will encourage other entrants into the market for Intel-compatible PC operating systems. *See supra* Part III.B.3.c. As a result, the Court finds that Plaintiffs' first explanation of the handheld device's relation to the remedy in this case is not only far removed from the theory of the "middleware platform threat" which gave rise to the liability in this case, but logically unsound.

Plaintiffs argue second that as handheld devices increase in popularity, attracting more software developers and potentially beginning to replace the personal computer, there is an "increas[ed] likelihood" that "a handheld device operating system developer would port it to run on Intel-compatible PCs." Pl. Prop. Findings of Fact ¶ 148. Plaintiffs offer no direct support for this theory. Plaintiffs do not offer testimony from or about any such "handheld device operating system developer" with an interest in porting the operating system to serve as an operating system for a personal computer. *See supra* Part III.B.3.c. Indeed, handheld devices have been

⁵³Inasmuch as Plaintiffs' view the handheld device as a substitute for the PC, Plaintiffs' argument for the inclusion of handheld devices in the scope of the remedy represents an ironic about-face from Plaintiffs' earlier position—taken in conjunction with the identification of the relevant market in the liability phase—that handheld devices are *not* interchangeable with the PC. *Microsoft*, 253 F.3d at 52; *Findings of Fact* ¶ 23. In this regard, the Court observes that, unlike middleware, handheld devices were not treated as "nascent threats" during the liability phase.

“commercially successful” since at least 1996, and yet Plaintiffs do not offer any evidence which indicates that the operating systems on which the devices run will be ported to run on the PC.

Id. Accordingly, the Court must reject Plaintiffs’ second theory of relevance as entirely speculative and unsupported by fact.

Plaintiffs next assert that because handheld devices compete with PCs for the attention of software developers there will be a reduction in the number of applications written for the personal computer. Pl. Prop. Findings of Fact ¶¶ 149-50. This reduction, contend Plaintiffs, will directly reduce the applications barrier to entry. *Id.* While there is evidence that a great number of applications are written for the handheld device, *see supra* Part III.B.3.c, Plaintiffs have not presented evidence that there has been any decrease in the number of PC applications since the rise in popularity of the handheld device. In short, there is no evidence linking the number of applications written for handheld devices to a decrease in the number of applications written for the PC. Even assuming that the increase in popularity of the handheld device would result in a decreased number of PC applications, from this point Plaintiffs merely reassert a version of their first theory of relevance, arguing that this decrease in PC applications will “impact competition between handhelds and PCs.” Pl Prop. Finding of Fact ¶ 150. As the Court concluded above, competition between handheld devices and PCs has not been shown to have any impact upon the market for PC operating systems. Plaintiffs also assert that a reduction in the number of PC applications will impact “competition among [operating system] manufacturers by reducing the Windows applications barrier to entry.” *Id.* Plaintiffs fail to identify any *evidence* which supports this theory. *See generally supra* Part III.B.3.c. Mere reduction in the number of applications written for all PC operating systems has not been shown by Plaintiffs to reduce the

applications barrier to entry. In sum, the Court rejects Plaintiffs' third theory of relevance regarding handheld devices as lacking entirely in factual support and logically flawed.

Lastly, Plaintiffs contend that the increasing popularity in handheld devices carries the potential to threaten Microsoft's monopoly in the market for Intel-compatible PC operating systems by creating a larger market and greater consumer demand for cross-platform middleware. *See* Pl. Prop. Finding of Fact ¶ 151. Plaintiffs do not offer any evidence, let alone economic analysis, that identifies a relationship between the market for handheld devices and the available and potential distribution channels of cross-platform middleware. *See supra* Part III.B.3.c. Because the Court cannot accept Plaintiffs' speculation that there exists such a relationship, the Court rejects Plaintiffs fourth theory of the relevance of handheld devices to the issue of remedy in this case.⁵⁴

Based on the foregoing, the Court rejects Plaintiffs' insistence that handheld devices need some form of protection by the remedial decree imposed in this case. Handheld devices did not play a role during the liability phase of this case, beyond exclusion from the relevant market, and they have not been shown to be relevant to the Court's task of terminating the illegal conduct,

⁵⁴More clearly established than the relationship between handheld devices and this proceeding is the fact that Microsoft's primary competitor in the handheld market would benefit from the inclusion of handheld devices within the definitions of "middleware" and "Microsoft Middleware Product." In fact, the evidence establishes that Palm was intimately involved in the inclusion of such software in Plaintiffs' proposed remedy and stands to benefit competitively from such inclusion because inclusion of handheld devices in the remedy would, for example, afford Palm access to significant information regarding Microsoft's proprietary technologies and would hinder Microsoft's ability to compete in a market already dominated by Palm. *See supra* Part III.B.3.c; *see, e.g.*, SPR §§ 4, 5, 6, 7, 8, 11, 15. This fact, although hardly dispositive of the issue, gives the Court concern as to the legitimacy of the inclusion of handheld-related software in the scope of the remedy. Plaintiffs' inclusion of handheld devices in the scope of their proposed remedy appears to be more closely related to Palm's fears that Microsoft will pose a competitive threat to its dominance in the market for hand held device operating systems, than to any legitimate concern that Microsoft will engage in unlawful conduct.

United Shoe, 391 U.S. at 250, and restoring competition to the relevant market, *Ford Motor Co.*, 405 U.S. at 573. While the Court’s ability to impose a remedy in an antitrust case is not “merely to end the specific illegal practices,” *Int’l Salt*, 332 U.S. at 401, there is no authorization for the Court to “interfere with ordinary commercial practices.” *Bausch & Lomb*, 321 U.S. at 728. Intervention into a market outside of and unrelated to the monopoly market is not justified merely because Microsoft has begun to compete in the new market and such competition is feared.

4. Web Services

The analysis of Plaintiffs’ arguments relative to Web services is similar to the analysis applied to handheld devices. Plaintiffs attempt to relate the emerging area of Web services to this proceeding primarily by emphasizing the seemingly collective recognition in the industry that Web services comprise the new computing platform. *See supra* Part III.B.3.d. Yet the mere importance of Web services to Microsoft and the industry as a whole is not sufficient to justify extending the remedy in this case to regulate Microsoft’s conduct in relation to Web services. Although Plaintiffs *assume* that Microsoft will engage in anticompetitive conduct in the future in conjunction with its participation in this emerging area of technology, this case cannot be used as a vehicle by which to fight every potential future violation of the antitrust laws by Microsoft envisioned by Microsoft’s competitors. “[A] district court may not enjoin all future illegal conduct of the defendant, or even all future violations of the antitrust laws, however unrelated to the violation found by the court.” *Zenith Radio*, 395 U.S. at 133. The Court may only restrain commission of the unlawful acts and other *related* unlawful acts. *Id.*

Plaintiffs argue that Web services carry the potential to decrease reliance upon personal

computers while increasing reliance upon other computing devices, emphasizing that a number of non-PC devices will have the capacity to access Web services. In this regard, much of Plaintiffs' focus relative to Web services identifies the potential of Web services to enable other devices, such as handheld devices and cellular phones, to erode the market for personal computers. Therefore, argue Plaintiffs, use of these devices may grow so popular that dependence on and the popularity of the personal computer will decrease. Whether Plaintiffs' theory on this point is correct or not, Plaintiffs have not explained how the increase in the use of non-PC devices in conjunction with Web services will reduce Microsoft's monopoly in the market for PC operating systems. As the Court noted above, mere reduction in the popularity of the PC and the ensuing reduction in the absolute demand for Microsoft's Windows operating system does not necessarily "pry open to competition" the market for PC operating systems. *Int'l Salt*, 332 U.S. at 401.

The testimony offered by Plaintiffs regarding handheld devices and Web services—technologies which are largely unrelated to the findings of liability in this case—reflects a fear that Microsoft will parlay its stronghold on the market for Intel-compatible PC operating systems into a position of power in other markets, such as the market for handheld computer operating systems or Web services. *See supra* Part III.B.3.d. In many respects, the concerns raised by Plaintiffs resemble allegations or predictions that Microsoft will attempt to monopolize these new markets or allegations that Microsoft is attempting to leverage its power in the market for Intel-compatible PC operating systems to obtain a competitive advantage in a secondary market.⁵⁵ Without addressing the validity of any such assertion, the Court observes that the

⁵⁵The Court notes as an aside that the viability of the latter theory, known as a "monopoly leveraging" theory, "is in serious doubt." *Microsoft*, 1998 WL 614485 at *26. The district court

concerns raised by Plaintiffs and their witnesses relevant to other markets are largely unconnected to the specific facts for which Microsoft has been found liable and, therefore, are more appropriately addressed as separate claims, in a separate suit, should Microsoft engage in such conduct and should Plaintiffs deem it appropriate to file one. Though it is plainly tempting to view this case as a means by which to curtail Microsoft's competitive conduct in a wide array of new markets, antitrust law does not authorize this Court to regulate the conduct of an antitrust violator in areas bearing little relation to the violation. *See Zenith Radio*, 395 U.S. at 133. In order to include remedy provisions addressing Web services and handheld devices, Plaintiffs must satisfy a minimum threshold: "The test is whether or not the required action reasonably tends to dissipate restraints and prevent evasions." *Bausch & Lomb*, 321 U.S. at 726. In short, the Court determines that, remedy provisions crafted to address Web services and handheld devices do not satisfy this test.

The Court's determination that Web services are not appropriately addressed by the remedy renders irrelevant a wide array of testimony regarding server-to-server interoperation and server-to-non-PC device interoperation. Similarly, the Court's determination that handheld devices are not appropriately addressed by the remedy renders irrelevant significant portions of testimony relating to interoperation between such devices and PCs or servers. Accordingly, to the extent that Plaintiffs presented testimony on these subjects, the Court concludes that the testimony is not relevant to the issue of a remedy in this case and, therefore, declines to address this testimony.

in this case rejected an earlier attempt to advance a monopoly leveraging theory in this case on this basis. *Id.* at *26-27.

5. *Middleware*

The Court returns at last to the discussion of “middleware” which prompted the Court’s examination of the new technologies identified by Plaintiffs. In summary form, Plaintiffs argue that the vast expansion of “middleware” to include the technologies discussed above is demanded by the fact that the PC ecosystem, meaning generally the combination of PC hardware and software products, has changed significantly since the events of the mid-1990s that gave rise to liability in this case and continues to change. *See generally* Pl. Opp’n to Def. Mot. in Limine to Exclude Testimony on Products Unrelated to the Limited Ground of Liability Upheld by the Ct. of Appeals; Pl. Supp. Mem. in Opp’n to Def. Mot. in Limine to Exclude Testimony on Products Unrelated to the Limited Ground of Liability Upheld by the Ct. of Appeals. Because of this constant, fast-paced evolution, Plaintiffs contend that the remedy the Court imposes must reach beyond the “middleware threats” to the Windows monopoly of the liability era and search for new “platform threats.” Conversely, Microsoft objects to the expansion of protection to these technologies, in part, on the grounds that Plaintiffs have failed to articulate any theory which forms a nexus between these technologies and the restoration of competition *in the relevant market*. *See generally* Def. Mot. in Limine to Exclude Testimony on Products Unrelated to the Limited Ground of Liability Upheld by the Ct. of Appeals; Def. Mot. in Limine to Exclude Testimony About Events That Allegedly Occurred Before June 24, 1999. Having considered these arguments, the Court concludes that Plaintiffs’ treatment of middleware is flawed and, therefore, must be rejected. Concordantly, the Court determines to adopt Microsoft’s treatment of middleware for use in the Court’s order of remedy.

Undoubtedly, an effective remedy must be sufficiently forward-looking to extend beyond

the specific middleware threats addressed during the liability phase, such that Microsoft cannot simply repeat the same conduct with respect to other existing and similar categories of middleware functionality and even to categories of middleware functionality which have not yet been conceived. *Zenith Radio*, 395 U.S. at 132-33. Notwithstanding the need and appropriateness of a forward-looking remedy, the Court treats every expansion of protection with great caution and makes every attempt to craft a remedy which is no more expansive than necessary. *See Bausch & Lomb*, 321 U.S. at 728. As elaborated in detail *supra*, it is clear that Plaintiffs seek to treat as “middleware” a wide variety of technologies to which the relationship of liability in this case is either remote or nonexistent. Although Plaintiffs have argued that such technologies are merely the most nascent “middleware platform threats,” the Court finds that most of these technologies are fundamentally different from the “middleware threats” that have been discussed previously in this case.

Plaintiffs’ definition of “middleware” and their ensuing definition of “Microsoft Middleware Product” are irreparably flawed in their attempt to capture within their parameters all software that exposes even a single API.⁵⁶ *See supra* Parts III.B.2.a-b, III.B.3, III.C.1-4. The commonality between all software products that expose APIs and the middleware addressed at the liability phase is insufficient, on its own, to justify expansion of the terms of the Court’s remedy to address nearly every software product. *See Microsoft*, 56 F.3d at 1460 (“Even where the government has proved antitrust violations at trial, the remedies must be of the ‘same type or class’ as the violations, and the court is not at liberty to enjoin ‘all future violations of the

⁵⁶Reflecting Plaintiffs’ view that middleware is any software which exposes APIs, many of Plaintiffs’ witnesses testified throughout this proceeding that particular pieces of software are “middleware.” The Court rejects this use of the term as fundamentally in conflict with the use of the term throughout the liability phase of this proceeding.

antitrust laws, however unrelated to violations found by the court.”) (quoting *Zenith Radio*, 395 U.S. at 132-33). Such broad and unjustified expansion ignores the Supreme Court’s caution that the Court must be “careful to avoid constructions of § 2 which might chill competition, rather than foster it.” *Spectrum Sports*, 506 U.S. at 458.

Even where Plaintiffs’ definitions of “middleware” and “Microsoft Middleware Product” are more specific in identifying software according to its functionality or brand name, rather than by the fact that it exposes APIs, Plaintiffs have included functionality in the definition which is sufficiently distinguishable from the middleware threats addressed during the liability phase such that these software products are not properly treated as “the same or similar” to the products addressed during the liability phase. *See supra* Parts III.B.2.a-b, III.B.3, III.C.1-4. For the vast majority of the software technologies identified in Plaintiffs’ definitions of “middleware” and “Microsoft Middleware Product,” Plaintiffs fail to offer evidence which the Court deems sufficient to support a conclusion that these technologies have the potential to evolve into platforms for other applications in a manner akin or equivalent to that possessed by Navigator and Java. *Id.* Indeed, many of these technologies are patently non-nascent and have yet to show any promise of evolving into substantial platforms for other applications. *Id.*

In addition, Plaintiffs include as “Microsoft Middleware Products” software which has never been included or “integrated” into Microsoft’s PC operating system products. *Id.* Inclusion of a particular functionality in Windows is integral to the theory of liability, because it was this inclusion of middleware functionality in its Windows products in a manner that worked to the absolute exclusion of competing non-Microsoft middleware⁵⁷ that gave rise to significant

⁵⁷The Court notes for the sake of clarity that the significance of Microsoft’s incorporation of particular functionality into its operating system programs in conjunction with the liability

portions of liability in this case.⁵⁸ For both Navigator and Sun’s Java, Microsoft developed its own implementation or version of the technology, namely IE and the Microsoft JVM. Microsoft’s “campaign” against Navigator and Java included the bolstering of its own versions of these technologies to the exclusion of Navigator and Sun’s Java. *See Microsoft*, 253 F.3d at 59-78. Far from a mere technicality, Microsoft software which has never been incorporated or “integrated” into Microsoft’s operating system products warrants exclusion from treatment as the Microsoft counterpart to third-party middleware threats in the context of this remedy.

Beyond inaccurately reflecting the definition of “middleware” utilized in the liability phase, Plaintiffs’ definition is vague and ambiguous, rendering compliance with the terms of Plaintiffs’ remedy which are reliant upon this definition to be largely unenforceable. *See supra* Part III.B.2.b. Therefore, this aspect of Plaintiffs’ “middleware” definition is at odds with precedent on the subject of antitrust remedies, *see Int’l Salt*, 332 U.S. at 400, and the law of remedies in general. Fed. R. Civ. P. 65(d); *Atiyeh v. Capps*, 449 U.S. 1312, 1317 (1981).

In sum, the Court finds that Plaintiffs’ “middleware” definition, though a remarkable feat of semantic gymnastics, does not reflect accurately the use of that term throughout the earlier portion of this proceeding and includes products and technologies which are readily distinguishable from the middleware addressed earlier in this case. *See supra* Parts III.B.2.a-b,

findings pursuant to § 2 of the Sherman Act, though based upon a common set of facts, is unrelated to Plaintiffs’ now-defunct claim that such incorporation constitutes illegal tying in violation § 1 of the Sherman Act. *See Microsoft*, 253 F.3d at 84 (“The facts underlying the tying allegation substantially overlap with those set forth . . . in connection with the § 2 monopoly maintenance claim.”).

⁵⁸Admittedly, one might argue that some of the functionalities identified in Microsoft’s definition of “Microsoft Middleware Product” have not been shown to be true middleware, but there exists no objection by either party to the inclusion of these functionalities in the scope of protections afforded by the remedy and, thus, no issue for the Court to resolve in this regard.

III.B.3, III.C.1-4. In essence, Plaintiffs have expanded the parameters of the defining characteristics of the middleware threat so as to include virtually any piece of software. *Id.* To do so in conjunction with a remedial decree impermissibly threatens to interfere with ordinary and legitimate commercial practices inherent in Microsoft's participation in the software industry. *See Spectrum Sports*, 506 U.S. at 458; *Bausch & Lomb*, 321 U.S. at 728. In addition, as Plaintiffs have included a great amount of software in their definition which has not been shown to possess the capability of serving as a "platform," there is no basis upon which the Court can conclude that remedial assistance for this wide array of software will lower the applications barrier to entry into the PC operating system market. Absent evidence that a remedy which addresses non-platform software will facilitate competition in the monopolized market, the Court sees little justification for inclusion of such software within the scope of the remedy. *Ford Motor Co.*, 405 U.S. at 573. The Court, therefore, declines to use Plaintiffs' definition of "middleware" and the definitions related thereto in the remedial decree.

Conversely, the Court finds that the treatment of middleware and the related definitions in Microsoft's proposed remedy more closely reflect the meaning given to the term from the inception of this proceeding. Microsoft's treatment of middleware appropriately expands beyond the specific middleware addressed during the liability phase to address new potential platform threats which possess many of the defining characteristics of the middleware identified by Judge Jackson. *See supra* Part III.B.2.a. Accordingly, Microsoft's treatment of middleware, as addressed in its definitions of "Non-Microsoft Middleware" and "Non-Microsoft Middleware Product," as well as in its definitions of "Microsoft Middleware" and "Microsoft Middleware Product," accords with the notion that the remedial decree "is not limited to prohibition of the

proven means by which the evil was accomplished, but may range broadly through practices connected with acts actually found to be illegal.” *Gypsum*, 340 U.S. at 88-89. The Court’s remedial decree reflects this determination, adopting the treatment of middleware advanced by Microsoft in its remedy proposal. *See supra* Part III.B.2.a.

Notwithstanding this general conclusion, and over Microsoft’s objection, the Court has determined that at least one of the technologies identified by Plaintiffs, server/network computing, is appropriately addressed in some respect by the remedy in this case, to the extent that the server operating systems host applications which will ultimately run “for” the desktop. Respecting the fact that the server/network computing model described above does not fit precisely within the middleware definition used in this proceeding up to this point, the Court determines not to manipulate the use of the term in order to address this area of computing. Rather, as discussed in greater detail *infra* Part IV.E, the Court’s remedy will address the potential of server/network computing to aid in eliminating the consequences of Microsoft’s illegal conduct without giving middleware a definition different than that employed during the earlier stages of this case. *Nat’l Soc’y of Prof’l Eng’rs*, 435 U.S. at 698.

The Court also notes that, to the extent that interactive television software can be proven, in the future, to have been ported from TV set-top boxes to run on a Microsoft PC operating system and expose a range of functionality to ISVs through published APIs, such technology would be included automatically in a number of the Court’s remedy provisions.

D. Alleged “Bad” Acts by Microsoft

Throughout this phase of the proceeding, Plaintiffs have recited for the Court’s benefit countless findings of fact entered by Judge Jackson during the liability phase regarding actions

taken by Microsoft. These findings recount various actions taken by Microsoft which can be characterized as improper or unsavory in one respect or another and, at the very least, harmful to its competitors. Significantly however, many of these findings were ultimately not relied upon by the district court in conjunction with the imposition of liability for violation of § 2 of the Sherman Act. Concordantly, in its review of the district court's liability findings, the appellate court did not have occasion to rely upon the vast majority of factual findings entered by the district court, but not cited by the district court as a basis for § 2 liability. These factual findings, abundant and damning as they appear, have not, in fact, been weighed for competitive and anticompetitive effect. It has never been the contention of the parties that, during this remedy phase of the proceeding, the Court should undertake such a balancing of anticompetitive effect and procompetitive justification with regard to these factual findings. As a result, these factual findings, standing alone and unconnected to specific liability findings, cannot be utilized to justify specific remedial provisions.

It is tempting, as Plaintiffs' Proposed Findings of Fact illustrate, to rely upon the multiple accounts in Judge Jackson's *Findings of Fact* of Microsoft conduct that is harmful to its competitors, malicious, and severe, in order to justify the imposition of an equally severe remedy in this case. Such reliance, however, ignores the careful admonition of the appellate court that this conduct cannot be condemned as exclusionary, even where the intent behind it is anticompetitive, unless there has been a showing that the "monopolist's conduct on balance harms competition." *Microsoft*, 253 F.3d at 59. As the appellate court observed, "[e]ven an act of pure malice by one business competitor against another does not, without more, state a claim under the federal antitrust laws" *Id.* at 58 (quoting *Brooke Group Ltd. v. Brown &*

Williamson Tobacco Corp., 509 U.S. 209, 225 (1993)) (quotation marks omitted). The federal antitrust laws “do not create a federal law of unfair competition or ‘purport to afford remedies for all torts committed by or against persons engaged in interstate commerce.’” *Brooke Group Ltd.*, 509 U.S. at 225 (quoting *Hunt v. Crumboch*, 325 U.S. 821, 826 (1945)). Harm to “one or more competitors,” *however severe*, is not condemned by the Sherman Act in the absence of harm to the competitive process and thereby harm to consumers. *Microsoft*, 253 F.3d at 58 (emphasis omitted).

The fact that Judge Jackson entered factual findings in the context of an antitrust suit is itself not sufficient to justify addressing with a remedy the conduct described in these findings. “Whether any particular act of a monopolist is exclusionary, rather than merely a form of vigorous competition, can be difficult to discern” *Id.* Therefore, because no court has yet found that the acts identified in the *Findings of Fact*, but not relied upon for the imposition of liability, visited *any* harm upon competition, let alone a harm which was not outweighed by the simultaneous procompetitive effect, this Court cannot presume that each of the acts identified in the *Findings of Fact* merits consideration equal with those acts which were found to be anticompetitive in violation of § 2, nor that these acts merit any special weight.

In addition to Plaintiffs’ reliance upon the portions of Judge Jackson’s *Findings of Fact* in justifying the imposition of certain conduct restrictions upon Microsoft, Plaintiffs identify a number of new and, for lack of a better term, allegedly “bad” acts taken by Microsoft both prior and subsequent to the imposition of liability. Plaintiffs insist that they do not intend these “bad” acts to be viewed by the Court as new allegations of anticompetitive conduct. Rather, Plaintiffs offer these new examples as evidence of conduct which is similar to or a continuation of conduct

identified during the liability phase of this proceeding. In some instances, Plaintiffs attempt to relate the new conduct to that which gave rise to the findings of liability in this case. However, in most instances, Plaintiffs relate this more recent conduct to conduct discussed by Judge Jackson in his *Findings of Fact*, but unaddressed in terms of liability. The Court, throughout this opinion, examines various examples of Microsoft conduct identified by Plaintiffs in order to determine whether it is sufficiently related to the liability imposed by the appellate court to justify consideration by this Court in conjunction with the crafting of a remedy.

Notwithstanding this approach, because Plaintiffs identify an elaborate series of new “bad” acts by Microsoft relating to Microsoft’s alteration and extension of industry standards, use of proprietary technology, disclosure of technical information, or lack thereof, and the ensuing effect of all of this conduct upon interoperability in the context of server/network computing, the Court will address these acts *en masse*. After reviewing the evidence in this regard, the Court concludes that the alleged “bad” acts are tenuously related to the liability findings and, therefore, are of little use in crafting a remedy.

1. Findings of Fact-Allegedly New “Bad” Acts Relating to Interoperation

a. Kerberos

Kerberos is a security protocol that provides a mechanism for “authenticating” a user to a computing network. Short ¶ 67; Tr. at 5515 (Short); Tr. at 5831-32 (Madnick). Authentication is the process by which a server determines whether a client computer should be permitted to access the network (i.e., whether the user is who he/she says he/she is). Short ¶ 67; Tiemann ¶ 159; Tr. at 5515 (Short). Authentication is usually accomplished by the user entering a User ID and a password. Ledbetter ¶ 52; Short ¶ 67.

Authorization is a separate process by which a server determines whether a client computer is entitled to use a particular network resource (i.e., which files on the network the user can access). Ledbetter ¶ 52; Shapiro ¶ 179; Short ¶ 68; Tiemann ¶ 159. Authorization usually takes place after the user has successfully completed authentication. Ledbetter ¶ 52; Shapiro ¶ 179. The Kerberos specification does not address how users are authorized to access network resources. Short ¶ 68.

When Microsoft implemented the Kerberos protocol, it added Windows-specific authorization data (in the form of a Privilege Access Certificate or “PAC”) in the “Authorization Data” field of Kerberos “tickets.” Short ¶ 72. This addition permits the same Kerberos ticket to contain both authentication and authorization information. Short ¶ 72. The addition constitutes a proprietary extension of the otherwise open standard, and thus, the extension cannot be utilized by third parties unless Microsoft discloses the extension. As a result, a non-Windows client interoperating with a Microsoft server cannot make use of all of the same authorization services as a Microsoft Windows client interoperating with a Microsoft server. Tr. at 5833-36 (Madnick).

It is undisputed that Microsoft’s proprietary extension of the Kerberos open standard is not technically inconsistent with the open standard, because a portion of the open standard was left “undefined,” with the expectation that software developers could use the field to extend the open standard to support their particular implementations. Tiemann ¶¶ 161-62; *accord* Madnick ¶ 105. Microsoft’s extension fulfills this expectation, but because Microsoft did not disclose its extension, Plaintiffs’ witnesses complained that the extension violated the “spirit” of the open standard. *See, e.g.*, Tiemann ¶ 162.

Microsoft presents testimony that Plaintiffs' complaints with regard to the undisclosed portions of Microsoft's Kerberos extension should have been resolved by Microsoft's February 2002 submission regarding the Kerberos extension to the Internet Engineering Task Force ("IETF"), a major standards-setting body. Madnick ¶ 102; Short ¶ 74; Tr. at 5519-20 (Short). Despite this testimony, on behalf of Plaintiffs, Michael Tiemann, Chief Technology Officer of Red Hat, Inc., Tiemann ¶ 1, questioned the adequacy of the submission and argued that the issue is unresolved. Mr. Tiemann did not offer any evidence of the inadequacy of Microsoft's recent submission to the IETF and concedes that his doubts are speculative and hastily formed. *See id.* ¶¶ 165-66.

b. CIFS

In the early part of the last decade, Microsoft developed for use with Windows a protocol called SMB used for file and print sharing. SMB was a proprietary protocol which, as long as it remained undisclosed, could only be used by Microsoft. Tiemann ¶ 136. Microsoft then developed as a subset of SMB the "Common Internet File System" ("CIFS") protocol, which is a file access protocol for use over the Internet that enables groups of users to share documents securely across the Internet or within corporate intranets. Short ¶ 80. Eventually, third-party developers reverse engineered portions of the SMB and CIFS protocols, creating SAMBA, an open-source implementation⁵⁹ of the protocols that enables non-Microsoft servers to perform file and print sharing functions with Microsoft server and client operating systems. Tiemann ¶ 137;

⁵⁹ "Open source" refers to a "movement" or business model within the software community in which the source code for the software is made publicly available, often pursuant to terms which grant a license free of charge, with the proviso that any redistribution of the source code, whether modified or unmodified, must also be made publicly available for license free of charge. Tiemann ¶ 33.

Short ¶ 83. Mr. Tiemann alleged that the proprietary nature of the SMB and CIFS protocols hinder interoperability between a Windows client and a Linux server. Tiemann ¶ 136. Though he conceded that the SAMBA project has enabled some interoperability, Mr. Tiemann noted that such reverse-engineered solutions are effective only until Microsoft chooses to alter the technology. *Id.* ¶ 141. Mr. Tiemann contended that “Microsoft’s implementation of SMB and then CIFS was designed to defeat interoperability and protect its desktop operating system monopoly.” *Id.* ¶ 142. Microsoft did not offer any evidence which explains its conduct with regard to CIFS and SMB. Robert Short, Vice President for Windows Core Technology at Microsoft, Short ¶ 1, testified, however, that Microsoft has, or will license the CIFS and SMB protocols pursuant to Microsoft’s settlement agreement with the United States.⁶⁰ *Id.* ¶ 84.

c. Directory Services, LDAP, ADSI

Server operating systems must have some type of directory to keep track of information about the network. Madnick ¶ 113; Short ¶ 88. A full-featured directory stores information about users, organizations, sites, systems, applications, files, printers and almost any other object that can exist in a computing network. Short ¶ 88; *see also* Ledbetter ¶ 51. “Active Directory” is the name given to the directory included in the Windows 2000 Server operating system.

Bennett ¶ 198; Madnick ¶ 114; Short ¶ 88. Server operating systems produced by other software

⁶⁰The Court discusses the extent to which Microsoft will be required to disclose communications protocols pursuant to the remedy in this case *infra* Part IV.E. To the extent that the CIFS and SMB protocols are natively supported by Windows and are used to interoperate, or communicate, with a Microsoft server, they will be disclosed pursuant to the Court’s remedial decree. *Id.* Such mandatory disclosure, however, is not based upon a determination that Plaintiffs’ allegations of “bad” acts warrant a remedy, but upon the Court’s determination that network/server computing is sufficiently akin to middleware that communications protocols used by Windows to interoperate natively with Microsoft servers should be disclosed in order to facilitate interoperation between Windows clients and non-Microsoft servers. *See supra* Part III.C; *infra* Part IV.E.

companies have similar directories, including eDirectory in Novell NetWare, iPlanet Directory Server in Sun Solaris, and SecureWay Directory in IBM AIX. Madnick ¶ 114; Short ¶ 88; Tr. at 1497-98 (Ledbetter).

The Lightweight Directory Access Protocol (“LDAP”) is an industry standard protocol for directory services. Tiemann ¶ 151; Bennett ¶ 198; Short ¶ 89. The Active Directory Service Interfaces (“ADSI”) are a set of interfaces that any software program running on different versions of Windows 2000 or on Windows XP Professional can use to access multiple directory services in addition to Active Directory. Short ¶ 90. Mr. Tiemann alleges that Microsoft’s ADSI constitutes a proprietary extension of LDAP that remains undisclosed and undocumented. Tiemann ¶ 152. Mr. Tiemann therefore asserts that “Microsoft’s extension of LDAP in Active Directory puts his firm, Red Hat, at a competitive disadvantage vis-à-vis Microsoft’s offerings, not because Red Hat engineers are not capable of providing competing functionality, but because of a lack of disclosure that renders them unable to communicate that functionality to Microsoft clients and servers under the ADSI protocol.” Tiemann ¶ 153. On behalf of Microsoft, Mr. Short disputes Mr. Tiemann’s assertion that LDAP is undisclosed and contends instead that the protocol is fully disclosed and documented on the Microsoft Developer Network (“MSDN”). Short ¶ 91.

d. TDS

The SQL server is Microsoft’s database server. Tiemann ¶ 143. The Tabular Data Stream protocol (“TDS”) is a proprietary, undocumented protocol that Microsoft uses to communicate between Microsoft desktop PCs and SQL servers. *Id.* TDS enables various Microsoft applications such as Office to view and access the data stored in a SQL server. *Id.*

Like CIFS, TDS has largely been reverse engineered, but there remain portions which have not yet been reverse engineered. *Id.* ¶ 144. Mr. Tiemann alleges that without a full implementation of TDS, Red Hat is unable to provide applications that would allow Linux⁶¹ clients to access information stored on Microsoft’s SQL servers or to allow Linux servers to interoperate in a certain manner in a SQL server network. Tiemann ¶¶ 143-44. One of Microsoft’s computer science experts, Dr. John Bennett, a professor in the Departments of Computer Science and Electrical and Computer Engineering at the University of Colorado at Boulder, Bennett ¶ 1, does not directly dispute the allegation that Microsoft has not disclosed TDS for third party use. *Id.* ¶ 194; Tr. at 7150-54 (Bennett). Dr. Bennett avoids the point with the assertion that there exists a reverse-engineered product, referenced by Mr. Tiemann, Tiemann ¶ 144, which makes some of the TDS functionality available for use by non-Microsoft PC clients when interoperating with Microsoft’s SQL server. Bennett ¶ 194; Tr. at 7150-54 (Bennett). Dr. Bennett further observes that the product at issue is a “server application, not even an operating system.” Bennett ¶ 194.

e. MAPI

MAPI is a protocol designed by Microsoft and used for communication between the Microsoft Outlook client and the Microsoft Exchange server. Bennett ¶ 157. Plaintiffs’ witnesses identified MAPI as the industry standard for “server-based messaging system software.” Ledbetter ¶ 83. Since widespread use of MAPI was adopted, Microsoft has extended the standard and maintains proprietary, undisclosed portions of the MAPI protocol. Bennett ¶ 159; Ledbetter ¶ 84; Tiemann ¶ 147. As a result, there are some functions that non-Microsoft

⁶¹“Linux is 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.” *Findings of Fact* ¶ 50. Mr. Tiemann’s firm, Red Hat, claims to be “the leading distributor of the Linux operating system.” Tiemann ¶ 1.

servers cannot provide because of an inability to communicate through the MAPI protocol with a Microsoft Outlook client. Tiemann ¶¶ 148-49. Mr. Tiemann maintains that this inability to interoperate is the goal of Microsoft's proprietary extension. Tiemann ¶ 149. Although Microsoft, through Dr. Bennett's testimony, concedes its reluctance to disclose certain information, Microsoft maintains that its implementation of MAPI is an innovation like any other, which enables the company to "distinguish its products from those of its competitors." Bennett ¶ 159.

f. MUP

A portion of the Windows operating system is known as the Multiple UNC (Universal Naming Convention) Provider or MUP. Ledbetter ¶ 122. The MUP is Microsoft's proprietary code that facilitates communications between clients and servers in a network. *Id.* ¶ 123. The MUP facilitates communications between Windows clients and multiple servers in a network by directing calls from a client PC to the server that the customer has selected to provide the services requested by the call. *Id.* ¶ 123; Short ¶ 99. Microsoft revised the MUP code for its release of Windows NT 4.0 on August 9, 1996, and as a result of the revision, requests for services by Novell servers in those networks slowed significantly, creating the illusion that Microsoft servers could handle requests for remotely-stored files much faster than Novell servers. Ledbetter ¶¶ 127, 140; Bennett ¶¶ 163-64. Novell complained to Microsoft and was dissatisfied with the speed and manner in which Microsoft corrected the problem. Ledbetter ¶¶ 134-36.

Dr. Ledbetter suggested that Microsoft intentionally designed the MUP modifications to create a result detrimental to Novell. Tr. at 1795-97 (Ledbetter). On behalf of Microsoft, Mr.

Short responded that such an implication is without basis. Short ¶¶ 99-101. Dr. Bennett further noted that the problem described by Dr. Ledbetter was not limited to non-Microsoft software and that similar delays could be experienced by Microsoft network service providers. Bennett ¶¶ 164-65. Microsoft appears to have fully resolved the MUP problem with the release of Windows NT 4.0 Service Pack 4.0 in September of 1998. Bennett ¶ 165; *see also* Tr. at 1799 (Ledbetter).

In general, Microsoft denies that it ever seeks to frustrate interoperability by using proprietary technologies and standards, rather than industry standards, to disadvantage competitors. Instead, Microsoft insists that because it, like any firm, has some limitation on its resources, its decisions regarding interoperability merely reflect its decisions regarding resource allocation. In this regard, Microsoft contends that it does not intend to make technology incompatible, but that such outcomes may result from Microsoft's allocation of its own resources in response to the demands of the market. Tr. at 4559 (Gates).

2. Old "Bad" Acts Relating to Interoperation

In a similar vein, Plaintiffs point to specific factual findings entered by Judge Jackson regarding other "bad" acts in relation to Microsoft's disclosure of technical information. For example, Plaintiffs direct the Court to *Findings of Fact* ¶¶ 90-91, wherein Judge Jackson found that Microsoft knowingly withheld "critical technical information" from Netscape, hindering Navigator's ability to interoperate with Windows 95. *Id.* ¶ 90. Judge Jackson also found that Microsoft withheld "a scripting tool that Netscape needed to make its browser compatible with certain dial-up ISPs." *Findings of Fact.* ¶ 92. Lastly, Plaintiffs direct the Court to *Findings of Fact* ¶ 129 in which Judge Jackson recounted that Microsoft offered IBM early access to its

source code, a blandishment enjoyed by a handful of other OEMs, on the condition that IBM pre-install Microsoft's applications in place of competing applications. *Id.* ¶ 129. From these acts, Plaintiffs assert that "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." Pl. Prop. Findings of Fact ¶ 588. Judge Jackson did not ascribe any liability for the above-described acts. *See Microsoft*, 87 F. Supp. 2d 34.

3. Conclusions Regarding "Bad" Acts Evidence

Pointing to both new and old "bad" acts, Plaintiffs argue that Microsoft's ability to hinder interoperability must be curtailed by mandating the disclosure of vast amounts of technical information and by requiring Microsoft to continue to support "industry standards" in any instance where Microsoft has made an alteration to such a standard. Plaintiffs attempt to justify such remedial provisions by relating all of the above "bad" acts, new and old, concerning the release of technical information to the appellate court's imposition of liability. *See, e.g.*, Pl. Prop. Findings of Fact ¶¶ 581-585, 1279. Upon review of Plaintiffs' allegations of "bad" conduct by Microsoft relating to interoperability and the liability findings in this case, the Court concludes that Plaintiffs' allegations in this area bear only a remote relationship to the liability findings. As a result, Plaintiffs' reliance upon this series of allegedly "bad" acts by Microsoft carries little weight, if any, in the Court's determination of the appropriate remedy in this case.

a. Insufficient Nexus to Java Developer Tools Deception

Seeking to link this "bad" act evidence to the liability findings in this case, Plaintiffs direct the Court to the appellate court's finding with regard to Microsoft's "software development tools . . . created to assist ISVs in designing Java applications" that Microsoft

included in its “Java implementation.” *Microsoft*, 253 F.3d at 76. These tools, like Microsoft’s JVM, were incompatible with Sun’s cross-platform aspirations for Java. *Id.* The appellate court expressly noted that such incompatibility was “no violation, to be sure,” but deemed illegal Microsoft’s deception of software developers regarding the Windows-specific nature of the tools. *Id.* at 76-77. As a result of the deception, developers who relied upon Microsoft’s “public commitment to cooperate with Sun” and utilized the Microsoft Java tools unknowingly created applications that would only run on the Windows operating system. *Id.* at 76. Finding that the deception was no error on Microsoft’s part, but instead was part of Microsoft’s anticompetitive strategy to undermine cross-platform Java, and in the absence of any procompetitive justification for the action, the appellate court found Microsoft to be in violation of § 2 of the Sherman Act. *Id.* at 76-77.

While this was undoubtedly reprehensible behavior, of paramount significance in the Court’s examination of this liability finding is the fact that the imposition of liability for Microsoft’s Java tools concerned not the tools’ incompatibility with cross-platform Java, but Microsoft’s deceptive conduct. *Id.* The Court, therefore, rejects Plaintiffs’ suggestion that the imposition of liability for Microsoft’s deception regarding its Java developer tools in any way condemns Microsoft’s decisions to depart from industry standards or to utilize a proprietary standard in the absence of deception regarding the departure. *See supra* Part III.D.1. The Court further observes that Plaintiffs’ allegations regarding Microsoft’s alteration of industry standards and use of proprietary technology more closely resemble conduct for which the appellate court expressly rejected liability, than conduct condemned by the appellate court. *Id.* In particular, the actions about which Plaintiffs complain are not unlike Microsoft’s implementation of its own

JVM incompatible with Sun's JVM. *Compare id., with Microsoft*, 253 F.3d at 74-75. Microsoft proffered a procompetitive justification for its development of an incompatible JVM, which was found to outweigh the anticompetitive effect of the implementation. *Microsoft*, 253 F.3d at 74-75. Similarly, Microsoft's inclusion of its own Java runtime in every copy of Windows so as to ensure ubiquity also was found not to violate the antitrust laws. *Id.* at 75.

Just as "a monopolist does not violate the antitrust laws simply by developing a product that is incompatible with those of its rivals," *id.*, little, if anything, in the liability findings of this case could be construed to indicate that, as a general rule, a monopolist's decision to alter industry standards or implement a proprietary version of such standards in its own product or technology, without more, violates the antitrust laws. This Court undoubtedly has the discretion to "uproot all parts of an illegal scheme—the valid as well as the invalid—in order to rid the trade or commerce of all taint of the [illegal conduct]." *Paramount Pictures*, 334 U.S. at 148. Still, "[i]n resolving doubts as to the desirability of including provisions designed to restore future freedom of trade," this Court is instructed to weigh the "circumstances under which the illegal acts occur." *Gypsum*, 340 U.S. at 89.

In this instance, the appellate court was very clear as to which portions of Microsoft's conduct were anticompetitive in their effect so as to violate the antitrust laws and which portions of Microsoft's conduct were rendered legitimate by a procompetitive justification. This Court cannot ignore the careful and nuanced distinctions drawn by the appellate court in order to justify the prohibition of conduct which bears only a limited resemblance to a narrow part of an anticompetitive scheme. As a result, the Court finds Plaintiffs' focus on Microsoft's alteration of industry standards and reliance upon undisclosed proprietary technologies to be largely

misplaced. Plaintiffs' focus ignores the totality of the circumstances, and it ventures into areas of conduct which, at best, are only tangentially related to the conduct for which Microsoft has been found liable.

b. Insufficient Nexus to First Wave Agreements

Plaintiffs also focus, in this context, upon Microsoft's treatment of technical information in conjunction with the First Wave Agreements it entered into with various ISVs. In this context, Microsoft was found to have provided preferential technical support and conditioned receipt of technical information in exchange for ISV promises to promote exclusively the Microsoft JVM and IE. *Microsoft*, 253 F.3d at 71-72 (discussing Microsoft's First Wave Agreements with ISVs regarding the use of IE); *id.* at 75-76 (discussing Microsoft's First Wave Agreements with ISVs regarding Microsoft's JVM). In relation to both the Microsoft JVM and IE, the First Wave Agreements were deemed to violate the Sherman Act inasmuch as they effectively excluded the Sun-compliant JVM and Navigator from significant channels of distribution. *Id.* at 72, 75-76. Importantly, however, the appellate court expressly noted that the mere fact that Microsoft exchanged "costly technical support and other blandishments" in conjunction with the agreements was not a basis for the imposition of liability. *Id.* at 75 (quoting *Findings of Fact* ¶ 401); *see also id.* at 71-72 (describing Microsoft's use of "preferential support" and "technical information" as consideration). Rather, it was the exclusive effect of the agreements which led to the imposition of liability for Microsoft's First Wave Agreements with ISVs. *Id.* at 71-72, 75-76.

There are no liability findings in this case which condemn Microsoft solely for the use of valuable technical information as consideration in contracting with third parties; only where such

agreements required the use of Microsoft technology to the exclusion of third-party technology did the appellate court find antitrust violations. The circumstances described above regarding Microsoft's alteration of industry standards, use of proprietary standards, and refusal to release technical information are readily distinguishable from Microsoft's conduct in relation to the First Wave Agreements. *Compare supra* Part III.D.1, *with Microsoft*, 253 F.3d at 71-72, 75-76.

Notably, none of the new allegations of "bad" acts described above arise in the context of Microsoft entering into contracts or other negotiations predicated upon the provision of technological information. *See supra* Part III.D.1. Instead, Plaintiffs have merely identified a series of circumstances where Microsoft allegedly withheld proprietary technical information to the detriment of Microsoft's competitors. *Id.* As the Court previously observed, action which is harmful to competitors does not, by itself, violate the antitrust laws. *Microsoft*, 253 F.3d at 58.

Although "[e]quity has power to eradicate the evils of a condemned scheme by prohibition of the use of admittedly valid parts of an invalid whole," *Bausch & Lomb*, 321 U.S. at 724; *see also Paramount Pictures*, 334 U.S. at 148, Plaintiffs' focus on an entirely separate series of alleged withholdings of proprietary technical information unrelated to any exclusive deals with ISVs, far exceeds mere eradication of Microsoft's practice of promising technical information and other blandishments in conjunction with the First Wave Agreements. *Compare supra* Part III.D.1-2, *with Microsoft*, 253 F.3d at 58. The Court, therefore, does not regard the alleged withholding of technical information described in Plaintiffs' most recent allegations as synonymous with the anticompetitive conduct, or any part thereof, addressed by the appellate court in conjunction with its review of the First Wave Agreements. On the same grounds, the Court rejects the view that such alleged withholding of information be viewed as a mere

continuation of conduct found in whole or in part to violate the antitrust laws.

c. Nexus to Old “Bad” Acts

At best, some of the allegedly new “bad” acts described above bear a limited similarity to the series of old “bad” acts from the liability phase because they concern the withholding of technical information. *See supra* Part III.D.1. Despite this limited similarity, Plaintiffs’ allegations are not relevant to this phase of the litigation. Plaintiffs do not argue, nor does it appear, that these “old” bad acts gave rise to any findings of liability against Microsoft for violations of antitrust law. While the factual findings of old “bad” acts identified by Plaintiffs are not benign acts by Microsoft, they were not found to violate the Sherman Act. There is no need to “remedy” conduct for which no liability was ascribed, nor is there a need to “remedy” new conduct which bears a mere tangential similarity to such previously identified conduct.

Despite Plaintiffs’ protestations to the contrary, the Court finds that Plaintiffs’ allegations with regard to Microsoft’s conduct in the area of interoperability are, at their core, new allegations of anticompetitive conduct. *See id.* Notwithstanding the Court’s authority to exceed the parameters of the precise conduct found to violate the antitrust laws in order to ensure an effective remedy, there is no dispute that the Court is not at liberty to remedy new “bad” conduct for which no liability has been ascribed. *See Microsoft*, 56 F.3d at 1460; *see also Yamaha Motor Co. v. FTC*, 657 F.2d 971, 984 (8th Cir. 1981) (rejecting injunction on the ground that its provisions extended “beyond any reasonable relationship to the violations found”). The parties have agreed throughout this proceeding that it would be inappropriate now, during the remedy phase of this proceeding, for the Court to consider and evaluate for anticompetitive effect new allegations against Microsoft. Accordingly, the Court finds that Plaintiffs’ new allegations of

“bad” conduct relating generally to interoperation and more specifically, to Microsoft’s alteration of industry standards, use of proprietary technology, and non-disclosure of technical information, are inapposite to the narrow task at hand.

E. Causation Analysis

1. Microsoft’s Simple Injunction Argument

Inasmuch as Plaintiffs seek to expand the scope of the conduct to be addressed by the remedy in this case, Microsoft has sought to narrow the scope. In this regard, Microsoft contends that, if Plaintiffs are entitled to any remedy,⁶² they are entitled to no more than a simple proscription against the offensive conduct. To justify its argument in this regard, Microsoft relies upon the appellate court’s determination that “[i]n devising an appropriate remedy, the District Court also should consider whether plaintiffs have established a sufficient causal connection between Microsoft’s anticompetitive conduct and its dominant position in the OS market.” *Microsoft*, 253 F.3d at 106. The appellate court further observed that “[a]bsent such causation, the antitrust defendant’s unlawful behavior should be remedied by ‘an injunction against the continuation of that conduct.’” *Id.* (quoting 3 AREEDA & HOVENKAMP, ANTITRUST LAW ¶ 650a, at 67). Drawing from this language, Microsoft insists that:

Establishing a causal connection sufficient to justify more than an injunction against the 12 acts the Court of Appeals found anticompetitive would require each of the following:

1. Proof that Navigator and Java would have been successful software products that would have achieved near ubiquitous distribution absent the 12 Microsoft acts found to be anticompetitive.
2. Proof that Navigator and Java then would have evolved into

⁶²Microsoft has maintained that Plaintiffs are not entitled to any remedy in this case. The Court rejected these arguments, which were primarily advanced in Microsoft’s “motion to dismiss” in an earlier Memorandum Opinion. *State of New York, et al. v. Microsoft*, No. 98-1233, slip op. (D.D.C. June 12, 2002).

- alternative software development platforms for general purpose applications.
3. Proof that so many applications would have been written to run on Navigator and Java (as opposed to running directly on Windows) that the applications barrier to entry into the market for Intel-compatible PC operating systems would have been significantly reduced.
 4. Proof that once the applications barrier to entry had been significantly reduced, other vendors would have entered the market for Intel-compatible PC operating systems and thereby eliminated Microsoft's monopoly.

Microsoft Prop. Concl. of Law ¶ 109. In so arguing, Microsoft demands of Plaintiffs precisely what the appellate court deemed to be largely unattainable. The appellate court stated without equivocation that “neither plaintiffs nor the court can confidently reconstruct a product’s hypothetical technological development in a world absent the defendant’s exclusionary conduct.” *Microsoft*, 253 F.3d at 79. Moreover, the district court had already determined as a factual matter that there was “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.” *Findings of Fact* ¶ 411. The appellate court was well aware of this finding, *Microsoft*, 253 F.3d at 107 (quoting *Findings of Fact* ¶ 411), and did not indicate that Plaintiffs must overcome it in order to obtain a remedy exceeding a mere proscription of the illegal conduct.

In addition, Microsoft’s arguments relating to causation overlook the context of the appellate court’s analysis. Throughout its discussion of causation, the appellate court addressed the level of causation that must be established in order to justify a remedy of divestiture. *Id.* at 106-07. The treatise upon which the appellate court so heavily relied, Areeda and Hovenkamp’s *Antitrust Law*, clearly distinguishes the evidence of causation which is required for a divestiture order and the evidence of causation which is sufficient for injunctive relief. Areeda and

Hovenkamp advise that in cases like this one, where “a monopolist has consummated an exclusionary act . . . equitable relief beyond a mere injunction against repetition of the act is generally appropriate.” 3 AREEDA & HOVENKAMP, ANTITRUST LAW ¶ 653c, at 94-95.

Recognizing the possibility that “the specific act under challenge may be unique to the circumstances and unlikely to be precisely ‘repeated,’” and the need to “undo the various effects of the act,” Areeda and Hovenkamp offer the precise advice advanced by the appellate court: the relief must be “tailored” to fit the wrong. *Id.*; *Microsoft*, 253 F.3d at 107. The treatise advises specifically that the tailoring must have “sufficient breadth to ensure that a certain ‘class’ of acts, or acts of a certain type or having a certain effect, not be repeated.” 3 AREEDA & HOVENKAMP, ANTITRUST LAW ¶ 653c, at 94-95.

Even if Microsoft were correct that a proper remedy in this case should only enjoin the specific conduct found to be anticompetitive, Microsoft overlooks the fact that any doubts as to the extent of even this narrow remedy are to be resolved against the defendant. Areeda and Hovenkamp advise that “[m]erely for purposes of enjoining the conduct itself, exclusionary conduct is best defined rather broadly in the sense of resolving against the monopolist any doubts concerning the significance of the conduct’s contribution to the monopoly.” *Id.* ¶ 653c, at 91.

Inasmuch as Microsoft has proposed a remedy which plainly exceeds the bounds of the exclusionary conduct, Microsoft concedes that the Court may order such a remedy in this case. To the extent that the Court has rejected or altered portions of Microsoft’s proposed remedy, it does so, in its discretion, to ensure that the conduct found to be exclusionary in violation of § 2 of the Sherman Act is, in fact, “broadly” defined, as Areeda and Hovenkamp instruct, and

thereby fully enjoined. Accordingly, the Court finds unpersuasive Microsoft's argument that Plaintiffs are entitled to no more than a simple proscription against the conduct found to violate the antitrust laws.

2. *Economic Testimony*

In reviewing Judge Jackson's failure to hold an evidentiary hearing prior to imposition of the IFJ, the appellate court recounted the presence of substantial factual disputes, highlighting in particular the conflicting predictions proffered by Plaintiffs' expert economists and investment banking experts and Microsoft's experts in the same areas. *Microsoft*, 253 F.3d at 101-02. Based upon this account and the nature of the remedy proposals, this Court anticipated that substantial portions of the testimony in this phase of the proceeding would come from witnesses qualified by the Court as experts in one field or another. Along these lines, throughout the presentation of evidence in this phase of the proceeding, the Court has been particularly attentive to the testimony of the parties' economic experts with regard to the anticipated effect of particular remedial provisions on competition in the relevant market and for consumers.

Neither of the parties has taken the position that it would be improper for the Court to impose a particular remedial provision in the absence of an endorsement of such provision from one of the economists testifying in this proceeding. Notwithstanding this fact, the Court observes that where the changes that would result from the imposition of a particular remedial provision are dramatic, there is at least an expectation that the party proposing such changes will present an economic analysis of the effect of the changes upon competition in the monopolized market, as well as upon Microsoft, other industry participants, and the consumer. Such expert testimony is of particular use to the Court because the economist is capable of examining the

anticipated effect of the provision upon all segments of the industry, rather than from a single perspective, such as that which is frequently offered by individual industry participants.

Although the absence of economic analysis of any given remedy provision does not, by any means, require the rejection of the proposed provision, the Court is careful to note those occasions where expert economic testimony would have been particularly useful to the Court and where its absence is significant.

a. Dr. Shapiro's Causation Analysis

i. Factual Findings

Plaintiffs' sole presentation of expert economic analysis comes from Dr. Carl Shapiro, Professor of Business Strategy at the University of California at Berkeley. Dr. Shapiro offered an analysis of the appropriate remedy in this case and, not surprisingly, endorsed many, though not all, of the provisions in Plaintiffs' proposed remedy. Shapiro ¶¶ 1-207. Dr. Shapiro testified that his economic analysis rests upon the premise and belief that "restoring competition requires remedial provisions that will affirmatively lower the barriers to entry into the market for PC operating systems." Shapiro ¶ 16 (emphasis omitted). Dr. Shapiro went on to explain that because he viewed the remedy in this case as seeking to "restore competition," the appropriate starting point is an "assessment of how Microsoft's illegal conduct harmed competition." *Id.* ¶ 17 (emphasis omitted).

Dr. Shapiro's "assessment" in this regard appears to have been based entirely upon his examination of the district and appellate courts opinions in this case. *Id.* ¶¶ 18-20, 22-23. In fact, Dr. Shapiro was unable to identify any source other than the district and appellate court opinions in this case upon which he relied to examine the effects of Microsoft's anticompetitive

conduct upon the applications barrier to entry. Tr. at 3360-64 (Shapiro). In this regard, Dr. Shapiro admitted that his citation to Judge Jackson’s *Findings of Fact* in order to illustrate the impact of Microsoft’s anticompetitive conduct upon Navigator and Java included conduct which was found *not* to violate the antitrust laws. *Id.* at 3381-93 (Shapiro). Dr. Shapiro also conceded that he did not make any attempt to separate the effect of the illegal conduct from the effect of the conduct found *not* to be illegal. *Id.* at 3392, 3401. From his assessment of the record, Dr. Shapiro reached the conclusion that Microsoft’s anticompetitive conduct “raised” the existing applications barrier to entry, and therefore, the remedy imposed by the Court, in Dr. Shapiro’s opinion, “should lower entry barriers.” *Id.* ¶ 25 (emphasis omitted).

Quite logically, Dr. Shapiro opined that “entry barriers should be lowered to compensate consumers for the elevation of entry barriers that has resulted from Microsoft’s illegal conduct.” *Id.* ¶ 46; *see also id.* ¶ 58. Dr. Shapiro readily conceded, however, a lack of any “precise measure” of the extent to which Microsoft’s illegal conduct actually “raised” entry barriers. Shapiro ¶ 46. Dr. Shapiro acknowledged his inability to define or even estimate the amount, or the “quantum,” to which Microsoft’s conduct augmented or fortified the existing applications barrier to entry to defend against the threat posed jointly by Navigator and Java. Tr. at 3359-60 (Shapiro). Dr. Shapiro opined that this uncertainty leaves the Court with the task of making “some judgment calls . . . in terms of how far the remedy should go.” *Id.* at 3359. Nevertheless, Dr. Shapiro offered his “best estimate of the elevation of entry barriers caused by Microsoft’s illegal conduct.” Shapiro ¶ 46. This “estimate” however, is little more than a rejection of the analysis of Microsoft’s economic expert, Dr. Murphy, which the Court addresses below. *Id.* ¶¶ 61-70. Ultimately, Dr. Shapiro offered the conclusion that “[t]he impact of the illegal acts

was significant at the time, while their ongoing effects are very difficult to assess.” *Id.* ¶ 62. This “conclusion,” of course, is little more than a reiteration of Dr. Shapiro’s earlier determination that it is impossible to measure the extent to which Microsoft’s anticompetitive conduct raised the existing barrier to entry. The Court observes, in this regard, that Dr. Shapiro does not appear have based this portion of his analysis on any additional empirical evidence or to have relied upon his own experience and expertise to assess the impact of Microsoft’s illegal conduct. The remainder of Dr. Shapiro’s testimony consisted largely of his assessment of the effectiveness of the two competing remedy proposals in lowering the applications barrier to entry.

ii. Conclusions

To the extent that Dr. Shapiro offered an analysis of whether Microsoft’s illegal conduct raised the existing barrier to entry, that analysis is essentially a legal analysis, rather than an economic analysis. The Court reaches this conclusion because Dr. Shapiro’s analysis relies entirely upon the judicial findings and conclusions entered in this case and the logical conclusions which can be drawn therefrom. *See supra* Part III.E.2.a.i. In conjunction with his analysis on this point, Dr. Shapiro does not appear to have gathered or synthesized empirical information or to have applied particular economic principles. *Id.* Likewise, Dr. Shapiro’s ensuing analysis of the extent to which the remedy in this case should seek to affirmatively lower the existing barrier to entry does not appear to be based upon anything more than a logical reading of the judicial opinions in this case, as he offered no quantification to guide the Court beyond the view that the lowering of the barrier to entry should correspond roughly to the amount the barrier was raised by the illegal conduct. *Id.*

The Court can itself review the same judicial opinions reviewed by Dr. Shapiro and reach determinations regarding whether the remedy should seek to affirmatively lower the applications barrier to entry and the extent to which it should do so. Indeed, Dr. Shapiro himself expected as much, anticipating that the Court would exercise its judgment in deciding “how far the remedy should go.” *Id.* Thus, the Court observes, as a preliminary matter, that Dr. Shapiro’s ensuing analysis regarding the sufficiency of the two competing remedy proposals to lower the barrier to entry will be useful *only* to the extent that the Court agrees with Dr. Shapiro’s interpretation of the appellate and district court opinions in this case.

b. Dr. Murphy’s Causation Analysis

i. Factual Findings

One of Microsoft’s economic experts, Dr. Kevin Murphy, Professor of Business Economics in the Graduate School of Business at the University of Chicago, provided a causation analysis from a very different perspective. Dr. Murphy concluded that Microsoft’s anticompetitive conduct did not have a significant effect on Navigator, Java, or Microsoft’s position in the market for Intel-compatible PC operating systems. Murphy ¶¶ 92, 104, 157. The Court finds that Dr. Murphy’s conclusions as to the effect of Microsoft’s conduct upon Navigator and Java are factually in conflict with the conclusions of the appellate court that gave rise to the findings of liability in this case. *See Microsoft*, 253 F.3d 34. Dr. Murphy’s conclusion with regard to the effect of Microsoft’s anticompetitive conduct upon its monopoly is less directly in conflict with the appellate court’s opinion because, as that court acknowledged, a mere inference of causation, *id.* at 79, rather than a “clear[] indication of a *significant causal connection* between the conduct and creation or maintenance of the market power,” would

support a finding of liability, *id.* at 106 (emphasis in original). Still, Dr. Murphy's conclusion that the anticompetitive conduct identified in this case had *no* effect upon Microsoft's monopoly can be seen to undercut, if not directly contradict, the inference of causation necessary to the appellate court's imposition of liability. Although Dr. Murphy has protested any assertion that his analysis ignores, contradicts, or second-guesses the findings of the appellate court, the Court disagrees. *See, e.g.*, Tr. at 4068 (Murphy).

ii. Conclusions

The Court harbors serious concerns as to the usefulness of Dr. Murphy's causation analysis. Most troubling to the Court in examining Dr. Murphy's analysis is the fact that many of the conclusions reached by Dr. Murphy cannot be reconciled logically with significant portions of the appellate court's opinion. *See supra* Part III.E.2.b.i. Based upon the Court's concerns as to the basis for Dr. Murphy's causation analysis, the Court ascribes little, if any, weight to this portion of Dr. Murphy's testimony.

Notwithstanding the foregoing conclusions regarding the expert testimony offered by both Drs. Shapiro and Murphy, the Court notes that substantial portions of testimony from both of these expert witnesses, distinct from the portions described above, prove useful to the Court in its assessment of the parties' respective remedy proposals.

IV. REMEDY-SPECIFIC CONCLUSIONS

Having rendered the foregoing preliminary determinations regarding the appropriate scope of the remedy in this case, the Court, in the exercise of its broad discretion on the subject of remedy, enters the following determination on the issue of remedy. The Court's determination is based upon the entire factual and legal record in this case and is guided, in

particular, by the factual findings on the subject of remedy entered by the Court and appended hereto as Appendix A. The Court's determination as to the remedy to be imposed in this case reflects the Court's assessment of the facts and application of the relevant law, as well as the exercise of the Court's broad discretion.

A. Original Equipment Manufacturer ("OEM") Configuration Flexibility

1. Windows Licenses

The remedy imposed by the Court will provide substantial freedom to OEMs in their configuration of Microsoft's Windows operating system by lifting Microsoft's illegal license restrictions. A significant portion of the liability findings concerns Microsoft's treatment of OEMs, specifically with regard to Microsoft's imposition of exclusionary restrictions in conjunction with the Windows operating system licenses provided to OEMs. *Microsoft*, 253 F.3d at 60-62. The licenses sharply limited OEMs' flexibility and choices in configuring the PC desktop. The limitations were exclusionary in that they bound OEMs' configuration of the desktop in a manner which tended to favor Microsoft software and services at the expense of software and services offered by other entities. Drawing upon these liability findings, there is little dispute as to the general proposition that the remedy imposed by the Court should terminate Microsoft's illegal and anticompetitive license restrictions and prevent Microsoft from imposing similar restrictions in the future.

Despite this limited agreement that the remedy should lift Microsoft's anticompetitive OEM license restrictions, the parties differ significantly as to the specific manner in which such restrictions should be lifted, as well as the extent to which greater flexibility, beyond that addressed at the liability phase, should be secured for OEMs. The first such disagreement

concerns whether the remedy in this case will provide protection from restrictions for “Third-Party Licensees.” Plaintiffs argue that the lifting of the license restrictions should require Microsoft to license its Windows operating system to third parties, such as media companies or software developers, who will then distribute or otherwise use the licenses for commercial purposes. The third-party licensing portion of Plaintiffs’ proposal would permit such third parties to “customize” the appearance of Windows to reflect the third party’s input. *See* Appendix A, Part I.A.

Plaintiffs do not link this aspect of their request for a remedy to a finding of liability which concerns Microsoft’s treatment of such “Third-Party Licensees.” Plaintiffs argue instead that the protection of the ability of such licensees to customize Windows will increase the development and distribution opportunities for non-Microsoft middleware, aiding in unfettering the market from Microsoft’s anticompetitive conduct. Plaintiffs, however, have failed to establish that such licensing will actually benefit or promote competition. *See id.* Additionally, Plaintiffs’ proposal for third-party licensing does not reflect the appellate court’s recognition that, to the extent that Microsoft’s license restrictions prevented drastic alteration of the user interface, they did not violate the Sherman Act. *Microsoft*, 253 F.3d at 63. Rather, Plaintiffs’ examples of third-party configuration unapologetically reflect precisely this type of a drastic alteration. *See* Appendix A, Part I.A. Plaintiffs’ proposal in this regard will plainly limit Microsoft from engaging in conduct which has not been found to be in violation of the antitrust laws. *Id.*; *Microsoft*, 253 F.3d at 63.

While the case law permits the Court to address legitimate conduct as well as illegal conduct in order to ensure that the market is free from the effects of the anticompetitive scheme,

Nat'l Soc'y of Prof'l Eng'rs, 435 U.S. at 698, Plaintiffs have failed to make a showing that regulation of Microsoft's third-party licenses in order to enable "customization" will advance competition, *see* Appendix A, Part I.A. Indeed, the appellate court did not address any aspect of "third-party licensing" in its opinion. *See Microsoft*, 253 F.3d 34. In addition, the testimony offered in support of Plaintiffs' proposal raises a concern that it has been included for the benefit of particular competitors, rather than for the benefit of competition itself. *See* Appendix A, Part I.A. Absent a clearer connection to the imposition of liability or a clearer showing that a remedy which regulates third-party licensing will benefit competition, the Court declines to impose a remedy which extends needlessly beyond the parameters of the liability findings in order to address license restrictions which Microsoft may impose in third-party licenses. *See Brunswick*, 429 U.S. at 488 ("The antitrust laws, however, were enacted for 'the protection of competition not competitors.'") (quoting *Brown Shoe*, 370 U.S. at 320).

2. *Installation and Display of Icons, Shortcuts, and Menu Entries*

Rather than extend the terms of the decree haphazardly beyond the limits of the anticompetitive conduct as Plaintiffs suggest, the Court will tailor the remedy to fit the exigencies of this case, *Int'l Salt*, 332 U.S. at 400-01; *see also Bausch & Lomb*, 321 U.S. at 727, focusing initially upon terminating any existing practices deemed to be anticompetitive and ensuring that "there remain no practices likely to result in [illegal monopoly maintenance] in the future," *United Shoe*, 391 U.S. at 250. The remedy imposed by the Court therefore seeks primarily to address the specific conduct found to be anticompetitive with regard to OEM licenses. In order to address Microsoft's illegal prohibitions in OEM licenses, the remedy in this case will afford OEMs the freedom that they have been denied and will protect against any "back

door” attempt by Microsoft to deny flexibility. The remedy imposed by the Court will secure for OEMs the general ability to install and display icons, shortcuts and menu entries for middleware—the type of software disfavored by Microsoft’s anticompetitive restrictions—on the Windows desktop or in the Start menu. Importantly, however, rather than a blanket prohibition on licensing restrictions, the Court’s remedy recognizes the care with which the appellate court separated anticompetitive restrictions from legitimate license restrictions and attempts to reflect that separation in its terms. *See generally Microsoft*, 253 F.3d 34.

For example, the appellate court concluded that license restrictions preventing drastic alteration of Microsoft’s copyrighted work were only marginally anticompetitive and on this basis, rejected a finding of liability for licenses that prohibit OEMs from launching an alternative user interface automatically at the end of the initial boot sequence. *Microsoft*, 253 F.3d at 63. Given this very specific recognition that Microsoft can legitimately protect its products from drastic alteration, the remedy imposed by the Court will prohibit anticompetitive practices but still enable Microsoft to protect its copyrighted products from drastic alteration. *Id.* Therefore, the provisions of the injunctive decree will balance preservation of the core elements of Microsoft’s product design against the need to secure significant flexibility and protection for OEM configuration of the product.

The Court first strikes this balance in the context of the installation and display of icons, menu entries, and shortcuts. Microsoft will be enjoined from restricting by agreement any OEM licensee from installing an icon, menu entry, shortcut, product, or service related to “Non-Microsoft Middleware.” *See supra* Part III.B-C. (discussing definition of “Non-Microsoft Middleware”). Likewise, the Court will enjoin Microsoft from limiting the display of any such

icon. However, the Court will not prevent Microsoft from imposing non-discriminatory limitations on the specific areas in which icons may be displayed, provided that such limitations cannot be used to favor Microsoft and, instead, exist as part of the Windows product design. There is no evidence that the minor limitations on OEM flexibility in this manner will permit illegal monopolistic practices to persist or harm competition. *See* Appendix A, Part I.A. The Court's remedy will also permit Microsoft to protect the design of its product from drastic alteration in a manner which is the substantial equivalent of a launching of a new user interface, such as OEM designation of an icon in such an extreme size or shape that it obscures the crucial elements of the Windows user interface. There has been no showing that the preservation of Microsoft's ability to impose license restrictions with regard to these kinds of extreme alterations of Windows will work to the detriment of competition, *see id.*, and in the Court's view, such license restrictions are more akin to the restrictions for which Microsoft was absolved of liability than those for which Microsoft was found to have acted unlawfully.

3. Insertion of Internet Access Provider ("IAP") Registration Offers

The insertion by OEMs of offers of service from IAPs during the initial boot sequence was found to provide an opportunity for the promotion of alternative middleware. *Findings of Fact* ¶ 210. Microsoft's limitation on the ability of OEMs to insert such offers was found to have an anticompetitive effect in violation of antitrust law. *Microsoft*, 253 F.3d at 61-64. To remedy this finding, the remedial decree imposed by the Court will enjoin Microsoft from imposing license restrictions on the ability of OEMs to insert such offers.

Microsoft has argued that the insertion of IAP registration sequences should be subject to the imposition of Microsoft's "reasonable technical requirements" on the rationale that such

requirements preserve a consistent user experience. In offering this concern as a justification, Microsoft ignores the fact that the same rationale was rejected by the appellate court when it imposed liability for Microsoft's license restrictions regarding the initial boot sequence. *Id.* at 63-64. Specifically, the appellate court concluded that Microsoft's concern for consumer confusion and the allegedly reduced value of its product did not outweigh the anticompetitive effect of the license restrictions. *Id.* Microsoft's argument was found to have merit only to the extent that the license restrictions were necessary to prevent "drastic alteration of Microsoft's copyrighted work." *Id.* at 63. Microsoft has not offered any additional justification for preserving its ability to impose "reasonable technical requirements" on the introduction of IAP registration offers during the initial boot sequence. *See* Appendix A, Part I.A. Accordingly, there is no basis upon which the Court can rationally conclude that the remedy should permit Microsoft to impose such specifications beyond the requirement that the registration sequence must return the user to the Windows user interface at its conclusion. *Id.*; *see also Microsoft*, 253 F.3d at 63 ("We agree that a shell that automatically prevents the Windows desktop from ever being seen by the user is a drastic alteration of Microsoft's copyrighted work . . ."). Even Microsoft concedes that, at a minimum, the final judgment in this case must address the specific acts found by the appellate court to constitute exclusionary practices in violation of § 2 of the Sherman Act. Hence, the remedy imposed by the Court will enable OEMs to offer IAP registration during the initial boot sequence.

4. Automatic Launching of Applications

In a related context, the Court's remedial order will secure the ability of OEMs to install applications which launch automatically, meaning without end-user invocation, in particular

instances. Microsoft argues that the remedy imposed by the Court should not give OEMs complete autonomy with regard to the automatic launching of applications at start-up or upon accessing or departing the Internet. The Court recalls once again that the only Microsoft license restriction found to have competitive value outweighing its anticompetitive effect was the prohibition on the automatic launch of a program which *replaced* the Windows user interface with a substitute user interface. *Microsoft*, 253 F.3d at 63. The rationale for this holding rests upon the appellate court’s conclusion that the “drastic alteration of Microsoft’s copyrighted work” outweighed the “marginal anticompetitive effect” of the restriction. *Id.* By implication, therefore, the appellate court did not relieve Microsoft of liability for the imposition of license restrictions relating to the automatic launching of software where the automatically launched programs respected and functioned within the Windows user interface and thereby did not drastically alter Microsoft’s copyrighted work. *Compare id.* at 64 (“[W]e hold that with the exception of the *one restriction* prohibiting automatically launched alternative interfaces, *all* of the OEM license restrictions at issue represent uses of Microsoft’s market power to protect its monopoly”) (emphasis added), with *Findings of Fact* ¶ 213 (“Third, Microsoft prohibited OEMs from installing programs, including [but not limited to] alternatives to the Windows desktop user interface, which would launch automatically upon completion of the initial Windows boot sequence.”).

Paying careful attention to the very specific reason for the appellate court’s rejection of liability with regard to alternative user interfaces, the Court regards it as appropriate for the remedy in this case to permit the automatic launch of non-Microsoft programs upon the completion of the initial boot sequence where the automatically-launched program does not

substitute the Windows user interface for a different interface or otherwise drastically alter Microsoft's copyrighted work. *See* Appendix A, Part I.A (describing programs that are automatically launched but do not replace Microsoft's user interface). The Court has tailored its remedy to permit the automatic launch of such programs because the ability to launch programs automatically will assist in the promotion of non-Microsoft software and middleware, resulting in an increased likelihood that a particular piece of middleware will reach its potential to serve as a multi-purpose platform for applications. *See id.*

The Court, therefore, specifically rejects the contention by Microsoft that automatic launching of software products should be limited to circumstances where Microsoft has chosen to launch automatically a competing middleware program. The benefit of the automatically launching program arises from the fact that the user need not do anything to invoke the program's capabilities. *Id.* The limitation proposed by Microsoft will cabin innovation to that which is led by Microsoft. *Id.* Whether or not Microsoft happens to have a product which provides similar functionality which would be launched automatically has little bearing upon the competitive advantages to be gained by enabling the automatic launching of new and innovative products. *Id.* Accordingly, the Court will enjoin Microsoft from limiting the automatic launch of software provided that such software does not replace the Windows user interface or otherwise drastically alter Microsoft's copyrighted work.

B. End-User Access

In addition to the lifting of Microsoft's illegal license restrictions, the Court's remedial order will require Microsoft to alter its Windows technology to ensure that OEMs and end users may disable end-user access to various types of Windows functionality. Much of the litigation in

the remedy phase has focused upon the proper remedy for the imposition of liability upon Microsoft for its “commingling” of browsing-specific code with code that provides operating system functionality. *Microsoft*, 253 F.3d at 65 (quoting *Findings of Fact* ¶ 161). The appellate court, appearing to adopt the district court’s rationale that a distinction could be drawn between browsing-specific code and operating system code, explained that such commingling “has an anticompetitive effect” because it “deters OEMs from pre-installing rival browsers [because doing so increases the OEM’s product testing and support costs],⁶³ 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.” *Id.* at 66. This anticompetitive effect outweighed Microsoft’s procompetitive justification and accordingly, resulted in the imposition of liability by the appellate court. *Id.*

In the case of commingling, the most appropriate remedy, in this Court’s view, must place paramount significance upon addressing the exclusionary effect of the commingling, rather than the mere conduct which gives rise to the effect. By addressing the adverse effect of such commingling, the Court can more readily expand the remedy beyond the specific finding of liability for commingling browsing-related code with operating system-related code. Such expansion is inherently difficult, as there, indeed, exists great disagreement and confusion as to what aspects of Microsoft’s product design, if any, would constitute commingling beyond the treatment of browser code and operating system code. *See* Appendix A, Part X.B.

Plaintiffs seek to broaden the view of commingling to encompass any circumstance in

⁶³ “[P]reventing 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 (citing *Findings of Fact* ¶ 159).

which operating system code is included in the same files as code that Plaintiffs have characterized as non-operating system or middleware code. *Id.* Such broadening, however, invokes a dilemma that has existed since the inception of this suit, namely whether certain functionalities can be identified as exclusive to the “operating system,” while other functionalities are entirely unrelated to the operating system. Fundamental to the “commingling” finding by the district court and subsequent affirmance by the appellate court was the factual determination that there existed “a *consensus* in the software industry that [Web-browsing] functionalities are distinct from the set of functionalities provided by an operating system.” *Findings of Fact* ¶ 150 (emphasis added). Plaintiffs have failed to offer evidence which establishes that a similar consensus exists with regard to the other Microsoft middleware functionalities that Plaintiffs have proposed to make removable from Windows. *See supra* Part III.B-C; *see also* Appendix A, Part X.B. Nevertheless, even where such distinctions can be drawn between operating system and non-operating system, it is equally difficult to then separate various purported non-operating system functionalities into their own categories of functionality.⁶⁴ *See* Appendix A, Part X.B. Moreover, even if operating system and non-

⁶⁴This problem of technically separating the “operating system” from other functionality, such as browsing functionality, also arose in conjunction with Plaintiffs’ claim, pursuant to § 1 of the Sherman Act, of illegal tying and, in fact, has its roots in the predecessor litigation: *United States v. Microsoft Corp.*, 147 F.3d 935 (D.C. Cir. 1998). In that case, the D.C. Circuit observed that “as was the case with Windows 95, the products--the full functionality of the operating system when upgraded by IE 4 and the ‘browser functionality’ of IE 4--do not exist separately.” *Id.* at 951-52. In the instant case, Plaintiffs alleged that Microsoft illegally tied its browser, IE, to its operating system. Ultimately, the appellate court was unable to conclude that the two identified “products” were, in fact, separate. *Microsoft*, 253 F.3d at 85-95. In this regard, the appellate court noted that Plaintiffs had failed to provide precise definitions of “browser” and the browser market. *Id.* at 95. The appellate court made the same observation in the context of its discussion of Plaintiffs’ attempted monopoly claim, noting Plaintiffs’ “failure to articulate and identify evidence before the District Court as to . . . what constitutes a browser (*i.e.*, what are the technological components of or functionalities provided by a browser).” *Id.* at

operating system functionalities are separable in concept, separation of the code, in practice, is far more difficult. *Id.*

Plaintiffs have advanced a remedy that requires the removal of Windows software code providing the “middleware” functionality of “Internet browsers,” and a number of other types of “middleware” functionality, so as to leave only “operating system” code. Yet, Plaintiffs have been unsuccessful at distinguishing the code which comprises an “operating system” from the code which comprises a non-operating system “Microsoft Middleware Product,” such as a browser. *Id.* Because of this failure, Plaintiffs have not offered a reasonable way for Microsoft to separate the code in order to comply with the code removal requirements in Plaintiffs’ unbinding proposal. *Id.* This is not to say that, in the abstract, it is a technologically impossible task to separate the code. However, in the absence of clear definitions between the items to be separated, there is no way to know whether the required unbinding has been achieved. *Id.* Likewise, Plaintiffs have not shown that, even if they were able to define sufficiently the items which must be made separate, that such separation is attainable in the near future. *Id.* Microsoft presented significant evidence, which the Court credits, that such separation would not only degrade whatever remains, but would be a significant undertaking. *Id.*

Of even greater significance is the fact that the evidence does not indicate that the removal of software code is beneficial from an economic perspective. *Id.* Plaintiffs’ sole economic expert declined to endorse a remedy requiring the removal of software code. *Id.* Both of Microsoft’s economic experts testified that there was no economic rationale for removing software code as opposed to the removal of end-user access to any commingled functionality.

Id. Therefore, Plaintiffs have offered no economic analysis of what may occur in the marketplace following a drastic remodeling of a product with over 95 percent of the market share. *Microsoft*, 253 F.3d at 51, 54; *Findings of Fact* ¶ 35. This omission merely emphasizes for the Court the grievously inadequate nature of the evidence offered in support of a requirement that Microsoft remove software code from its Windows products.

The Court also heard and credits extensive testimony that recounts the manner in which the forced removal of software code from the Windows operating system will disrupt the industry, harming both ISVs and consumers. *See* Appendix A, Part X.B. In this regard, the Court credits the testimony of various ISVs that the quality of their products would decline if Microsoft were required to remove code from Windows. *Id.* The Court also credits similar testimony which explained that the software products produced by ISVs would become larger, more complex, and slower to develop. *Id.* Plaintiffs have failed, in response to this testimony, to establish that their proposed system of replacing the removed Microsoft code with software code produced by other vendors, if the OEMs so chose, would prove to be either workable in practice or beneficial to competition and the market as a whole. *Id.* In short, the record is overwhelmed with significant un rebutted evidence that Plaintiffs' proposal of code removal would harm ISVs and consumers. *See id.*

The case law is unwavering in the admonition that it is not a proper task for the Court to undertake to redesign products. "Antitrust scholars have long recognized the undesirability of having courts oversee product design" *Microsoft*, 147 F.3d at 948. Accordingly, even if Plaintiffs had presented evidence sufficient to support their request that the Court require Microsoft to remove code from its products, the Court would be appropriately reluctant to enter a

remedy that requires Microsoft to completely redesign its Windows products and places the Court in the role of scrutinizing whether Microsoft has done so without degradation of the ultimate product. Moreover, the D.C. Circuit has stated emphatically that “any dampening of technological innovation would be at cross-purposes with antitrust law.” *Id.* The evidence in this portion of the proceeding establishes not only that Microsoft’s innovation would be stifled by the requirement that it redesign its products, but that the ability of ISVs to innovate would be slowed because of the detrimental effects of the presence in the marketplace of multiple versions of Microsoft’s Windows operating system, each with different code and different APIs. *See* Appendix A, Part X.B. As explained in detail in Appendix A, the multiplicity of versions results from the fact that, once the purported “middleware” portions of Microsoft’s operating system are removed, whether or not replaced by third-party software, the resulting product will vary significantly depending upon the particular piece of “middleware” that was removed and/or replaced by third-party software. *Id.*

Nothing in the rationale underlying the commingling liability finding requires removal of software code to remedy the violation. To the contrary, the evidence presented to the Court indicates that the ability to remove end-user access to any commingled functionality would sufficiently address the anticompetitive aspect of the conduct and would prove far less disruptive to consumers and industry participants. *See* Appendix A, Parts I.B, X.B. The concern of the district court, as well as the appellate court, was that commingling deterred preinstallation of rival browsers by OEMs. *Microsoft*, 253 F.3d at 66; *Microsoft*, 87 F. Supp. 2d at 39. The rationale for this deterrence rested upon the increased consumer support costs inherent in installation of more than one product in any given category. *See Findings of Fact* ¶ 159. The

evidence presented to the Court during the remedies phase continues to support the view initially espoused by Judge Jackson that although the “Add/Remove function did not delete all of the files that contain browsing specific code from the user’s perspective, uninstalling Internet Explorer in this way was equivalent to removing the Internet Explorer program from Windows 95.” *Id.* ¶ 165. Based on all of the foregoing conclusions, and in the exercise of the Court’s discretion, the Court determines that the remedy in this case will not require removal of code from Microsoft’s Windows operating system. *See* 2 AREEDA ET AL., ANTITRUST LAW ¶ 325a, at 246 (“[T]he decree . . . will not embody harsh measures when less severe ones will do.”).

The more appropriate remedy, which the Court will impose, is a mandate that Microsoft permit OEMs to remove end-user access to aspects of the Windows operating system which perform middleware functionality. The requirement that Microsoft provide OEMs with the ability to add or remove the icons, menu entries, and shortcuts corresponding to a readily identifiable group of Microsoft technologies will address two distinct findings of liability. First, the provision of OEM flexibility to add and remove end-user access to certain Microsoft technologies will address directly the anticompetitive effect of Microsoft’s commingling of code providing browsing functionality with operating system functionality. Specifically, the removal of end-user access to certain Microsoft technologies will eliminate, or at least substantially reduce, the deterrent effect of the presence of the Microsoft technology upon the OEM’s inclination to install an alternative technology. *See* Appendix A, Part I.B; *see also Findings of Fact* ¶ 165. The Court notes in this regard that any argument that the removal of end-user access as a remedy to Microsoft’s commingling is inadequate as a remedy is quickly stifled by the clear and certain harm to the entire personal computer ecosystem which would result from the

alternative proposal of mandated code removal. *See* Appendix A, Part X.B. Second, allowing OEMs to remove end-user access to certain Microsoft technologies directly addresses the finding of liability against Microsoft for excluding IE from the “Add/Remove Programs” utility in Windows 98. *Microsoft*, 253 F.3d at 65. By extending the requirement that Microsoft preserve the removal of end-user access to Microsoft technologies beyond IE, namely to those technologies incorporated in Microsoft’s definition of “Microsoft Middleware Product,” *see supra* Parts III.B-C, the Court expands beyond the specific liability in this case to address conduct which is the substantial equivalent. This expansion helps to ensure that many of the “untraveled roads” to restraint of trade are not left open. *Int’l Salt*, 332 U.S. at 400.

In remedying Microsoft’s anticompetitive exclusion of IE from the “Add/Remove” utility by mandating that Microsoft provide OEMs and consumers with the ability to enable or disable end-user access to various Microsoft and non-Microsoft technologies, the Court expressly rejects Plaintiffs’ definition of “end-user access.” *See* Appendix A, Part I.B. Plaintiffs’ proposal to regulate indirect invocation of IE and other middleware addresses conduct considered and ultimately rejected by the appellate court as a basis for antitrust liability. *See supra* Part II.A.5. Criticizing and appearing to reject Judge Jackson’s “broad condemnation” of the “binding” of IE to Windows with “technological shackles,”⁶⁵ the appellate court parsed the “three specific

⁶⁵Microsoft, dubbing this technological binding more attractively as “integration,” presented testimony extolling the virtues of integration for both consumers and other industry participants. *See, e.g.*, Sanders ¶¶ 11-40. The Court declines to enter any findings with regard to whether integration of new technology into Microsoft’s PC operating system products is, as a general proposition, suitable or beneficial. Such determinations would have been more appropriate during the liability phase, in conjunction with the balancing of the pro- and anticompetitive benefits of technological binding or “integration,” whereas a determination regarding the propriety of “integration” is not called for at this late stage in the proceeding. Instead, it is sufficient to note that the appellate court rejected Judge Jackson’s broad condemnation of Microsoft’s technological binding or “integration” as a violation of § 2.

actions Microsoft took to weld IE to Windows” and ultimately imposed liability for only two such actions. *Microsoft*, 253 F.3d at 64-67. The appellate court rejected the imposition of liability for Microsoft’s practice of overriding the user’s choice of a “default browser.” *Id.* at 67.

Judge Jackson explained this Microsoft practice in paragraph 171 of his *Findings of Fact*:

As shipped to users, Windows 98 has Internet Explorer configured as the default browser.⁶⁶ 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.

Findings of Fact ¶ 171. In response, Microsoft proffered the following “technical reasons” for the override:

The Windows 98 Help system and Windows Update feature depend on ActiveX controls not supported by Navigator, and the now-discontinued Channel Bar utilized Microsoft’s Channel Definition Format, which Navigator also did not support. Lastly, Windows 98 does not invoke Navigator if a user accesses the Internet through “My Computer” or “Windows Explorer” because doing so would defeat one of the purposes of those features--enabling users to move seamlessly from local storage devices to the Web *in the same browsing window*.

Microsoft, 253 F.3d at 67. (quoting Microsoft’s “Opening Br.” at 82 (internal citations omitted))

(emphasis in original). Based upon this proffer of “valid technical reasons” for the override described by Judge Jackson, and in the absence of evidence from Plaintiffs demonstrating that the “anticompetitive effect of the challenged action” outweighed the proffered justification

Microsoft, 253 F.3d at 64-67.

⁶⁶“Default” in this context indicates that in some of the circumstances where the Windows operating system would invoke some aspect of browsing functionality, it would automatically rely upon the browsing functionality provided by IE, without first seeking input from the user.

therefor, the appellate court determined that Microsoft's conduct with regard to the "default browser" would not support § 2 liability. *Id.*

Plaintiffs' proposal ignores the rejection of liability for Microsoft's practice of overriding the user's choice of a "default browser" where there exist "valid technical reasons" for doing so. *Id.* In particular, Plaintiffs' proposal to regulate the provision of "end-user access" includes "indirect invocation" of a particular Microsoft technology, meaning invocation by the operating system itself rather than directly by the end user. *See* Appendix A, Part I.B. The regulation of such "indirect invocation" would have the effect of prohibiting at least some of the conduct, such as Windows' indirect invocation of IE over Navigator to enable "users to move seamlessly from local storage devices to the Web *in the same browsing window*," which the appellate court refused to condemn, *Microsoft*, 253 F.3d at 67 (quoting Microsoft's "Opening Brief" at 82) (emphasis in original). *See* Appendix A, Part I.B. Plaintiffs' exceptionally broad definition of "end-user access" threatens to regulate and prohibit significant amounts of ordinary operating system functionality. *Id.* Plaintiffs do not justify this regulation of Microsoft's legitimate conduct with evidence of a particular competitive benefit to be gained therefrom. *Id.* Accordingly, the Court regards a definition of "end-user access" which includes indirect invocation of a particular functionality as inadequately tailored to meet the circumstances of this case. *See Microsoft*, 253 F.3d at 107.

More appropriately tailored is a remedy which provides OEMs and ISVs with a substantial degree of confidence that a particular Microsoft functionality can be replaced with a non-Microsoft functionality. The remedy acknowledges that Microsoft may, in some instances, override the OEM's or end user's designation of a non-Microsoft Middleware Product when

there exist “valid technical reasons,” while simultaneously seeking to minimize the occasions when such an override occurs. *See* Appendix A, Part I.B. In his discussion of end-user access, Judge Jackson observed that “[i]f OEMs removed the most visible means of invoking Internet Explorer, and pre-installed Navigator with facile methods of access, Microsoft’s purpose in forcing OEMs to take Internet Explorer--capturing browser usage share from Netscape--would be subverted.” *Findings of Fact* ¶ 203. In order to ensure that the free choice of third-party middleware is protected against subversion, the Court’s remedial decree imposes a requirement that, in any instance where a Microsoft operating system launches a “Microsoft Middleware Product,”⁶⁷ in its full form, rather than within another portion of the operating system, end users and OEMs must be afforded the opportunity, via an unbiased mechanism, to designate a non-Microsoft middleware product that will launch in place of the “Microsoft Middleware Product.” Such a provision enables the ready substitution of third-party products for functionality which would otherwise have been provided by the “middleware” functionality incorporated into Microsoft’s operating system and encourages the installation and ultimately, the consumer use of third-party “middleware.” *See* Appendix A, Part I.B.

A remedy which provides the ability to replace “middleware” functionality, which has been included in Microsoft’s operating system products, offers protection beyond the mere cessation of the conduct which gave rise to the liability in this case. The appellate court did not enter any findings of liability with regard to whether Windows provided a means by which Microsoft functionality incorporated into the operating system could be readily replaced by third-party software. *See generally Microsoft*, 253 F.3d 34. In fact, the appellate court rejected

⁶⁷As noted earlier in this Opinion, the Court’s remedial decree adopts the definition of “Microsoft Middleware Product” provided in Microsoft’s remedy proposal. *See supra* Part III.B.

liability for the aspect of Windows' design which provided for only the partial replacement of Microsoft browsing technology with third-party browsing technology. *Id.* at 67. Regardless, the Court considers the extension of the remedy beyond the specific liability findings in this instance to be appropriate, as such extension will help to "pry open to competition a market that has been closed by defendant's illegal restraints." *Int'l Salt*, 332 U.S. at 401.

Conversely, the Court regards a remedy which imposes more severe requirements with regard to the provision of "defaults," such as that proposed by Plaintiffs, as an unjustified regulation of Microsoft's product design. In particular, the Court has found that a remedy which adopts Plaintiffs' treatment of defaults would likely require the complete redesign of Microsoft's Windows product or, at the very least, vast amounts of design work by Microsoft. *See* Appendix A, Part I.B. Plaintiffs have failed to present evidence that such redesign would bring great returns, or any returns for that matter, in the form of increased competition within the monopolized market. *Id.* In fact, Plaintiffs have failed to present any economic analysis to support this provision in their remedy proposal, which would result in the complete modularization of Microsoft's operating system products. *Id.* On the present record, therefore, the Court declines to impose more sweeping regulation of Microsoft's product design with regard to the availability of replaceable defaults.

Notwithstanding the imposition of an affirmative measure to further competition, in order to respect the carefully drawn boundaries of liability, the Court, of necessity, will preserve Microsoft's ability to override the designation of third-party software (in place of Microsoft middleware functionality present in the operating system) where the third-party software fails to implement a reasonable technical requirement. *See Microsoft*, 253 F.3d at 67. Further

unfettering the market, the Court will curtail any abuse of this freedom by requiring Microsoft to provide the relevant technical reasons, *in writing*, promptly upon the request of any ISV. The provision of this information will assist ISVs in designing their products so as to avoid any such overrides and thereby reduce the anticompetitive effect caused by the override. *See id.* at 65 (“Because the override reduces rivals’ usage share and protects Microsoft’s monopoly, it too is anticompetitive.”), 67 (“As for . . . causing Windows to override the user’s choice of a default browser in certain circumstances[,] . . . Microsoft may not be held liable for this aspect of its product design.”).

In conjunction with the decision to impose a remedy that secures the removability of end-user access to certain Microsoft technologies, permits replacement of Microsoft technology with third-party technology, and provides more general flexibility to OEMs to configure Microsoft’s operating system products, the Court must ensure that OEM (and consumer) choices in this regard are not devalued by other aspects of Microsoft’s product design and configuration. For example, OEM configuration and removal of end-user access will be of little use in the promotion of non-Microsoft middleware if Microsoft is free to design its product to override the configuration before the end-user has an opportunity to utilize the settings. *See Appendix A, Part I.B.* Accordingly, the Court shall prohibit Microsoft from designing its operating system product so as to induce reconfiguration of an OEM’s or consumer’s formatting of icons, shortcuts, and menu entries in an attempt to favor Microsoft’s own software. Pursuant to the Court’s remedial decree, any Microsoft-invited alteration of preferences must be presented via an unbiased mechanism and only after the end-user has had sufficient time to utilize the PC as configured by the OEM. Moreover, any Microsoft-invited alteration of OEM configuration may

not be imposed in such a manner so as to harass or coax the end user into accepting the alteration. Given the neutrality of the invitation to alter settings and the ability to retrieve the settings, the Court does not regard the amount of time during which Microsoft may not invite the consumer to alter his or her settings to be particularly significant. *Id.* In the absence of substantial evidence to the contrary or in support of a more viable alternative, the Court determines that two weeks following the initial boot-up shall be a sufficient amount of time during which to prohibit a neutral invitation to alter the configuration of the desktop. *Id.*

C. Additional Protection for OEM Flexibility

Because the OEM channel is such a significant channel of distribution for middleware, *Microsoft*, 253 F.3d at 61, the remedy in this case can further unfetter the market from the effects of Microsoft's unlawful anticompetitive behavior by protecting OEMs from retaliation by Microsoft based upon an OEM's support for alternative middleware or operating systems.⁶⁸ Given the power wielded by a monopolist like Microsoft, in the absence of protection against retaliation and threats of retaliation, industry participants whose survival hinges on their relationship with such a monopolist will be reluctant to exercise the new-found freedoms offered by the remedy in this case. *See* Appendix A, Part III. In addition, the OEM flexibility guaranteed by other portions of the remedial decree has the potential to lose its effectiveness if Microsoft is not restricted from using its power as a monopolist to coerce OEMs to act for Microsoft's exclusive benefit. *Id.*

⁶⁸The liability in this case is clear with regard to Microsoft's history of retaliation and threats of retaliation against other industry participants, such as ISVs and IHVs. *See, e.g., Microsoft*, 253 F.3d at 72-74 (discussing Microsoft's dealings with Apple); *id.* at 77-78 (describing Microsoft's "threat to Intel"). Although Microsoft has a history of retaliation against OEMs, *see, e.g., Findings of Fact* ¶¶ 115-32, such retaliation did not provide a clear basis for liability. *See generally Microsoft*, 253 F.3d 34; *see also supra* Part II.B.

The Court finds that protection of industry participants against threats of retaliation will have an effect similar to a ban on actual retaliation and, thus, will further the ultimate goal of promoting competition. *Id.* Microsoft has argued that where the retaliation itself is banned, there is little practical need to protect against threats of retaliation because to carry out the threat would violate the decree. While technically true, this analysis ignores the power wielded by a monopolist such as Microsoft and the resulting damage which can flow from a mere threat. *Id.* Moreover, the burden rests in the wrong place if Microsoft's competitors are required, when faced with such a threat, to gamble that Microsoft will not carry out the threat because doing so would violate the decree in this case. *Id.* The more prudent course is to enjoin both the threat and the retaliation itself and leave to Microsoft the task of acting carefully so as to ensure that it does not improperly threaten retaliation against other industry participants. *See Bigelow v. RKO Radio Pictures*, 327 U.S. 251, 265 (1946) ("The most elementary conceptions of justice and public policy require that the wrongdoer shall bear the risk of the uncertainty which his own wrong has created.").

Restrictions on Microsoft's freedom to retaliate or threaten retaliation must be carefully drawn so as not to unduly restrict legitimate business practices. *Id.* Such restrictions can dampen competition, *see* Appendix A, Part III, and thereby violate the principles which guide the imposition of a remedy in antitrust cases. *See Ford Motor Co.*, 405 U.S. at 573 ("The relief in an antitrust case must be 'effective to redress the violations' and 'to restore competition.'") (quoting *E.I. Du Pont De Nemours & Co.*, 366 U.S. at 326). In particular, the remedy imposed by the Court is fashioned so as to prevent true "retaliation" rather than restrict all forms of action taken by Microsoft which might be characterized as "adverse" to competitors. Indeed, conduct

that is in some respect adverse to competitors is almost implicit in the concept of competition. *See* Appendix A, Part III. There is neither justification in the record of this case, nor in the field of antitrust law, for a far-ranging prohibition on conduct adverse to competitors, *id.*, and the Court rejects imposition of such a ban as part of the remedy in this case. However, because retaliation against OEMs for their support of competing products is conduct of the same “type or class,” *Zenith Radio*, 395 U.S. at 132-33; *see also Microsoft*, 56 F.3d at 1460, as conduct which was found to be anticompetitive in this case,⁶⁹ *see Microsoft*, 253 F.3d at 77, and because a ban on retaliation will enable OEMs to take advantage of other freedoms provided by the remedy in this case, *see Bausch & Lomb*, 321 U.S. at 726 (“The test is whether or not the required action reasonably tends to dissipate restraints and prevent evasions.”), the Court may properly limit Microsoft’s ability to threaten and engage in retaliation against OEMs in certain circumstances.

Notwithstanding this conclusion, the remedial decree imposed by the Court will permit Microsoft to compensate OEMs based upon the absolute level or amount of the OEM’s distribution, promotion, development, and other types of support for a particular Microsoft product. *See* Appendix A, Part III. In other words, Microsoft will be permitted to provide compensation for OEM action which promotes or supports Microsoft products, but Microsoft cannot withhold such consideration or other consideration based upon OEM action which tends to favor non-Microsoft products. While these two goals may appear to be somewhat at odds, the liability in this case all but demands this level of hair-splitting. The appellate court was very

⁶⁹Retaliation or other forms of adverse action against industry participants for their support of products which compete with other product lines offered by Microsoft that are substantially unrelated to the monopoly market in this case, such as handheld devices and the like, *see supra* Part III.B-C, are too far removed from the liability in this case to be treated as “of the same type or class” as the illegal conduct in this case. *Zenith Radio*, 395 U.S. at 132-33.

clear throughout its opinion that “the antitrust laws do not condemn even a monopolist for offering its product at an attractive price,” even where the monopolist offers valuable consideration in the form of technical information and “bounties.” *Microsoft*, 253 F.3d at 67-68.⁷⁰ In addition, evidence presented during this phase of the proceeding emphasizes that there are often instances where compensation commensurate with the amount of support given to a particular product is not only a routine business practice, but it is “obviously beneficial.” *See* Appendix A, Part III. The Court recognizes that, in the absence of some condition of fixed percentages or exclusivity, an attractive pricing scheme will not be condemned as anticompetitive and, indeed, may have procompetitive advantages. Based upon this recognition, the Court regards it as inappropriate for the remedy in this case to entirely prohibit Microsoft’s ability to compensate OEMs commensurate with the actual level of OEM support of the Microsoft product.

Further protection for OEMs as a middleware channel of distribution is available through the implementation of uniformity in the licenses Microsoft provides in the monopoly market. *See* Appendix A, Part II. As evidenced by their respective remedies, the parties on both sides of this case acknowledge that uniformity in the Windows operating system licenses will bolster the protections for middleware in the OEM channel of distribution.⁷¹ *Id.* The parties’ respective

⁷⁰As illustrated in other portions of the appellate court’s opinion, it is the conditioning of the receipt of consideration upon some degree of exclusivity which raises antitrust concerns. *See, e.g., Microsoft*, 253 F.3d at 75 (“Again, we reject the District Court’s condemnation of low but non-predatory pricing by Microsoft. To the extent that Microsoft’s First Wave Agreements with the ISVs conditioned receipt of Windows technical information upon the ISVs’ agreement to promote Microsoft’s JVM exclusively, they raise a different competitive concern.”).

⁷¹Though not clearly implicated in actions that gave rise to liability addressed by the appellate court, Judge Jackson’s *Findings of Fact* reflect that Microsoft manipulated the terms of its license agreements in conjunction with its attempt to quash the middleware threat posed by

proposals for uniform licenses for Windows operating system products are remarkably similar, with each requiring uniformity in the terms and conditions of the licenses for the twenty OEMs with the highest volume of Windows operating system licenses. *Id.* Both proposed remedies further provide, in broad terms,⁷² that a royalty schedule must be established, pursuant to which Microsoft may opt to charge a different royalty for different language versions of the Windows operating system and may provide reasonable volume discounts based upon the actual volume of licenses. SPR § 2.a; SRPFJ § III.B. There is little dispute that the imposition of uniformity in licensing will enhance the freedom of OEMs to support non-Microsoft products and thereby further the goal of “achiev[ing] freedom from the influence of the unlawful restraint of trade.” *Bausch & Lomb*, 321 U.S. at 726.

Given this seeming lack of dispute over the appropriateness of a substantial degree of uniformity in Microsoft’s Windows operating system licenses, the Court’s remedy will require Microsoft to provide OEMs with such uniformity. However, in recognition of the potential negative side effects of complete uniformity in licensing as attested to by Drs. Murphy and Elzinga, *see* Appendix A, Part II, the uniform licenses mandated by the Court’s remedy will allow some divergence in terms depending upon the volume of licenses provided. Specifically,

Navigator. *See, e.g., Findings of Fact* ¶ 234 (“In return for Compaq’s capitulation and revival of its commitment to support Microsoft’s Internet strategy, Microsoft has guaranteed Compaq that the prices it pays for Windows will continue to be significantly lower than the prices paid by other OEMs. . . . Compaq’s license fee for Windows is so low that other OEMs would still pay substantially more than Compaq even if they qualified for all of the royalty reductions listed in Microsoft’s Market Development Agreements (‘MDAs’). What is more, while Microsoft requires other OEMs to verify actual compliance with particular milestones in order to receive Windows 98 royalty reductions, Microsoft has secretly agreed to provide the full amount of those discounts to Compaq regardless of whether it actually satisfies the specified conditions.”).

⁷²Admittedly, there are minor differences in the two remedies even on these common points. *Compare* SPR § 2.a, *with* SRPFJ § III.B.

the Court's remedial order will permit reasonable volume discounts based upon the actual volume of licenses for any Windows operating system product.

To further tailor the uniform licensing provision so as to provide OEMs with the greatest security, while minimizing the less desirable collateral effects of uniformity, the Court's order of remedy will not prohibit Microsoft's practice of awarding "market development allowances, programs, or other discounts" ("MDPs"), provided that the award of such benefits is based upon reasonable, objective criteria, which are enforced uniformly and without discrimination. The Court's determination that the remedy should not eliminate Microsoft's ability to offer MDPs reflects the fact that the affirmance of liability in this case by the appellate court did not condemn Microsoft's use of MDPs and, in fact, steadfastly refused to condemn practices which, at their core, "offer[ed] a customer an attractive deal." *Microsoft*, 253 F.3d at 68; *see also id.* at 78 ("The only specific acts to which the court refers are Microsoft's expenditures in promoting its browser, which we have explained are not in themselves unlawful.") (internal citation omitted). The Court's determination is further based upon the finding that MDPs are procompetitive in many instances. *See* Appendix A, Part II. Indeed, Plaintiffs' witnesses testified that so long as MDPs cannot be used to improperly influence OEM choices—for example, through discriminatory or retaliatory terms or enforcement—there remains little basis for objection to their use. *Id.* Accordingly, the Court declines to prohibit this legitimate aspect of Microsoft's licensing agreements, but instead shall limit Microsoft's ability to use MDPs to impede competition.

Additional protection for OEMs and their ability to exercise their rights under the remedy imposed in this case can be derived from limited regulation of Microsoft's ability to terminate an

OEM's Windows license. The Windows license is fundamental to an OEM's ability to conduct business, and hence, the threat of termination is a powerful tool which Microsoft can utilize to exert undue influence over a particular OEM. *See* Appendix A, Part IV. To leave such a tool available for Microsoft's abuse would detract from the ability of the other provisions of the remedy in this case to unfetter the market from Microsoft's illegal monopoly maintenance. *Id.*

However, the limitation on Microsoft's ability to terminate an OEM's Windows license must not be so broad as to curb Microsoft's ability to enforce its intellectual property rights such that the terms of the license are rendered meaningless. *Id.* As a result, Microsoft shall not be permitted to terminate an OEM's license without having first provided the OEM with notice and opportunity to cure. When Microsoft has provided two such notices, Microsoft may terminate the license without any further notice or opportunity to cure. This limitation on Microsoft's ability to terminate an OEM's Windows license appropriately provides additional protection to OEMs, further securing the likelihood that they will engage in vigorous competition. *Id.*

Importantly, however, this limitation does not interfere significantly with Microsoft's legitimate business practices. *Id.* The Court further concludes that the addition of a requirement that Microsoft may terminate only for "good cause" is unnecessary as termination of a license for an improper purpose, such as retaliation, is prohibited by other portions of the Court's remedy. *Id.* In this regard, the Court observes that, in the event that Microsoft terminates a license in the absence of "good cause," such termination will likely be subject to careful scrutiny to ensure that Microsoft has not terminated an OEM license for a purpose inconsistent with the terms of the final judgment.

D. Other Participants in the Ecosystem

1. Ban on Retaliation

The factual and liability findings in this case evidence a practice by Microsoft of threatened and actual retaliation against Apple and Intel, each of which is both a hardware vendor and software developer, *Microsoft*, 253 F.3d at 71 (Apple), *Findings of Fact* ¶ 95 (Intel), for engaging in action which promoted or supported non-Microsoft middleware. *See, e.g., Microsoft*, 253 F.3d at 72-73 (discussing Microsoft’s dealings with Apple); *id.* at 77 (describing Microsoft’s “threat to Intel”).⁷³ The immediate and most apparent remedy for this anticompetitive conduct is a prohibition on Microsoft’s ability to retaliate not only against these particular firms, but generally against software developers and hardware vendors. *See* Appendix A, Part III. As with the prohibition on retaliation against OEMs described above, the Court must tailor any prohibition on retaliation against ISVs and IHVs to address actions which are of the same type or class as that which was found to be in violation of the antitrust laws, while still

⁷³The appellate court devoted a section of its analysis to Microsoft’s treatment of Intel in response to Intel’s development of a “high performance, Windows JVM,” *Microsoft*, 253 F.3d at 75 (quoting *Findings of Fact* ¶ 396), recounting the numerous ways in which Microsoft “pressur[ed] Intel not to support cross-platform Java,” *id.* at 77. Microsoft’s pressure in this regard was based upon the threat to the Windows monopoly posed by cross-platform Java. *Id.* The appellate court found Microsoft’s pressure tactics to be clear in their anticompetitive effect and wholly without procompetitive justification. *Id.* at 77-78. Because of the exclusionary effect of Microsoft’s threats to Intel, which Microsoft “lamely characteriz[ed] . . . as ‘advice,’” the appellate court deemed Microsoft’s conduct in this context to violate § 2 of the Sherman Act. *Id.*

In a similar section, the appellate court examined Microsoft’s dealings with Apple, which included an agreement by Apple not to “position icons for nonMicrosoft browsing software on the desktop of new Macintosh PC systems or Mac OS upgrades,” as well as an agreement prohibiting Apple from “encouraging users to substitute another browser for IE.” *Id.* at 73 (quoting *Findings of Fact* ¶¶ 350-52). These promises not to support competing products had the effect of exclusivity, the anticompetitive effect of which was unmitigated by procompetitive justification. *Id.* at 73-74. In the absence of procompetitive justification, the appellate court deemed this conduct to violate § 2 of the Sherman Act. *Id.*

preserving Microsoft's ability to engage in legitimate competitive conduct that is only remotely related to the relevant anticompetitive conduct. In this regard, the Court again determines that a prohibition on all action "adverse" to industry participants "based upon" their support for competing products is not sufficiently tailored to address the conduct found to be anticompetitive. *Id.* Such a broad prohibition threatens to eliminate conduct which may have significant procompetitive value. *Id.*

Similarly too, the prohibition on retaliation for the support of competing products must be tied to the monopoly market in this case and cannot appropriately prohibit Microsoft from engaging in conduct in markets unrelated to the monopoly market. As previously noted, this Court is "not at liberty to enjoin 'all future violations of the antitrust laws, however unrelated to violations found by the court,'" *Microsoft*, 56 F.3d at 1460 (quoting *Zenith Radio*, 395 U.S. at 132-33), nor is the Court at liberty to "interfere with ordinary commercial practices," *Bausch & Lomb*, 321 U.S. at 728, even where those practices are malicious and injurious to particular competitors, *Brooke Group Ltd.*, 509 U.S. at 225. While retaliation is an unsavory method of competition which the Court does not condone, the liability ascribed to Microsoft for its threats of retaliation directed at Intel and Apple will not support broad regulation of *any* Microsoft conduct, though it might be characterized as retaliatory, in markets wholly unrelated to the monopoly market, particularly where Microsoft's dominance in such markets, or lack thereof, has not been assessed. The mere fact that particular conduct can be characterized as retaliation does not necessarily render such conduct sufficiently related to the liability in this case so as to justify inclusion of such conduct in the remedy. *See* Appendix A, Part III. To be sufficiently related to the liability in this case, a ban on retaliation must have some nexus to the monopoly

market identified for purposes of this proceeding. *See Microsoft*, 56 F.3d. at 1460.

By utilizing the term “competes” in the remedial decree, the Court’s prohibition on retaliation for the support of non-Microsoft software is broad, but still reflective of the necessary nexus. For example, inasmuch as a server operating system serves as a platform for applications running “for” the PC, in a manner similar to true middleware, the server operating system can be said to “compete” with Microsoft’s PC operating system software. *See supra* Parts III.B.3.a, III.C.1. In this regard, then, the Court’s remedy extends well beyond the specific targets of Microsoft’s previous retaliation, to provide forward-looking protection for any firm that produces software or hardware posing any competitive threat to Microsoft’s monopoly in the market for Intel-compatible PC operating systems.

Further, like the ban on retaliation against OEMs, the prohibition on Microsoft retaliation against ISVs and IHVs for their support of platform software that competes with Microsoft’s PC operating system software will prohibit threats of retaliation, which have the capacity to chill ISV and IHV support for competing products even where the retaliation itself is prohibited. *Id.* Such protection is particularly appropriate given that both examples of Microsoft’s retaliatory conduct against IHVs and ISVs during the liability phase concerned threats of retaliation. *Microsoft*, 253 F.3d at 73 (describing a call from Mr. Gates to Apple’s CEO “to ask ‘how we should announce the cancellation of Mac Office’”) (quoting *Findings of Fact* ¶ 349); 77 (describing Microsoft’s “threat to Intel”).

2. Agreements Limiting Support for Competing Products

In a related vein, but specific to ISVs, the appellate court affirmed the district court’s finding of liability with respect to the effectively exclusive nature of the “First Wave

Agreements.” The First Wave Agreements “required developers to make Microsoft’s JVM the default in the software they developed” to the exclusion of the Sun-compliant JVM. *Microsoft*, 253 F.3d at 75. The appellate court found that the agreements had the effect of “foreclos[ing] a substantial portion of the field for JVM distribution” and were without procompetitive justification. *Id.* at 76. In response to this finding of liability, the Court’s remedy will preclude Microsoft from entering into agreements predicated upon an ISV’s promise to refrain from developing, promoting, or distributing any software which competes with the platform capabilities of Microsoft software. Such a provision will ensure that Microsoft is unable to chill the development of competing software products which may provide a platform for PC applications. *See* Appendix A, Part V.A.

Inherent in such a remedy provision, however, exists a danger that a blanket ban on agreements predicated on a promise not to support a competing product will interfere with collaborative ventures between Microsoft and ISVs. *Id.* It is often the case that, in conjunction with a joint venture or work-for-hire agreement, the parties of the venture agree not to compete with the scope of the venture. *Id.* This type of agreement provides the participants to the venture some assurance that their respective efforts will be used collaboratively, as the agreement intends, rather than competitively. *Id.* Such collaborative ventures foster the advancement of technology, promoting innovation and ultimately competition. *Id.* Because a remedy which “dampen[s] . . . technological innovation would be at cross-purposes with antitrust law,” *Microsoft*, 147 F.3d at 948, and because Plaintiffs have not offered any valid justification for prohibiting such agreements, the remedy in this case is carefully tailored so as not to hinder Microsoft’s ability to enter into legitimate joint ventures and work-for-hire agreements. In

particular, the remedy imposed by the Court will reserve for Microsoft the ability to limit an ISV's support for a competing platform product where such limitation is reasonably necessary and of a reasonable scope and duration in relation to the contractual obligation of the ISV to support Microsoft's software or to jointly develop software for Microsoft.

3. *Exclusive Agreements*

In two different portions of its opinion, the appellate court considered the exclusive effect of the First Wave Agreements Microsoft entered into with ISVs, and in each portion, the appellate court determined that the exclusive effect of the agreements violated § 2 of the Sherman Act. *Microsoft*, 253 F.3d at 71-74 (discussing the effect of the agreements upon Navigator), 75-76 (discussing the effect of the First Wave Agreements upon Java). Elsewhere in its opinion, the appellate court examined Microsoft's exclusive agreement with Apple and determined that the agreement violated § 2 of the Sherman Act. *Id.* at 72-74. In yet another portion of its opinion, the appellate court considered Microsoft's exclusive agreements with internet access providers and determined that these too violated § 2 of the Sherman Act. *Id.* at 67-71. Considering as a whole Microsoft's treatment of these segments of the industry, it is appropriate to curtail sharply Microsoft's capacity to extract promises of exclusivity or support of a Microsoft product in a fixed percentage. Nevertheless, even where a broad prohibition on exclusive deals with multiple industry participants is justified by the findings of liability, the Court must take care not to ban those fixed-percentage and exclusive agreements that serve a procompetitive purpose. *See Microsoft*, 253 F.3d at 69. Some types of fixed-percentage and exclusive agreements may be beneficial to other participants in the ecosystem and often fall outside of the parameters of anticompetitive conduct. *See Appendix A, Part V.B.* Indeed, even

in its condemnation of Microsoft's exclusive agreements, the appellate court noted that exclusive contracts themselves are not without their usefulness, *Microsoft*, 253 F.3d at 69, and are "commonplace--particularly in the field of distribution--in our competitive, market economy," *id.* at 70.

Accordingly, the Court's remedial decree will limit Microsoft's ability to enter into agreements in which the other party agrees to support Microsoft's operating system products exclusively or in a fixed percentage. This provision will address those industry participants with whom Microsoft entered into unlawful and anticompetitive exclusive agreements, namely ISVs, IAPs, and OEMs, as well as those industry participants, such as ICPs and IHVs, who are ready targets for the imposition of similarly unlawful exclusive agreements. The extension of this prohibition beyond ISVs, IAPs, and OEMs, and beyond agreements concerning Web browsers and Java, to any software which competes with the platform capabilities of Windows, will serve to "uproot all parts of [the] illegal scheme--the valid as well as the invalid--in order to rid the trade or commerce of all taint." *Paramount Pictures*, 334 U.S. at 148.

While furthering the effort to "uproot" all of Microsoft's illegal conduct and conduct similar thereto, the Court will again tailor its prohibition on Microsoft's use of exclusive and fixed percentage agreements so as to permit those agreements which are beneficial to competition, but might otherwise have been prohibited by a blanket ban. In particular, in recognition of the benefit to technology and to competition derived from cooperative agreements between industry participants, *see* Appendix A, Part V.B., the Court's remedy takes pains not to discourage Microsoft from entering into legitimate joint ventures and joint development agreements. In this regard, Microsoft will have some limited ability to prohibit competition with

the object of the joint venture or joint agreement, where both parties have contributed significant resources to the venture. In addition, because the goal of this remedy provision is to curtail the exclusive effect of fixed percentage agreements, the remedy imposed by the Court will not prohibit fixed percentage agreements where there is evidence, in the form of a good faith representation from the other party to the agreement, that the fixed percentage will *not* have an exclusive effect. *See id.*

In addition, the Court's remedy balances the need not to discourage Microsoft from entering into procompetitive licenses for the use of third-party technology against the competitive advantages to be gained by limiting Microsoft's imposition of exclusivity terms in its other agreements with industry participants. The Court's remedy, therefore, permits Microsoft to include a term of exclusivity in conjunction with an intellectual property license. However, the Court observes that a broad authorization to include a provision of exclusivity in all agreements in which Microsoft licenses intellectual property from a third party would invite circumvention of the prohibitory portion of the remedy. To do so, Microsoft need only add to its agreements with industry participants an unnecessary license of intellectual property and thereby garner exclusion of the agreement from the purview of the prohibitory portion of the decree. *See id.* Rather than foster such an outcome, the Court will permit inclusion of an exclusivity provision in such agreements only in limited circumstances. In particular, Microsoft's ability to impose an exclusive term in an agreement in which Microsoft licenses intellectual property shall be limited to agreements wherein the license of the third-party technology constitutes the principal purpose of the agreement.

4. *Agreements Regarding Placement on the Desktop*

In the case of IAPs, the appellate court condemned Microsoft's contracts which extracted from IAPs a promise of exclusivity—meaning a promise to refrain from and/or sharply limit promotion or distribution of a non-Microsoft Web browser in exchange for prominent placement of the IAP's product in the configuration of the Windows operating system. *Microsoft*, 253 F.3d at 68-71. The Court's order of remedy will address this holding in two ways. First, the provision described above, which provides a general prohibition on Microsoft's ability to enter into agreements with a wide variety of industry participants, including IAPs, predicated upon a promise of exclusive support for a Microsoft product, will be restricted. *See supra* Part IV.D.3. In addition, the Court's remedy will include a provision which addresses the particular means of leverage Microsoft used to induce IAPs to enter into these agreements; namely, special placement on the desktop or elsewhere in Microsoft's PC operating system products of a visible means of end-user access to the third-party product. Therefore, the remedy imposed by the Court will prohibit Microsoft from granting special placement within the Windows operating system on the condition that the IAP refrain from supporting software that competes not only with Microsoft's Web-browsing technology, but also with a number of technologies incorporated into Windows that have middleware characteristics such that they are properly treated as "Microsoft Middleware." *See supra* Part III.B-C. This extension beyond a promise not to compete with Microsoft's Web-browsing functionality reflects an extension of the remedy beyond the specific liability findings to address conduct which is of the "same type or class" as the conduct which was found to be anticompetitive. *Zenith Radio*, 395 U.S. at 132-33.

In a further extension beyond the specific parameters of liability in this case,

notwithstanding the fact that the appellate court declined to impose liability for Microsoft's similarly exclusive agreements with ICPs, the Court will extend to ICPs the protections afforded to IAPs in this portion of the remedy. This extension is justified, in particular, because ICPs are similarly susceptible to the influence of prominent placement in the Microsoft PC operating system products, *Findings of Fact* ¶¶ 139, 313-17.

E. Explicitly Forward-Looking Remedies

The parties' remedy proposals in this case reflect an agreement that effective interoperation between the software running on two or more devices will play an integral role in the successful emergence of new software products and platforms and that fostering such interoperation is an appropriate remedial objective in this case. *See* SPR § 4; SRPFJ § III.D-E. This view is consistent with the case law, *Zenith Radio*, 395 U.S. at 133; *Gypsum*, 340 U.S. at 89, so long as the "forward-looking" nature of the remedy is not so expansive as to be unduly regulatory or provide a blanket prohibition on all future anticompetitive conduct. *See Zenith Radio*, 395 U.S. at 133. The Court agrees that the goal of facilitating interoperation between Microsoft's PC operating system products and third-party middleware, as well as between Microsoft's PC operating system products and third-party server operating systems, is consistent with the goal of "ensur[ing] that there remain no practices likely to result in monopolization in the future." *United Shoe*, 391 U.S. at 250.

The remedy proposals implicitly recognize that the key to interoperation between software products and the devices upon which they run rests with the ability to utilize effectively the APIs exposed by a particular software product. *See* SPR § 4; SRPFJ § III.D. Likewise the proposals acknowledge that the disclosure of the specific method of communication between

PCs and servers will foster interoperation between the two. Such interoperation, in turn, will advance the ability of the server operating system to serve as a middleware-like platform upon which applications can run “for” the PC. Accordingly, both proposed remedies recommend the mandatory disclosure of certain Microsoft APIs, technical information, and communications protocols for the purposes of fostering interoperation.

1. *API Disclosures (Interoperation between Windows and Microsoft Middleware)*

The remedy imposed by the Court with regard to the disclosure of APIs will require Microsoft to disclose those APIs, along with related technical information, which “Microsoft Middleware” utilizes to interoperate with the Windows platform.⁷⁴ To repeat what is, by now elemental, Plaintiffs proceeded to trial on the theory that Microsoft had acted anticompetitively in an effort to boost its own middleware and stifle rival middleware because those products posed a potential “platform threat.” Because the hallmark of the platform threat is the ability to operate on multiple platforms, the disclosure of the interfaces and related technical information relied upon by Microsoft’s own middleware fosters the ability of rival middleware platforms to work well with the ubiquitous Windows. The ready ability to interoperate with the already dominant operating system will bolster the ability of such middleware to support a wide range of applications so as to serve as a platform. *See* Appendix A, Part VI. In this regard, the API disclosures mandated by the Court’s remedy will further the remedial goal of restoring

⁷⁴The Court determined *supra*, Part III.B.3.a, that the term “interoperate” encompasses a continuum, rather than an absolute standard of information exchange. *See also* Appendix A, Part VI.A. Because Microsoft’s disclosure obligations in this portion of the Court’s remedial decree are fixed by the definition of “API” and are merely circumscribed by the requirement that the disclosures be provided for the “sole purpose of interoperating,” the Court does not limit the definition of “interoperate” to any particular degree of interoperation within the reasonable scope of the continuum.

competition to the market. *Ford Motor Co.*, 405 U.S. at 573; *see also Int'l Salt*, 332 U.S. at 401. Furthermore, the disclosures can help to ensure that developers of rival middleware platforms are not disadvantaged, with respect to Microsoft's own middleware developers, in their ability to create products that interoperate with the Windows operating system. *See* Appendix A, Part VI. Such disclosures have the potential to increase the ability of competing middleware to threaten Microsoft's PC operating system monopoly. Disclosures of APIs relied upon by Microsoft software beyond these parameters will not be required because, as discussed in greater detail below (and *supra* Part III.B-C), such disclosures are unrelated to the basis for liability and have not been shown to advance the objectives of a remedy in this case.

2. *Communications Protocols (Interoperation Between PC Operating Systems and Server Operating Systems)*

The remedy imposed by the Court will mandate disclosure and licensing of protocols used by clients running on Microsoft's Windows operating system to interoperate with Microsoft servers. As the Court concluded *supra*, Parts III.B.3.a, III.C.1, server operating systems can perform a function akin to that performed by traditional middleware because they provide a platform for applications running “for” use on a PC. The mandatory disclosure of the communications protocols relied upon by Microsoft's PC operating system to interoperate with its server operating systems will advance the ability of non-Microsoft server operating systems to interoperate, or communicate,⁷⁵ with the ubiquitous Windows PC client. Advancement of the

⁷⁵Recalling again that the term “interoperate” captures a continuum, rather than an absolute standard, *see supra* Part III.B.3.a., in the mandating the disclosure of communications protocols relied upon by Windows clients to interoperate natively with Microsoft servers, the Court's remedial decree utilizes a very simple definition of the term which is intended to capture the reasonable spectrum of the continuum. Hence, the Court's remedial decree requires that Microsoft disclose communications protocols necessary for a Windows client to “interoperate, or communicate, natively” with a Microsoft server. *See* Appendix B.

communication between non-Microsoft server operating systems and Windows clients will further the ability of these non-Microsoft server operating systems to provide a platform which competes with Windows itself. *See* Appendix A, Part VI. Through the disclosure of select communications protocols, the Court’s remedy extends to the most apparent frontier in “platform” threats to Microsoft’s PC operating system monopoly. *Id.* Far from seeking to “return the market to the status quo ante,” *Ford Motor Co.*, 405 U.S. at 573 n.8, this aspect of the Court’s remedy contributes to the elimination of the consequences of Microsoft’s illegal conduct, *Nat’l Soc’y Prof’l Eng’rs*, 435 U.S. at 698.

In all likelihood, the requirement that Microsoft disclose and license the communications protocols utilized by its PC operating systems to communicate with Microsoft’s servers is the *most* forward-looking provision in the Court’s remedy. *See supra* Parts III.B.3.a, III.C.1. Importantly, however, pursuant to the Court’s remedial decree, Microsoft need only disclose and license those protocols which are supported “natively” by Microsoft clients and, hence, do not require the addition of software code to the client in order to interoperate. This limitation is appropriate given the market in this case—Intel-compatible personal computer operating systems. Interoperation made possible by software added onto Microsoft’s PC operating system products is less clearly related to the facts of this case because it expands beyond the relevant market of Intel-compatible PC operating systems to address the ability of an *application* to interoperate with a server. Having concluded that such interoperation bears an insufficient nexus to the market in which liability was imposed, the Court need not address non-native interoperation in its remedy. *See supra* Part III.B-C.

3. Plaintiffs' Flawed Arguments for Overly Broad Disclosures

a. Insufficient Connection to the Liability Findings

Extending their arguments in favor of broader disclosures, Plaintiffs contend that Microsoft will hinder interoperability between clients and servers, as well as between non-PC devices, by the use of its own proprietary technology. The Court addressed the two underlying premises of Plaintiffs' arguments in this regard, *supra* Part III.B-D, in conjunction with the Court's determination of the proper scope of the remedy in this case. The Court first determined that interoperation between devices outside of the PC-to-server/network computing context is too far removed from the theory of liability in this case and that addressing such segments of computing via the remedy would be inappropriate and unjustified given the liability imposed in this case. *See supra* Part III.B-C. The Court next determined that Plaintiffs' attempt to link interoperability as a general concept to the findings of liability in this case is similarly flawed. *See supra* Part III.D. As the Court's conclusion with regard to the latter of these points addresses a significant portion of Plaintiffs' evidence, it bears repeating at this juncture.

Plaintiffs urge the Court to order vast disclosures and royalty-free licensing of technical information based upon their assertion that Microsoft intends in the future, and has previously taken action, to impede developers attempting to achieve cross-platform interoperability by the adoption of proprietary protocols instead of industry standard protocols, through the proprietary extension of industry standards, and through the non-disclosure of certain technical information.⁷⁶ *See, e.g.*, Pl. Prop. Findings of Fact ¶¶ 169-78. As the Court recounted above,

⁷⁶Plaintiffs further argue that broad interoperability disclosures are necessary to “lessen the potential that Microsoft will be able to lock in developers, consumers, and businesses through undisclosed proprietary interfaces and protocols.” Pl. Prop. Finding of Fact ¶ 629. This justification for broad interoperability disclosures is flawed, as it is essentially a new, and vastly

Plaintiffs support their request for such disclosures with testimony describing numerous instances in which Microsoft has implemented proprietary technology much to the consternation of its competitors. *See supra* Part III.D. At their core, Plaintiffs’ allegations with regard to Microsoft’s conduct in the area of interoperability are new allegations of anticompetitive conduct. *Id.* As such, these allegations must be subjected to the rigorous four-part test outlined by the appellate court in this case before the Court can find that Microsoft’s conduct violates antitrust law and demands a remedy. *See supra* Part II.A.3 (describing four-part test); *see also supra* Part III.D; *Microsoft*, 253 F.3d at 58-59.

Plaintiffs insist that the Court can remedy Microsoft’s conduct relating to industry standards, interoperation, and information disclosure in the absence of any such balancing of anticompetitive effect against procompetitive justification because Microsoft’s conduct with regard to this technical information is closely related or “the same or similar” to the conduct which gave rise to liability in this case. While the Court does not quibble with the notion that a remedy can address conduct beyond the specific acts found to be anticompetitive, Plaintiffs are unable to establish a satisfactory link between the interoperability disclosures they seek and the liability in this case. *See supra* Part III.D; *see also* Appendix A, Part VI. The Court fails to see the necessary relationship between any conduct which gave rise to liability in this case and Plaintiffs’ allegations of Microsoft’s new “bad” acts relevant to communications protocols and other industry standards. Plaintiffs’ reliance upon old “bad” acts is similarly unavailing.

Plaintiffs cite to factual findings entered during the liability phase of the case which conclude

unsupported, allegation of attempted monopolization, or a resurrection of the previously Court-rejected “monopoly leveraging” argument. *See supra* Part III.C; *Microsoft*, 1998 WL 614485 (D.D.C. Sept. 14, 1998), at *26-28.

that Microsoft selectively disclosed technical information to third parties, but cannot identify any liability sustained by the appellate court which flows directly from these findings. *See, e.g.*, Pl. Prop. Findings of Fact ¶¶ 171-72.

Plaintiffs make a better argument regarding the relationship between new examples of “selective disclos[ure of] technical information” and liability finding related to the “First Wave Agreements,” as these agreements included the promise of technical information in exchange for exclusivity in browser distribution. *Microsoft*, 253 F.3d at 71-72. This argument, however, also falls short. Tellingly, the appellate court sustained liability for this action only upon a finding that the exclusivity provision in the First Wave Agreements foreclosed a substantial share of the market and thereby had a substantial effect upon the market. *Id.* at 72. Therefore, it is not the preferential provision of technical information that the appellate court condemned, but the exclusive effect of the agreements. *Id.*; *see also supra* Part III.D.

Similarly, the extension of industry standard protocols and the use of proprietary technology could be said to bear a limited connection to the imposition of liability for Microsoft’s deception of software developers regarding the Windows-specific nature of its Java development tools. *Microsoft*, F.3d at 76-77. Still, the appellate court’s focus in this context concerned deception, rather than the “incompatib[ility] with Sun’s cross-platform aspirations for Java [which was] no violation to be sure.” *Id.* at 76. Bearing a far clearer relationship to Microsoft’s alteration of industry standards and use of proprietary technology is the appellate court’s rejection of liability for Microsoft’s development of its own, incompatible, non-cross-platform, JVM. *Id.* at 74-75.

Plaintiffs’ theory of a close relationship between this new “bad” conduct and liability is

significantly flawed by the appellate court's explicit rejection of liability for conduct similar to this allegedly "bad" conduct now identified in the context of communications protocols and industry standards. *Id.* The appellate court carefully weighed each action taken by Microsoft for anticompetitive effect and procompetitive justification and in doing so, the appellate court refused to paint liability with broad strokes. The appellate court instead considered the precise effect of each Microsoft action. In short, Plaintiffs fail entirely to recognize the appellate court's refusal to condemn Microsoft's proprietary extensions and alterations, even where such extensions and alterations hindered interoperability and the development of cross-platform products.

Once again, the Court acknowledges that it has the power to prohibit "admittedly valid parts of an invalid whole," *Bausch & Lomb*, 321 U.S. at 724; *see also Paramount Pictures*, 334 U.S. at 148, where such prohibition will further eradicate the harmful effects of the anticompetitive conduct. The Court disagrees, however, that Microsoft's practice of utilizing undisclosed proprietary extensions of communications protocols and its similar use of proprietary technology can be accurately characterized as a part of the conduct which gave rise to the imposition of liability in this case. Plaintiffs' concern with Microsoft's use of proprietary technology is substantially more far reaching and is, at best, tangentially related to the provision of technical blandishments in exchange for a promise of exclusivity or a limited instance of Microsoft deception regarding a particular Microsoft technical implementation. *See supra* Part III.D. As a result, the Court declines to address this new conduct on the grounds that it more closely resembles the basis for a new allegation of anticompetitive conduct than a mere extension or "part" of conduct previously deemed to violate antitrust law.

Stripped of the support drawn from Plaintiffs' flawed view of the technologies which properly may be characterized as middleware concordant with the liability phase and Plaintiffs' allegations of new anticompetitive conduct in the area of interoperation, Plaintiffs' plea that the Court impose a remedy broadly facilitating interoperation in markets unrelated to the monopoly market is without basis. Even confined to the parameters identified by the Court; namely, interoperation between Windows and "Microsoft Middleware" and interoperation between Windows and Microsoft server operating systems, Plaintiffs' expansive interoperability disclosures are largely unjustified and present a host of problems which warrant their rejection by the Court. *See* Appendix A; Part VI.

b. Harmful Effects of Cloning

Over-broad disclosure, such as that proposed by Plaintiffs, must also be avoided because it will likely enable wholesale copying or cloning of Windows without violating Microsoft's intellectual property rights. *See id.* By cloning, the Court means the creation of a piece of software which replicates the functions of another piece of software, even if the replication is accomplished by some means other than the literal repetition of the same source code. *Id.* In most instances, where a clone is created without a copyright violation, the clone emerges from a process of reverse engineering—which consists of the study of functionality in the original product and the attempt to produce a product which accomplishes the same end. *Id.* The process of cloning the functionality of a competitor's product is usually an expensive and time-consuming undertaking which, if successful, will enable the cloned product to function as a replacement for the original product. *Id.* To impose a remedy which facilitates the cloning of Microsoft's products—a far simpler task than the creation of a new product—would provide a

windfall to Microsoft's competitors. *Id.*

Plaintiffs have been very clear that they seek to terminate the “vicious cycle” of Microsoft dominance in the operating system market by “enabl[ing] would-be competitors to support some of the thousands of applications created for Windows.” Pl. Prop. Findings of Fact ¶ 608. Plaintiffs explain that this goal can be achieved by providing competing software platform developers with sufficient disclosures to provide a substitute, or clone, platform that exposes the same APIs as those which are exposed by Windows. *Id.* Although innocently characterized by Plaintiffs as mere “interoperation” between devices, the evidence establishes that, rather than achieving the goal of “interoperation” as it is understood by most in the industry, and discussed by the Court *supra* in Part III.B.3.a, Plaintiffs seek to achieve a result of perfect interchangeability. *See* Appendix A, Part VI.A. In other words, Plaintiffs seek the disclosure of vast amounts of technical information for purposes of enabling the creation of functional substitutes for various pieces of Microsoft's products. *Id.* The result Plaintiffs envision is nothing other than cloning, which itself is not necessarily “bad” or illegal—but in this Court's view—is not a legitimate goal for the remedy in this case.

Plaintiffs fail entirely to offer economic evidence to support the enabling of the wholesale cloning of Microsoft's PC operating system or virtually any other Microsoft software product. None of the economists who testified, including Plaintiffs' own economist, Dr. Shapiro, could find any economic benefit to or justification for enabling the cloning of the Windows platform. *Id.* In fact, Dr. Shapiro testified that, even in the context of this proceeding, Microsoft has a legitimate interest in protecting itself against the cloning of its products by competitors. *Id.* To broadly enable the cloning of Microsoft's operating system and portions

thereof, as well as Microsoft products unrelated to Microsoft's monopoly, runs contrary to the theory of protection of intellectual property rights. In general, the protection of intellectual property rights encourages innovation by rewarding the innovator's investment in creating something new, while making the innovation available to the public. *See Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 480 (1974). To enable the cloning of Microsoft's products sets this scheme askew by denying Microsoft the returns from its investment in innovation and effectively divesting Microsoft's intellectual property of its value. *See Appendix A, Part VI.* Such a scheme inherently decreases both Microsoft's incentive to innovate as well as the incentive for other software developers to innovate, since they can simply create clones of Microsoft's technology. *Id.* In addition, the homogeneous set of features that would result from the broad availability of Microsoft product clones would defeat some aspects of competition. *See id.*

Plaintiffs' demand for extensive technical information for the purpose of fostering Plaintiffs' skewed view of "interoperation" would provide an unearned windfall to Microsoft's competitors and an unjustified divestiture of Microsoft's intellectual property. *Id.* These undesirable results are not countervailed by evidence that such a remedy would foster competition in the monopolized market. *Id.* To the contrary, the cloning of Microsoft's technology carries the potential to hinder some aspects of competition and discourage innovation. As antitrust law does not exist for the protection of competitors, but for the protection of competition, the Court does not regard this end as a legitimate one. *See Brown Shoe*, 370 U.S. at 320.

c. Harmful Effects of Disclosing Internal Interfaces

Beyond the Court's concern with cloning, the Court rejects any definition of the

parameters of API disclosure which would risk disclosure of an inordinate number of internal interfaces. Microsoft's PC operating systems, like most software, have numerous "internal" interfaces, meaning interfaces that are not documented and disclosed for use by applications. *See* Appendix A, Part VI. There exist a number of technical justifications for operating system vendors to decline to make such internal interfaces public. *Id.* For example, internal interfaces remain internal so that the software developer has the freedom to modify the interface over time. *Id.* Once the interface is disclosed, the developer effectively has a contract with other software developers, who might rely on the interface, that the interface will not be changed. *Id.* Hence, the disclosure of interfaces which the developer intended to maintain internally threatens to stifle innovation and product flexibility. *Id.* In addition, internal interfaces are often unstable, meaning that they will not perform effectively when relied upon by third-party applications. *Id.* The Court finds that there is sufficient harm which flows from the mandated disclosure of a vast quantity of internal interfaces which is not countermanded by competitive benefit such that it is best not to require Microsoft to disclose a multitude of internal interfaces. Accordingly, the Court declines to adopt a remedy provision requiring the extensive disclosure of internal interfaces.

4. Reasonable, Non-Discriminatory Licenses

Although the Court has rejected Plaintiffs' request for the broad disclosure of technical information relating to Microsoft's products, the Court's remedial decree will require Microsoft to make more limited disclosures of APIs, communications protocols, and related technical information in order to facilitate interoperation. Such information constitutes valuable Microsoft intellectual property—one of Microsoft's primary assets. *See* Appendix A, Part VII. Plaintiffs

take the view that Microsoft should not be permitted to charge a reasonable royalty in exchange for the license of its intellectual property.⁷⁷ To require Microsoft to license intellectual property in the absence of a reasonable royalty, as Plaintiffs suggest, constitutes a divestiture of one of Microsoft most valuable assets. *Id.* Such a divestiture is only appropriate where Plaintiffs have adduced evidence of “a clearer indication of a *significant causal connection* between the conduct and . . . maintenance of the market power.” *Microsoft*, 253 F.3d at 106 (emphasis in original). Plaintiffs have failed to provide the Court with any such evidence. *See* Appendix A, Part VII. As a result, the Court remains unconvinced that the causal connection between the anticompetitive conduct and Microsoft’s continued dominance in the Intel-compatible PC operating system market supports a divestiture remedy. *See Microsoft*, 253 F.3d at 107. Moreover, given the indirect connection between the interoperability portions of the remedy and the liability findings in this case, there is very little justification for transforming the most forward-looking portion of the remedy into a drastic structural remedy.

Nevertheless, the Court recognizes that the effectiveness of the disclosure provisions in the Court’s remedy is dependent upon the provision of the relevant technical information on terms which are consistent with the goal of fostering competition. In this regard, the Court must restrict the terms of the mandatory license so as to ensure that the goal of the remedial provision is not thwarted by discriminatory or oppressive license terms. Accordingly, the Court shall prohibit Microsoft from imposing unreasonable or discriminatory license terms, but shall permit Microsoft to require a reasonable royalty for the licenses necessary to exercise the rights

⁷⁷The combination of Plaintiffs’ unjustifiably broad disclosure provision and the royalty-free license would effect a drastic expropriation of substantial amounts of Microsoft’s intellectual property in the absence of *any* compensation to Microsoft and despite the absence of additional evidence of a causal connection.

guaranteed by the final judgment. The reasonableness standard is appropriate and likely necessary in this context because it avoids “involv[ing] the judiciary in the administration of intricate and detailed rules” relating to specific licenses. *Paramount Pictures*, 334 U.S. at 163 (“The judiciary is unsuited to affairs of business management . . .”). At the same time, however, the requirement of reasonableness imposes upon Microsoft an objective standard which curtails Microsoft’s ability to manipulate the terms of the intellectual property licenses in an attempt to circumvent the licensing and disclosure mandates of the remedial decree.

5. *Protection Against Hackers, Viruses, and Piracy*

Despite mandatory disclosure of technical information, it is appropriate to protect Microsoft and, more importantly, consumers, against disclosures which would assist hackers enable the creation of harmful viruses, and promote piracy. *See* Appendix A, Part VIII. Hackers and viruses pose threats both to consumers, as well as to Microsoft’s business, while piracy protection recognizes Microsoft’s copyrights and its subsequent entitlement to protect itself from copyright violation. *Id.* Protection against these threats is appropriate in the context of a remedy and must be factored into any decree. However, these protections must be sufficiently limited so as not to eliminate the value in the above-described disclosure provisions by allowing Microsoft to withhold information selectively and for its own benefit. Balancing the potential benefit of the disclosure provisions in the Court’s remedy against the likely harm which could be caused by allowing this information to fall into the wrong hands, the Court’s remedy will exempt certain material from disclosure in order to preserve the security of Microsoft products against hackers and viruses. Similarly, Microsoft will not be forced to disclose valuable information to firms with a history of piracy, so long as Microsoft does not use claims of piracy as a means by which

to discriminate.

In providing a security exemption for some of the disclosures required by the Court's remedial decree, the Court rejects Plaintiffs' witnesses' criticisms of Microsoft's model for ensuring security for users of its software. *See* Appendix A, Part VIII. These criticisms of Microsoft's security model misunderstand the purpose of this proceeding. The task presently before the Court is not the redesign of Microsoft's products to conform to Plaintiffs' views regarding what product design would be best for consumers and competitors alike. Rather, this Court's sole concern is to craft an effective remedy to redress Microsoft's antitrust violations identified by the appellate court and restore competition to the monopolized market. *Int'l Salt*, 332 U.S. at 400-01. Even in an antitrust suit, there is little justification, and even less desire, to extend this Court's judgment to issues of product design. *Microsoft*, 147 F.3d at 948; *see also Bausch & Lomb*, 321 U.S. at 728. Having credited the testimony of Microsoft's witnesses regarding the need for a security exemption, *see* Appendix A, Part VIII, the Court will permit Microsoft to forego its obligations to disclose and license certain technical information where the disclosure of such information would compromise the security of particular installations of Microsoft's software products. Additionally, as there is no benefit to be derived by advancing the improper interests of industry participants who fail to respect the intellectual property laws, the Court will not require Microsoft to disclose technical information to entities who are, or are likely to be, seeking such information for an improper purpose.

F. Compliance and Enforcement Provisions

The parties have differing visions of the most effective manner of enforcement of the injunctive decree entered as the remedy in this case. The scheme envisioned by Plaintiffs is

marked by its reliance upon a special master, appointed pursuant to Rule 53 of the Federal Rules of Civil Procedure. SPR § 18. Rule 53 generally empowers the Court to appoint a special master, with the following proviso:

A reference to a master shall be the exception and not the rule. In actions to be tried by a jury, a reference shall be made only when the issues are complicated; in actions to be tried without a jury, save in matters of account and of difficult computation of damages, a reference shall be made only upon a showing that some exceptional condition requires it.

Fed. R. Civ. P. 53(b). The D.C. Circuit has interpreted this portion of Rule 53 strictly, holding that the presence of “some deep technological issue” related to interpreting a decree alone is not sufficient to render the issue “complicated” pursuant to Rule 53. *Microsoft*, 147 F.3d at 954-55. Moreover, the D.C. Circuit has expressed disfavor for appointment of a special master in antitrust cases, though they are undoubtedly complex, because such complexity itself “is an impelling reason” for an experienced trial judge rather than a “temporary substitute appointed on an *ad hoc* basis” to preside over the issue presented therein. *Id.* at 955 (quoting *La Buy v. Howes Leather Co.*, 352 U.S. 249, 259 (1957)) (quotation marks omitted). Additionally, the D.C. Circuit clearly stated that references to special masters are improper where the master is called upon to determine the rights of the parties, rather than to enforce such rights. *Id.* at 954. In this regard, the appellate court has likened assessment of rights under a remedial decree to contract interpretation, a matter reserved for the trial judge. *Id.*

Plaintiffs envision the special master in a role which assumes a number of significant functions. Plaintiffs’ proposal provides broadly that the special master is empowered to “monitor Microsoft’s compliance with [the remedial decree] including taking all acts and measures he or she deems necessary or proper for the efficient performance of the [s]pecial

[m]aster’s duties.” SPR § 18.b. The special master in Plaintiffs’ proposed remedy is specifically charged with receiving third-party complaints regarding Microsoft’s compliance with the remedial decree. *Id.* § 18.f. Thereafter, pursuant to a strict time schedule, the special master is obliged to “determine if an investigation is warranted.” *Id.* Should the special master decide to investigate, again pursuant to a stringent time schedule, the complainant and Microsoft are each required to file any documentation and argument on the issue with the special master, who will then schedule and conduct a hearing. *Id.* Within fifteen days of such hearing, the special master must file with the Court its report of factual findings and a proposed order. *Id.*

In light of the applicable law, the Court harbors serious concerns as to the propriety of Plaintiffs’ proposed use of a special master. Plaintiffs fail to explain how, in assessing Plaintiffs’ or a third party’s complaint for merit, the special master will not determine the rights and obligations of the parties under the final judgment in this case—a role reserved exclusively for the district court. To empower the special master to engage in a determination of rights and obligations contravenes the parameters of appropriate use of a special master, as set forth by the D.C. Circuit. *Microsoft*, 147 F.3d at 954. Accordingly, the Court concludes that Plaintiffs’ proposed use of a special master to enforce the final judgment entered in this case is legally improper.

Even if the Court were confident that Plaintiffs’ proposed use of a special master was legally sound, such a conclusion would not allay the Court’s remaining concerns with regard to the logistical difficulties in Plaintiffs’ special master proposal. Most troubling to the Court is the manner in which Plaintiffs propose to abdicate responsibility for enforcement of the remedial

decree.⁷⁸ The first significant aspect of this abdication is the effective provision of enforcement authority to third-parties. Plaintiffs have gone to great lengths to ensure that third-parties have access to the enforcement mechanisms so that such third parties can bring issues to the attention of Microsoft and the Court. As originally proposed, Plaintiffs do not involve themselves in the process of assessing and addressing the complaints of third-parties. Instead, Plaintiffs leave that role to the special master, who is responsible for filtering third-party complaints and assessing their merit. In their Proposed Findings of Fact, Plaintiffs offer an amendment which would inject Plaintiffs into the process by requiring them to determine whether they support further investigation of a third-party complaint. Pl. Prop. Findings of Fact ¶ 1391. This determination, however, does not bind or even influence the special master's assessment of the need for investigation. Accordingly, even if amended as Plaintiffs belatedly suggest, Plaintiffs' remedy proposal remains structured such that Plaintiffs will play a limited and non-integral role in enforcement of the remedial decree.

In the Court's view, Plaintiffs, having initiated and litigated this suit, are the proper parties to evaluate complaints by non-parties regarding alleged violations of the Court's decree. While there is no inherent flaw in giving third parties a voice in this process, as very often such

⁷⁸Of additional concern to the Court is the schedule pursuant to which the special master would be required to proceed through his or her many duties. The Court finds this schedule to be rigid and inflexible, as it does not take into account the volume of complaints which the special master must assess, or the degree of complexity of the issues raised in these complaints. The Court is cognizant of the need for expediency in resolving complaints of non-compliance and lauds Plaintiffs' attempt to ensure their prompt resolution. Still, the Court remains unconvinced that Plaintiffs' desire for structure and certainty has materialized into a workable scheme. Accordingly, the Court declines to adopt the stringent deadlines proposed by Plaintiffs for the resolution of complaints of non-compliance. Mindful of the rapid pace of change in the industry and the harm which will be caused by violations of the Court's remedial decree, the Court assures the parties that complaints of non-compliance will be handled by the Court with the understanding that time is of the essence.

third parties will be most immediately aware of Microsoft's conduct, non-parties should not be allowed direct access to the enforcement mechanisms. Rather, if Plaintiffs want to rely upon the assistance of third parties in monitoring Microsoft's compliance with the Court's decree, it is appropriately Plaintiffs' duty to assess the assertions of such third parties for merit.

In a related vein, the Court perceives discord between the notion that the same individual is to be responsible for the initial screening of complaints of non-compliance, the investigation of such complaints, and the initial adjudication of the merits of such complaints. Plaintiffs have, in effect, charged the special master with the duties of detective, prosecutor, and judge. The Court has little faith that such a scheme would prove to be workable in practice. In addition, in response to the Court's concern regarding the absence of any provision permitting alternative dispute resolution, Plaintiffs have proposed to empower the same special master as mediator. Pl. Prop. Findings of Fact ¶ 1393. This proposal, in the Court's view, serves only to compound the problem of the special master proposal, not resolve it, by adding "mediator" to the already present special master duties of detective, prosecutor, and judge. Plaintiffs propose a special master as a panacea that will relieve them of the burden of enforcing the decree for which they so tirelessly fought and will relieve the Court of the burden of assessing complaints of non-compliance. In short, the Court views such wholesale reliance upon a special master as not only improper, but unworkable.

Plaintiffs' proposal for a special master also presumes that Microsoft will constantly fail to be in compliance with the decree, requiring the persistent involvement of a special master to receive complaints and adjudicate compliance issues.⁷⁹ The Court neither agrees, nor sees the

⁷⁹Plaintiffs have not directed this Court to any evidence that Microsoft has a history of non-compliance with judicial decrees. In this regard, the Court notes that Microsoft was a party

basis for this presumption. Generally, courts presume that parties will adhere to orders of the Court. In this case, the Court has taken great care to provide the parties with a decree which is unambiguous in its terms so as to ensure that Microsoft's compliance is readily achieved. Microsoft requested as much, Tr. at 4984 (Gates), and the law demands such an outcome. *Int'l Salt*, 332 U.S. at 400; *see also* Fed. R. Civ. P. 65(d). The decree adopted by the Court, to borrow Mr. Gates' words, provides "clarity of [Microsoft's] obligations that allows [the company] to direct [its] employees . . . to steer absolutely clear of ever violating one of these things." Tr. at 4984 (Gates). Of course, if Microsoft finds itself repeatedly unable "to steer absolutely clear" of violating the decree, the occasion may arise when a special master's assistance would be appropriate. *Id.* If such an occasion should arise, the Court will revisit the issue. Nevertheless, the Court declines, at this juncture, to appoint a special master.

The remedy in this case will charge Plaintiffs with the obligation of monitoring Microsoft's compliance. While Plaintiffs may rely upon the views of third parties to guide them in this task, the duty of enforcement belongs to Plaintiffs. To ease the burden on the Court and on Microsoft in addressing Plaintiffs' concerns, the Court will require Plaintiffs to form a committee to coordinate enforcement of the remedial decree. Such a committee will serve to minimize duplication of enforcement activities and requests of the Court and Microsoft.

Beyond the special master provision of Plaintiffs' proposed remedy, the parties' proposed remedial decrees differ in that Microsoft's proposal provides for a largely independent "technical committee" responsible for monitoring enforcement, reporting to Plaintiffs, and facilitating

to a 1995 consent decree with the Department of Justice in which Microsoft was alleged to have violated the decree. Although a contempt proceeding commenced, Microsoft was ultimately absolved of the contempt charge because the relevant portion of the decree was found to be ambiguous. *See Microsoft*, 147 F.3d 935.

dispute resolution. SRPFJ § IV.B, D. Plaintiffs have been unwaveringly critical of Microsoft's proposal for a technical committee. *E.g.*, Pl. Prop. Findings of Fact ¶¶ 1380-87. As the technical committee provision exists largely to assist Plaintiffs in enforcing the provisions of the final judgment in this case, if Plaintiffs do not want to rely upon a technical committee, the Court sees little reason to require them to do so. Accordingly, the Court declines to appoint a technical committee in the form proposed by Microsoft.

The remaining enforcement provisions in the parties' respective remedy proposals, as Plaintiffs readily acknowledge, are not widely divergent. For example, both suggest a requirement that Microsoft employ an officer with duties to ensure Microsoft's compliance with the decree. Despite this general similarity, however, the parties envision a conceptually different role for the compliance officer. Plaintiffs envision the compliance officer as a high-level Microsoft employee who retains a significant amount of autonomy and independence from the corporation. As a result, the compliance officer position proposed by Plaintiffs is appointed by a committee comprised of at least three members of the Microsoft board of directors who are neither present, nor former, Microsoft employees. SPR § 17.a-b. The compliance officer in Plaintiffs' proposal is protected against abrupt termination by a provision which permits removal only by the Chief Executive Officer of Microsoft with the concurrence of the committee that appointed the officer. *Id.* § 17.d. The compliance officer reports to the Chief Executive Officer and to the committee which appointed him or her. *Id.* § 17.b. In addition, Plaintiffs' proposed compliance officer is responsible for reporting to Plaintiffs regarding Microsoft's compliance with the Court's remedial decree. *Id.* § 17.c.

In contrast, while the compliance officer position proposed by Microsoft has similar

duties to those identified in Plaintiffs' proposed remedy, the role of the compliance officer is more clearly that of a Microsoft employee, rather than a semi-independent monitor. As a result, Microsoft's proposed enforcement provision does not specify the details of the compliance officer's hiring or termination. SRPFJ § IV.C. Likewise, the Microsoft version of the compliance officer is not required to report on compliance matters to Plaintiffs. *Id.*

While either provision would likely prove to be workable in practice, the Court sees merit in the safeguards of impartiality imposed by Plaintiffs' version of a compliance officer. Of course, Microsoft is always free, and even encouraged, to dedicate additional employees, whose role more closely resembles that suggested by Microsoft's proposed remedy, to perform additional compliance functions. Such dedication, however, will not alter the compliance officer's responsibilities.

The Court remains concerned, however, with the particular aspect of Plaintiffs' remedy proposal requiring the compliance officer to deliver a copy of the order of remedy in this case to, and obtain a certification of understanding and compliance from, "each officer, director, and Manager, and each platform software developer and employee involved in relations with OEMs, ISVs, IHVs, or Third-Party Licensees." SPR § 17.c.i. In contrast, Microsoft's remedy proposal requires the compliance officer to distribute the decree to and obtain a similar certification of understanding and compliance only from Microsoft's officers and directors. SRPFJ § IV.C.3. The Court finds this aspect of Plaintiffs' proposal to be largely unnecessary and somewhat at odds with Plaintiffs own emphasis on the extent to which Microsoft's "senior executives . . . were actively involved in and/or directed conduct found to be anticompetitive." Pl. Prop. Findings of Fact ¶ 1326. Plaintiffs have not identified any evidence which indicates that lower-

level employees were responsible for Microsoft's illegal acts and strategies. In light of this absence of evidence, there seems little justification for requiring each such employee to certify compliance with the remedial decree in this case and risk contempt for violation of the decree. Far more appropriate is to charge Microsoft's directors and officers with ensuring that their business strategy, as implemented by their subordinates in the corporate structure, does not violate the Court's remedial decree. Moreover, to the extent that such lower-level employees engage in conduct which violates the Court's remedial decree, Microsoft, as a corporation, will remain liable for such violation. Accordingly, the remedy imposed in this case will not require the over-broad certification of compliance by subordinate employees proposed by Plaintiffs.

Reflecting the similarities in the remaining portions of the two proposed remedial decrees, the remedy adopted by the Court will provide Plaintiffs, acting only after consultation with their enforcement committee, reasonable access to Microsoft's source code, books, ledgers, accounts, correspondence, memoranda, and other correspondence, access to Microsoft employees for interview, and the right to request and receive written reports from Microsoft on any matter contained in the Court's remedial decree. Plaintiffs will, of course, be bound to limit any use of information obtained through these means for the purpose of ensuring Microsoft's compliance with the remedial decree, or as otherwise required by law. Similarly, should information and documents provided to Plaintiffs be subject to disclosure to a third party, Microsoft will not be deprived of the opportunity to claim protection pursuant to Federal Rule of Civil Procedure 26(c)(7).

G. Term of the Decree

Evidence on the subject of the proper term for the Court's behavioral remedy in this case

is sparse and largely unenlightening. *See* Appendix A, Part IX. One fact, however, is abundantly clear from the record: there exists substantial uncertainty as to the future demands of the software industry. Due to rapid pace of change in this arena, it is particularly difficult in this case to predict what effect the present remedy will have a decade from now. The appellate court voiced precisely this concern in its opinion last August:

By 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. Conduct remedies may be unavailing in such cases, because innovation to a large degree has already rendered the anticompetitive conduct obsolete (although by no means harmless).

Microsoft, 253 F.3d at 49.

There is little dispute that many of the acts which gave rise to the imposition of liability in this case have long since ceased. Similarly, there is no dispute that the industry at issue in this case is remarkable for its constant and rapid change. Nevertheless, Plaintiffs argue that the “there is no reason for an effective forward-looking remedy to depart from the standard 10-year term of antitrust decrees.” Pl. Prop. Concl. of Law at 79. In making this assertion, Plaintiffs place substantial importance upon the contention that ten years is the “standard” in antitrust decrees. Plaintiffs derive this “standard” argument from the fact that ten years is the “standard term for antitrust consent decrees” entered into by the Antitrust Division of the United States Department of Justice. Pl. Prop. Findings of Fact ¶ 1441 (emphasis added). While the Court has not doubt that the official policy of the Antitrust Division is both logically and legally sound, the Court is neither bound, nor persuaded by Plaintiffs’ reliance upon Antitrust Division policy to justify the ten-year term of their proposed decree.

Imposing a remedy in this case is not unlike trying to shoe a galloping horse. Were the Court to impose a ten-year term, it is likely that, by the latter half of the term, the market will have long since sent the horse to pasture in favor of more advanced technology. Thus, although the remedy crafted by the Court is undoubtedly forward-looking, it is beyond the capacity of this Court, counsel, or any witness, to craft a remedy in 2002, for antitrust violations which commenced in the mid-1990s, which will be appropriately tailored to the needs of a rapidly changing industry in 2012. An antitrust decree should endure only so long as necessary to ensure competition. The Court is unconvinced that the imposition of a decree for greater than five years will further that goal. Accordingly, the Court's remedial decree will persist for five years from its effective date. As an incentive for Microsoft to comply with the terms of the decree, however, the Court specifically reserves the right to extend the term of the decree for up to two years upon a finding that Microsoft has engaged in a pattern of willful and systemic violation of the Court's decree.

H. Other Provisions in Plaintiffs' Proposed Remedy

Plaintiffs' remedy proposal includes a number of provisions that the Court has considered but rejected variously as unsupported by the evidence, unconnected to the appellate court's findings of liability, or potentially harmful to the industry and to consumers. In the following paragraphs, the Court sets forth more specifically the fatal flaws in these portions of Plaintiffs' proposed remedy. In particular, the Court emphasizes, where applicable, the absence or inadequacy of an economic analysis of the effect of a particular remedy proposal. Where a remedy inflicts drastic change upon Microsoft or its products that is likely to broadly affect the industry, as well as consumers, the complete absence, or gross inadequacy, of an economic

analysis of the impact of the provision upon competition is conspicuous and troubling.

1. Open-Source IE and Mandatory Auction of Office

Two sections in Plaintiffs' proposed remedy suggest a divestiture of two of Microsoft's most valuable assets, IE and Microsoft Office. Plaintiffs fail entirely to justify the inclusion of these purportedly "innovative" provisions. *See* Appendix A, Part X.A. First and most striking, the theory pursuant to which Plaintiffs propose these provisions ignores the theory of liability in this case. The divestiture provisions serve to directly benefit non-Microsoft operating systems, in particular Linux and Apple. It is well recognized that the theory of liability in this case concerns Microsoft's response to cross-platform applications, not operating systems, that displayed the potential to offer platform services such that their popularity would greatly simplify the porting of applications *en masse* from operating system to operating system. *See Microsoft*, 253 F.3d 34. To offer a remedy which directly benefits other operating systems ignores the direction and impact of Microsoft's anticompetitive behavior and advances a theory of competition discounted during the liability phase of this case. Indeed, Judge Jackson concluded, and Plaintiffs do not dispute, that the naturally existing applications barrier to entry hindered the ability of Apple and Linux to compete with Windows. *Findings of Fact* ¶¶ 47, 50-51. The district court did not conclude that Microsoft engaged in any anticompetitive action which directly hindered these operating systems' ability to compete with Windows; instead, that difficulty existed as a function of the *applications* barrier to entry.⁸⁰ The harm—if any—to

⁸⁰Although Microsoft's dealings with Apple did play a role in the imposition of liability, the act for which Microsoft was found to have violated § 2 concerned Microsoft's targeting of Navigator, rather than Microsoft's direct competition with Apple. *Microsoft*, 253 F.3d at 72-74. Microsoft's conduct relating to Apple was found to be anticompetitive because it excluded Navigator from a significant portion of the market. *Id.* at 73-74.

competing operating systems is indirect, arising from the unfulfilled potential of middleware to reduce the applications barrier to entry. Given these facts, it is difficult to understand what role the bolstering of particular operating systems will play in redressing anticompetitive conduct directed at middleware.

Similarly antithetical to the goal of the remedy in this case is the fact that the divestiture remedies relevant to IE and Microsoft Office proposed by Plaintiffs will provide significant benefit to competitors, but have not been shown to benefit competition. *See* Appendix A, Part X.A. It is fundamental that “the antitrust laws . . . were enacted for ‘the protection of competition, not competitors.’” *Cargill*, 479 U.S. at 110 (quoting *Brown Shoe*, 370 U.S. at 320) (emphasis in original); *see also Brunswick*, 429 U.S. at 488. Rather than rectify injury to consumers caused by diminished competition, Plaintiffs’ proposed divestitures of IE and Office merely serve to shield Microsoft’s competitors from the rigors of the marketplace.⁸¹ *See* Appendix A, Part X.A.

Finally, the Court concludes that these proposals, as divestitures of Microsoft’s primary asset—intellectual property—are “structural remedies” as discussed by the appellate court. *See id.*; *Microsoft*, 253 F.3d at 105-06. The appellate court advised that where the Court was unconvinced of the causal connection between the conduct found to be anticompetitive and the company’s position in the relevant market, “it may well conclude that divestiture is not an

⁸¹In particular, Plaintiffs’ counsel offered the argument that the divestiture of IE was an appropriate remedy based upon the theory that it is the “fruit” of Microsoft’s illegal conduct. *See* Pl. Prop. Findings of Fact ¶ 1116 (citing *Microsoft*, 253 F.3d at 103). Neither the evidentiary record from the liability phase, nor the record in this portion of the proceeding, establishes that the present success of IE is attributable entirely, or even in predominant part, to Microsoft’s illegal conduct. *See* Appendix A, Part X.A. Accordingly, the Court rejects Plaintiffs’ argument that IE should be divested as the “fruit” of Microsoft’s illegal conduct.

appropriate remedy.” *Microsoft*, 253 F.3d at 107. In this instance, not only is the Court unconvinced that there exists a sufficient relationship between the liability findings and this aspect of the proposed remedy, but the Court is unable to conclude that Plaintiffs have sufficiently bolstered the “causal connection” referenced by the appellate court to justify divestiture, in any form, as an appropriate remedy in this case. *Id.* at 107. Accordingly, the Court declines to adopt the open-sourcing of IE or the mandatory auction of Office licenses as remedies in this case. *See also Yamaha Motor*, 657 F.2d at 984 (rejecting injunction on the ground that its provisions extended “beyond any reasonable relationship to the violations found”).

2. *Ban on Knowing Interference*

Citing to the series of new “bad” acts the Court described *supra*, Part III.D, Plaintiffs suggest that the remedy imposed by the Court should prohibit Microsoft from engaging in any action that interferes with the compatibility of a non-Microsoft product and Microsoft Windows or other Microsoft software products. SPR § 5. Plaintiffs would exempt from this prohibition action which is justified by “good cause.” *Id.* Because the Court has already determined that most of the new “bad” acts identified by Plaintiffs are not appropriately treated as being of the same type or class as those acts which gave rise to the liability in this case, *see supra* Part III.D, imposition of this proposed provision is not justified by the Supreme Court’s now familiar holding in *Zenith Radio*, 395 U.S. at 133. Furthermore, Plaintiffs have not established that a ban on “knowing interference” will foster competition in the monopolized market or among software with the capacity to threaten Microsoft’s monopoly. *See Appendix A, Part X.C.*

Of greatest concern to the Court, however, is the interference with Microsoft’s product

design that is invited by the proposed provision. *Id.* Enforcement of the provision would engage the Court in an analysis of whether “good cause,” as a technical matter, existed for Microsoft’s product design decisions. The evidence indicates that such a provision, because of its breadth and potential ambiguity, has the potential to hinder technological innovation. *Id.* Heeding the admonition that courts should not involve themselves in product design and that hindrance of technological innovation contravenes the purposes of antitrust law, *Microsoft*, 147 F.3d at 948, the Court rejects Plaintiffs’ proposed ban on “knowing interference” with compatibility.

3. *Support for Predecessor Versions*

Plaintiffs also propose a remedy provision requiring Microsoft to maintain full support and licensing for immediate predecessors to the most recent version of its Windows operating system. Plaintiffs argue that such a provision will encourage the customization of versions of Windows by ensuring that Microsoft will not undermine such customization with new releases of its operating system. Not only did the Court find Plaintiffs’ concern in this regard to be without basis in fact, *see* Appendix A, Part X.D, but the Court has already concluded that customization will not be mandated by the remedy in this case, *see supra* Part IV.A. As the Court discussed *supra* Part IV.A, a remedy in this case that forces Microsoft to permit “drastic alteration” of its copyrighted work runs afoul of the appellate court’s opinion that Microsoft did not act anticompetitively in restricting such alteration. *Microsoft*, 253 F.3d at 63. Furthermore, support for predecessor versions was shown to have a great likelihood of imposing significant costs upon Microsoft, slowing the pace of development, reducing beneficial network effects, and increasing consumer confusion. *See* Appendix A, Part X.D. The slowing of innovation cannot be squared with the objectives of antitrust law. *Microsoft*, 147 F.3d at 948. Because there is no evidence

that the benefit to competition would outweigh any of the substantial costs of such a provision and given the absence of a connection between this aspect of Plaintiffs' proposed remedy and the liability findings in this case, *see* Appendix A, Part X.D, the Court rejects mandatory support of predecessor versions of Windows as a remedy. *Ford Motor Co.*, 405 U.S. at 573 (holding that antitrust relief should "restore competition"); *see also Yamaha Motor*, 657 F.2d at 984.

4. Ban on Contractual Tying

Plaintiffs suggest that the remedy in this case should include a provision which bans Microsoft from conditioning the grant, to any species of licensee, of a Windows license upon an agreement to license, promote, distribute, or otherwise support, a Microsoft middleware product. The broad ban proposed by Plaintiffs is not directly connected to any finding of liability. Rather, the ban appears more appropriate as a remedy for a finding of § 1 liability for the illegal tying of products. The appellate court rejected a *per se* analysis for tying in this case and accordingly, reversed the district court's imposition of § 1 liability for the integration of Windows and IE. *Microsoft*, 253 F.3d at 84-95. In doing so, the appellate court noted that there are often efficiencies and other benefits to be gained from a tie. *Id.* at 87-88. The complete ban on contractual tying proposed by Plaintiffs not only ignores this significant observation, but it proceeds as if *per se* liability had been imposed for Microsoft's integration of IE and Windows. In this regard, the proposed ban on contractual tying is wholly unrelated to any finding of liability affirmed by the appellate court in this case.

Plaintiffs do not offer sufficient evidence to explain the benefit to competition to be gained by this regulation of predominantly, if not entirely, lawful conduct. *See* Appendix A, Part X.E. The evidence presented to the Court establishes that tying in the software market often

produces a benefit to consumers. *Id.* Consequently, a ban on *all* such tying will not benefit consumers. *Id.* Because Plaintiffs have not shown that a blanket ban on all contractual tying of products to Windows will benefit competition, and because it appears that such a ban has the likelihood of harming consumers, the Court determines to exclude any such provision from the remedy in this case.

5. *Ban on Retaliation for Participation in This Case*

Plaintiffs propose that the remedy imposed by the Court should regulate Microsoft's conduct with regard to participants in this lawsuit and the suit simultaneously filed by the United States against Microsoft. Although touted as a ban on retaliation, Plaintiffs' proposal is written far more broadly, applying to "any action adversely affecting [participants]. . . based directly or indirectly, in whole or in part, on . . . participation" in this litigation. SPR § 9; *see* Appendix A, Part X.F. As a practical matter, the Court observes that almost any action contrary to the interests of the multitude of Microsoft competitors that participated in this litigation could be subject to a claim that such action was "based on" participation in this litigation. *See id.* Undoubtedly, competitors regularly engage in action adverse to one another without violating the law, or even widely accepted norms of business ethics. Given the breadth of conduct implicated in Plaintiffs' proposed provision, the Court has little doubt that such a ban would curtail significant amounts of legitimate conduct and subject Microsoft to countless accusations of improper "adverse[]" action arising out of such legitimate conduct. *Id.*

While the Court by no means condones retaliatory conduct by Microsoft, the Court fails to see the necessity for a provision of the type proposed by Plaintiffs. Plaintiffs have failed to justify this provision with any showing that Microsoft has or would retaliate against the

participants in this suit. *Id.* Although the liability in this case demonstrates a consistent practice of retaliation against other industry participants, this retaliation has been confined to Microsoft's response to the business decisions of its competitors. *See Microsoft*, 253 F.3d at 72-74 (describing Microsoft's threat of retaliation against Appel), 77-78 (describing Microsoft's threat of retaliation against Intel). Indeed, Microsoft has been engaged in litigation in this District for seven years, and Plaintiffs were unable to proffer the testimony of a single witness that his or her firm had actually suffered any adverse action by Microsoft attributable to its participation. Moreover, for the great majority of witnesses who participated in this proceeding, their firms will receive protection from retaliation by Microsoft pursuant to the anti-retaliation provisions described *supra*.⁸²

Having weighed the very limited evidence provided in relation to this portion of Plaintiffs' proposed remedy, the Court finds that the balance of the evidence is grossly insufficient to justify an unmitigated ban on Microsoft taking any action which might be adverse to the multiple participants in this litigation. Based upon these findings, the Court determines that there is no reason to impose such a restriction upon legitimate business conduct. As a ban on adverse action like the one suggested by Plaintiffs would likely inflict greater harm than benefit upon competition, and the ban itself is not connected to any specific conduct by

⁸²The only testimony that touched on this topic was the testimony of Anthony Fama, of Gateway. Mr. Fama alleged that Microsoft had "threatened" retaliation against his firm in response to Mr. Fama's participation in this litigation. *See* Appendix A, Part X.F. Although the Court cannot agree with Mr. Fama that Microsoft's conduct was, in fact, a threat, *see id.*, the Court observes that, pursuant to the Court's remedial decree, Gateway will receive protection from any true retaliation or threat thereof which is based upon its support for products competitive with Microsoft's monopoly product, as well as the many other protections afforded to OEMs which the Court described above. The Court regards such protections as entirely sufficient to address the concerns raised by Mr. Fama.

Microsoft which was found to violate antitrust law, the Court finds that this relief is not properly tailored to the liability imposed. *Microsoft*, 253 F.3d at 107.

6. *Mandatory Java Distribution*

Plaintiffs next propose that Microsoft should be required to distribute a Sun-compliant JVM with each copy of its Windows operating system. This proposed remedial provision is broadly related to the fact that Microsoft's illegal conduct in this case was aimed, in large part, at the Sun-compliant Java platform. *See Microsoft*, 253 F.3d at 74-78. Notwithstanding this general connection to the liability phase, the evidence presented by Plaintiffs fails to show that the proposal for mandatory support for Sun-compliant Java would provide a substantial benefit to competition. *See Appendix A, Part X.G.* The evidence does, however, indicate that one of Microsoft's primary competitors, Sun Microsystems, has a vested interest in such a remedy provision and would benefit greatly from the same. *Id.*

Plaintiffs regard the Sun-compliant Java platform as a significant competitive threat to Microsoft's operating system dominance and view the mandatory distribution of the Sun-compliant Java platform as a means by which to bolster the platform's ability to break through the applications barrier to entry and challenge Microsoft's monopoly. In this regard, Plaintiffs contend that the Court's mandate of distribution is necessary, as there is no other means by which Java can achieve sufficient distribution to provide a viable platform. The Court rejects this assertion as unsupported by the record. *See id.* Once Microsoft's anticompetitive restraints on channels of Java distribution are lifted by other portions of the Court's remedy, any continuing lack of industry interest in Sun-compliant Java is not a problem appropriately resolved by this Court in this litigation. It is the problem of a particular competitor and not

competition itself and, therefore, not appropriate for redress under antitrust law. *See Spectrum Sports*, 506 U.S. at 458 (“The purpose of the [Sherman] Act is not to protect businesses from the working of the market; it is to protect the public from the failure of the market. The law directs itself not against conduct which is competitive, even severely so, but against conduct which unfairly tends to destroy competition itself. It does so not out of solicitude for private concerns but out of concern for the public interest.”).

Even if the Court regarded Plaintiffs’ view of the potential of the Java platform as accurate, the Court would nevertheless reject the mandatory distribution of a Sun-compliant JVM as a remedy in this case. The Court does not regard an appropriate remedy in this case as one which singles out particular competitors and anoints them with special treatment not accorded to other competitors in the industry, thereby providing an advantage to those particular firms in their efforts to compete with Microsoft. *See* Appendix A, Part X.G. The economic testimony presented in this proceeding uniformly rejected restoration of competition for particular competitors. *See id.* Rather, such restoration should be “technology neutral.” *Id.* Plaintiffs’ proposal in this regard is devoid of such neutrality. While an appropriate remedy should open the doors to competition, favoritism of one market participant over another in a remedy provision places the Court in the improper position of exerting too much control over the market. *See Spectrum Sports*, 506 U.S. at 458-59; *Cargill*, 479 U.S. at 110 (quoting *Brown Shoe*, 370 U.S. at 320); *see also Brunswick*, 429 U.S. at 488. The Court’s role is to end the illegal conduct and to make every effort to protect against conduct of the same type or class, not to engineer a particular market outcome. *Zenith Radio*, 395 U.S. at 132; *Ford Motor Co.*, 405 U.S. at 573; *Gypsum*, 340 U.S. at 88-89. For all of these reasons, the Court will not impose a

mandatory Java distribution requirement upon Microsoft.

7. *Adherence to Industry Standards*

Based almost entirely on complaints and fears regarding Microsoft's history and ability to alter standards which affect interoperability, *see supra* Part III.D, Plaintiffs propose a provision which requires that whenever Microsoft claims to support a particular industry standard, it shall be bound to support the standard until it publicly disclaims such support or the standard itself expires or is rescinded by the standard-setting body. In addition, Plaintiffs propose that this same portion of the remedy mandate that Microsoft continue to support an industry standard any time it makes a proprietary alteration to the standard.

To justify these proposals, Plaintiffs rely heavily upon the appellate court's imposition of liability for Microsoft's deception of software developers regarding the Microsoft-specific nature of its Java development tools. *Microsoft*, 253 F.3d at 76 This deception led software developers to believe that Microsoft's development tools would produce cross-platform Java-based software, rather than software that ran only on Windows. *Id.*

The former portion of this provision is little more than an attempt to order Microsoft to obey the antitrust laws, as Plaintiffs propose a provision which says quite simply to Microsoft: "Don't deceive anyone." Plaintiffs have appropriately referred to this provision as a "truth-in-standards" provision. Such a provision, however, is an inappropriate way to remedy anticompetitive conduct. The Supreme Court, in *Zenith Radio*, held that the Court may not simply enjoin "all future violations of the antitrust laws." 395 U.S. at 133. Rather a remedy "should be tailored to fit the wrong." *Microsoft*, 253 F.3d at 107. If the deception were ongoing, of course, the obvious remedy would be an order requiring Microsoft to cease that conduct.

However, there is no evidence that this deception, or any similar deception, has persisted. *See* Appendix A, Part X.H. Accordingly, the Court finds that there is no showing that the broad order to obey the antitrust laws by not engaging in any deception similar to that of the Java developers is either appropriate or necessary.

Turning to the other significant aspect of this provision, the requirement that Microsoft maintain support for industry standards where it has made proprietary modifications to the standards, the Court observes that this aspect of the proposal is unrelated to any finding of liability. Instead, Plaintiffs seek to prevent Microsoft from engaging in conduct which was found, at least in the specific instance addressed in this proceeding, to have competitive benefits which outweigh the anticompetitive effect of the conduct. *Microsoft*, 253 F.3d at 74-75 (“[A] monopolist does not violate the antitrust laws simply by developing a product that is incompatible with those of its rivals. In order to violate the antitrust laws, the incompatible product must have an anticompetitive effect that outweighs any procompetitive justification for the design.”) (citation omitted). In complete disregard of this holding, Plaintiffs seek to restrict Microsoft’s ability to engage in such conduct by requiring that Microsoft continue to support standards which it has chosen to modify. Although the Court has the power to address with its remedy conduct beyond that which was found specifically to violate the antitrust laws, such expansion beyond the liability findings must be justified by a showing that the regulation of lawful conduct will advance the interests of competition. Plaintiffs’ “truth-in-standards” proposal does not meet this threshold, as even when viewed generously, it is likely to have only a modest effect on competition, if it has any effect at all. *See* Appendix A, Part X.H.

Plaintiffs’ proposal regarding adherence to industry standards suffers from an additional,

and potentially more serious, flaw in that it imposes unworkable conditions. A remedial decree should be “as specific as possible, not only in the core of its relief, but in its outward limits, so that parties may know[] their duties and unintended contempts may not occur.” *Int’l Salt*, 332 U.S. at 400. The evidence shows that compliance with “industry standards” is difficult to determine and that such a determination is largely a subjective undertaking. *See* Appendix A, Part X.H. Given this fact, a requirement that Microsoft adhere to industry standards will likely prove unenforceable. *Id.* Such a provision has the potential of subjecting Microsoft to countless claims of non-compliance which may never be resolved with any certainty. *Id.* As a result, the Court regards such a provision, which will produce minimal benefit to competition, as undesirable.

8. *Monitoring of Microsoft’s Intellectual Property Claims*

Plaintiffs propose that, in conjunction with the Court’s enforcement of the remedial decree, the Court should review evidence raised by Plaintiffs or other third parties that Microsoft has brought or threatened to bring a “groundless” claim of intellectual property infringement. Plaintiffs fail entirely to establish any rational connection between this proposed provision and the imposition of liability for violations of § 2 of the Sherman Act. *See* Appendix A, Part X.I. Likewise, Plaintiffs have not established that Microsoft has, or is likely to, engage in such conduct, or that review of Microsoft’s intellectual property claims for “groundlessness” will benefit consumers or competition.⁸³ *Id.* Of additional concern is the fact that, on its face, this

⁸³Truly frivolous claims are prohibited by Rule 11 of the Federal Rules of Civil Procedure. Fed. R. Civ. P. 11. The Federal Rules further prohibit the presentation of claims and court filings in general for “any improper purpose, such as to harass.” Fed. R. Civ. P. 11(b)(1). Violations of Rule 11 are punishable by the imposition of sanctions not only upon counsel, but upon the parties themselves. Fed. R. Civ. P. 11(c). Plaintiffs have not established that additional protections against groundless claims of intellectual property infringement are either appropriate

provision in Plaintiffs' remedy proposal threatens to chill Microsoft's legitimate enforcement of its intellectual property rights. *Id.* Because Microsoft is an intellectual property company, *see* Appendix A, Part VII, such a chill could, in contravention of the goals of antitrust law, stifle Microsoft's innovation and investment. *Microsoft*, 147 F.3d at 948; *see also Spectrum Sports*, 506 U.S. at 458. In short, Plaintiffs have not established that the proposed monitoring of Microsoft's intellectual property claims is anything other than improper "interfere[nce] with [Microsoft's] ordinary commercial practices." *Bausch & Lomb*, 321 U.S. at 728. Given the overwhelming lack of evidentiary support and legal justification for the imposition of such a provision, the Court declines to incorporate this aspect of Plaintiffs' remedy proposal into the remedy in this case.

9. Investment Reporting

Plaintiffs have also suggested that the remedy in this case should require Microsoft to report its investments, regardless of size or significance, in a wide array of technologies and businesses. Plaintiffs argue that such reporting will assist law enforcement authorities in monitoring Microsoft's investment activities for violations of the antitrust laws. Plaintiffs, however, have not presented evidence that any law enforcement authorities would be interested in receiving such information. *See* Appendix A, Part X.J.

This suggested provision is so far removed from any liability in this case, it is difficult to understand the manner in which Plaintiffs believe such a provision will satisfy the objectives of an antitrust remedy. Plaintiffs acknowledge that their proposed provision will not actually prohibit any conduct, but will only provide information to law enforcement authorities. *Id.*

or necessary. *See* Appendix A, Part X.I.

Plaintiffs do not offer any testimony which indicates that this proposed provision will have any effect on competition in the relevant market. *Id.* Therefore, there is neither evidence nor argument that competition will benefit, nor is there any showing that conduct related to anticompetitive activity will cease as a result of the proposed provision. *Id.* Based upon this evidence, or more accurately, the lack thereof, and in light of the lack of any relationship to the liability imposed in this case, the Court declines to adopt Plaintiffs' view that such a provision is either appropriate or useful as part of a remedy in this case.

V. CONCLUSION

Recognizing, as they must, the confluence of the rapid pace of change in the software industry and the delays inherent in antitrust litigation, Plaintiffs sought to gather all existing complaints regarding Microsoft's business practices and bring them before the Court at this late stage in the case. In doing so, Plaintiffs attempted to circumvent the arduous process which necessarily precedes the imposition of antitrust liability and, instead, proceeded directly to seek a remedy for the readily identifiable aspects of Microsoft's business conduct that other industry participants find objectionable. Though an appropriate remedy may be forward-looking and address conduct beyond the specific acts found to be anticompetitive, Plaintiffs are mistaken in thinking that the imposition of § 2 liability under the Sherman Act for unlawful monopoly maintenance in the market for Intel-compatible PC operating systems permits the Court to impose a remedy in areas unrelated to the monopoly market. This suit, however remarkable, is not the vehicle through which Plaintiffs can resolve all existing allegations of anticompetitive conduct which have not been proven or for which liability has not been ascribed.

The appellate court could not have been clearer in its admonition that this Court's decree

should be “tailored to fit the wrong creating the occasion for the remedy.” *Microsoft*, 253 F.3d at 107. Yet despite this admonition, in their request for relief, Plaintiffs have shown little respect for the parameters of liability that were so precisely delineated by the appellate court. In many instances, therefore, this Court has had little choice but to reject Plaintiffs’ remedial suggestions on the grounds that they are unjustifiably in conflict with the imposition as well as the rejection of liability in this case.

Additionally, the Court observes that a number of the remedial provisions proposed by Plaintiffs would require drastic alterations to Microsoft’s products, as well as to aspects of its business model which do not involve illegal conduct. Plaintiffs present little, if any, legitimate justification for these remedies, and in most instances, these proposals are not supported by any economic analysis. Instead, it appears that these types of remedial provisions seek to convert certain legitimate aspects of Microsoft’s business model and/or product design into a model which resembles that of other industry participants simply for the sake of changing the status quo. Certain of Microsoft’s competitors appear to be those who most desire these provisions and, concomitantly, are the likely beneficiaries of these provisions, while other competitors in the relevant market would not necessarily benefit. In bringing these types of proposals before the Court, Plaintiffs again misunderstand the task presently before the Court—to *remedy* Microsoft’s antitrust violations. General changes to the lawful aspects of Microsoft’s business model or product design of the type proposed by Plaintiffs do not themselves provide a remedy, nor have Plaintiffs established that such changes are required, or even appropriate, in conjunction with a remedy. Accordingly, the Court has rejected those aspects of Plaintiffs’ remedy proposal which would impose such changes.

Instead, the appropriate remedy, which the Court has devised and explained at length in this Memorandum Opinion, is carefully tailored to fit the wrong creating the occasion for the remedy. The Court's remedy exceeds a mere proscription of the precise conduct found to be anticompetitive and is forward-looking in the parameters of the relief provided. Moreover, the remedy imposed by the Court is crafted to foster competition in the monopolized market in a manner consistent with the theory of liability in this case.

In particular, the Court's remedy addresses, to the extent appropriate, Plaintiffs' desire that Microsoft disclose technical information to foster interoperability between Microsoft's PC operating system software and third-party products, as well as between Microsoft's PC operating system products and server operating systems. The mandatory disclosures between Microsoft's monopoly product and server operating systems acknowledge the competitive significance of server/network computing as the newest type of "platform threat" to Microsoft's dominance in the relevant market. The disclosures mandated by the Court will likely prove beneficial to the development of middleware platforms and the functional equivalent of the middleware platform provided by server operating systems.

Likewise, the Court's remedy satisfies Plaintiffs' demand for remedial provisions which address OEM flexibility in the configuration of Microsoft's operating system products, but is tempered by the necessary respect for Microsoft's intellectual property rights. In this regard, the Court has largely rejected Microsoft's paternalistic view that it can determine what is best for consumers with regard to the configuration of the Windows operating system. In rejecting this view, the Court's remedy affords OEMs the freedom to configure Microsoft's operating system products in a manner which promotes third-party middleware through the prominent display of

icons, shortcuts, and menu entries, and such configuration will be protected against automatic alteration resulting from Microsoft's product design. In addition, OEMs will have the freedom to remove all prominent means of end-user access to portions of middleware functionality integrated into Microsoft's operating system so as to encourage the installation of third-party middleware. The Court's remedial decree also ensures that OEMs may introduce subscription services during the boot sequence without restriction by unjustified Microsoft technical requirements. Further secured by the terms of the Court's decree is the automatic launching of innovative software programs limited only by the requirement that the programs not drastically alter the Windows user interface.

In its order of remedy, the Court has heeded Plaintiffs' call for broad protection for OEMs, ISVs, and IHVs against retaliation and threats of retaliation by Microsoft for the support of products that compete with Microsoft's monopoly product. The Court's remedy further curtails Microsoft's ability to enter into agreements that have the effect of excluding competitors from the marketplace. The Court's prohibition on exclusionary contracts is carefully drawn, however, so as to foster, rather than prohibit, procompetitive joint ventures, work-for-hire agreements, and intellectual property licenses. Notwithstanding these affirmative measures, the Court's remedy, of necessity, stops short of any measure which will substantially discourage procompetitive joint ventures, require the substantial redesign of Microsoft's products, or otherwise interfere in Microsoft's lawful use of proprietary technology.

Throughout all of its provisions, the Court's remedial order is generous in its treatment of middleware platform threats. The defined terms in the Court's order are appropriately grounded in the theory of liability and the treatment of middleware platform threats during the liability

phase, while simultaneously prescient in that they are not confined to technology which exists today. Most notable is the scope of the term “Non-Microsoft Middleware,” which captures a wide array of existing platform technology, as well as technology not yet developed. In this regard, even the technologies which Plaintiffs have identified as future potential platform threats, such as interactive television middleware—whose success is but a prediction, will be addressed by the Court’s remedial order, provided the aspirations of these technologies become reality.

Plaintiffs are correct that Microsoft has a tendency to minimize the effects of its illegal conduct. Yet this minimization, however frustrating, does not require a remedy which prodigiously exceeds even an expansive view of the illegal conduct. The remedy in this case addresses the conduct found by the district and appellate courts to violate the antitrust laws and is imposed without regard to Microsoft’s minimalist view of its own illegal conduct. More importantly, the behavioral remedy imposed by this Court neither bends nor softens simply because Microsoft refuses to acknowledge the extent of its own wrongdoing.

During this litigation, promises have been made on behalf of Microsoft that the company will change its predatory practices which have been part of its competitive strategy in order to comply with the remedial decree. The Court will hold Microsoft's directors, particularly those who testified before this Court, responsible for implementing each provision of this remedial decree. Let it not be said of Microsoft that "a prince never lacks legitimate reasons to break his promise,"⁸⁴ for this Court will exercise its full panoply of powers to ensure that the letter and spirit of this remedial decree are carried out.

November 1, 2002

COLLEEN KOLLAR-KOTELLY
United States District Judge

⁸⁴NICCOLÒ MACHIAVELLI, *THE PRINCE*, ch. 18 (1514).

APPENDIX A

REMEDY-SPECIFIC FINDINGS OF FACT

The Court has considered the evidence submitted by the parties, made determinations as to its relevancy and materiality, assessed the credibility of the testimony of the witnesses, both written and oral, and ascertained the probative significance of the documentary and visual evidence presented. Based upon the Court's consideration of the entire record in this case and all of the reasonable inferences to be drawn therefrom, the Court enters the following factual findings.

I. ORIGINAL EQUIPMENT MANUFACTURER ("OEM") FLEXIBILITY

The district court concluded, and the appellate court agreed, that a number of Microsoft's restrictions on an OEM's flexibility in configuring Windows products, from both a licensing and a technological standpoint, were anticompetitive in violation of § 2 of the Sherman Act. *See United States v. Microsoft Corp.*, 253 F.3d 34, 59-67 (D.C. Cir. 2001) (*en banc*). In general terms, both proposed remedies include similar mechanisms for the lifting of Microsoft's exclusionary licensing restrictions and attempt, through other restrictions on Microsoft's conduct vis-à-vis OEMs, to secure for the OEMs a substantial degree of flexibility in the configuration of PCs with Windows installed as the operating system. *See, e.g.*, Plaintiff States' Proposed Remedy ("SPR") §§ 2.c, 10; Microsoft's Second Revised Proposed Final Judgment ("SRPFJ") § III.C, H. The remedy proposals include significant provisions to ensure OEM flexibility based upon the undisputed recognition that OEM flexibility will facilitate the distribution of software which, like the middleware threats posed by Navigator and Java addressed in the liability phase, has the potential to develop into a "middleware platform threat." In the paragraphs below, the

Court examines the evidence presented with regard to the operation of the OEM flexibility provisions in Plaintiffs' and Defendant's respective remedy proposals.

A. License Provisions

1. Plaintiffs' Third-Party Licensing Proposal

The two remedy proposals take a similar approach, enumerating various ways in which Microsoft may not limit original equipment manufacturer ("OEM") flexibility in the configuration of Windows operating system products through license restrictions. *Compare* SPR § 2.c, *with* SRPFJ § III.C. Despite this similarity, the proposals differ substantially in one respect; namely, Plaintiffs' proposal secures protection not only for OEMs, but also for "third-party licensees." Plaintiffs offer testimony explaining that third-party licensing would require Microsoft to license its Windows operating system not only to 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. Borthwick ¶ 12. The primary focus of Plaintiffs' third-party licensing provision appears to be the replacement of the Windows user interface with a more "customized" third-party interface. *See, e.g.*, Ashkin ¶ 84; Borthwick ¶¶ 2-3, 12-13, 19-35. This customization, predicted Plaintiffs' witnesses, will promote distribution of non-Microsoft software products, including middleware. *See, e.g.*, Ashkin ¶ 102; Borthwick ¶ 2.

John Borthwick, Vice President of AOL Advanced Services, a division of AOL Time Warner, maintained that the remedy in this case should secure for OEMs and third parties "control over the interface and over the applications that can be included in the PC experience (in particular the post-purchase setup or what is referred to in the industry as the

‘Out-Of-Box-Experience’).” Borthwick ¶ 15. Touting Plaintiffs’ proposal as more beneficial to OEMs and consumers because it allows for this kind of third-party “customization,” Mr. Borthwick offered examples of such customization in the “Harry Potter PC,” the “Lego Station,” and the “AOL Station.” Borthwick ¶¶ 19, 31-32; Pl. Ex. 1709. These examples illustrate that third-party customization, as envisioned by Plaintiffs, consists of the replacement of the Windows user interface by a user interface designed to promote the products of the third-party participant, such as Lego or AOL. Pl. Ex. 1709. To facilitate such customization, Plaintiffs’ proposed remedy expressly prevents Microsoft from limiting the replacement or alteration of its user interface and from limiting the automatic launching of alternative middleware and operating systems. SPR § 2.c.iii-iv.

In its opinion, the appellate court expressly rejected a finding of liability predicated upon Microsoft’s restrictions on the substitution of the Windows user interface so as to “prevent[] the Windows desktop from ever being seen by the user.” *Microsoft*, 253 F.3d at 63; *see also United States v. Microsoft Corp.*, 84 F. Supp. 2d 9, ¶ 211 (D.D.C. 1999) (hereinafter cited as “*Findings of Fact*”). The appellate court declined to find restrictions of this type to be exclusionary because the substitution of the Windows user interface constitutes a “drastic alteration of Microsoft’s copyrighted work.” *Microsoft*, 253 F.3d at 63. Mr. Borthwick did not distinguish the alteration or replacement of the Windows user interface, which is integral to his vision of customized PCs, from the alteration of the user interface described in *Findings of Fact* ¶ 211 and addressed by the appellate court at page 63 of its reported opinion. Trial Transcript (“Tr.”) at 2296-99 (Borthwick). In this regard, Plaintiffs’ vision for third-party licensing, as presented through the testimony of their witnesses, is inconsistent with the appellate court’s opinion

because it would limit Microsoft's ability to impose license restrictions which have been found not to be exclusionary. *Compare Microsoft*, 253 F.3d at 63, with SPR § 2.c. As a direct result, the lone economic endorsement of third-party customization, that of Plaintiffs' economic expert, Dr. Carl Shapiro, appears to be predicated on a clear misreading of the provision—as Dr. Shapiro understood § 2.c. to permit Microsoft to impose license restrictions *consistent* with the appellate court's ruling regarding alternative user interfaces. Tr. at 3650-52 (Shapiro).

Because § 2.c of Plaintiffs' remedy proposal would curtail conduct which has been found by the appellate court *not* to violate the Sherman Act, the Court is particularly attentive to whether a particular benefit will accrue to competition from the imposition of such a provision. Regrettably, the testimony presented by Plaintiffs does not explain to the Court's satisfaction the manner in which third-party licensing of the type described above will enhance and encourage competition in the monopolized market. Mr. Borthwick did not offer any such explanation in his direct testimony and, when asked during cross-examination to provide an explanation, conceded that the only substantial effect of third-party licensing would be increased competition between Microsoft's version of Windows and the various customized versions of Windows created by OEMs or third-party licensees. Tr. at 2294-96 (Borthwick). Similarly, Mr. Peter Ashkin, President of AOL Brand Products, a division of AOL, in claiming a "need" for third-party licensing, did not explain to the Court's satisfaction the connection between such licensing and the anticompetitive conduct in this case, nor did Mr. Ashkin explain coherently the manner in which third-party licensing would not create an unjustified expropriation of Microsoft's intellectual property. Absent any such explanation, the evidence is insufficient to support a conclusion that third-party licensing, as presented in Plaintiffs' proposed remedy, will benefit

competition.⁸⁵

2. *Icon Design and Placement*

The appellate court held that the provision in Microsoft's license agreements preventing OEMs "from adding icons or folders [to Windows] different in size or shape from those supplied by Microsoft" was anticompetitive in violation of § 2 of the Sherman Act. *Microsoft*, 253 F.3d at 62. The parties' respective remedy proposals are quite similar in remedying this finding by limiting Microsoft's ability to impose such restrictions. In particular, both remedy proposals include provisions which secure an OEM's ability to install and display icons, menu entries, and shortcuts for non-Microsoft products. *See* SPR § 2.c.ii; SRPFJ § III.C.1.

The significant difference between the two remedy proposals with regard to the provision of flexibility in such installation and display rests upon a reservation of rights by Microsoft in § III.C.1 of Microsoft's proposed remedy. This provision reserves for Microsoft the ability 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, provided that the restrictions are non-discriminatory with respect to non-Microsoft and Microsoft products." SRPFJ § III.C.1. A number of Plaintiffs' witnesses criticized this exception, *see, e.g.*, Ashkin ¶¶ 67-68; Barksdale

⁸⁵The clear discord between this aspect of Plaintiffs' proposed remedy and the appellate court's opinion, as well as the absence of a coherent explanation of the anticipated benefit to competition in the monopolized market, calls attention to the substantial involvement of Microsoft's competitors in drafting this portion of Plaintiffs' remedy proposal. This involvement raises a concern that the provision will accrue to the benefit of specific competitors, rather than to the benefit of competition. Indeed, Mr. Borthwick readily conceded that AOL had proposed the inclusion of the alternative user interface and "third-party licensing" aspects of § 2 of Plaintiffs' proposed remedy and that the provision was plainly beneficial to AOL's business. Tr. at 2263-65, 2273-74 (Borthwick); *see also* Def. Ex. 692.

¶ 77; Schwartz ¶ 179, arguing that Microsoft can “limit the addition of icons, shortcuts and menu entries for non-Microsoft products to only those places where Microsoft has decided to promote a Microsoft product with similar functionality,” Schwartz ¶ 179; *see also* Ashkin ¶¶ 67-68; Barksdale ¶ 77.

The criticisms of Plaintiffs’ witnesses on this point do not withstand scrutiny. The limitation in § III.C.1 of Microsoft’s remedy proposal serves only to permit Microsoft to designate certain areas of Windows as limited to the provision of particular types of functionality. For example, where there is an entry for “Printers and Faxes” on the right-hand side of the start menu, § III.C.1 would allow Microsoft to prevent an OEM from placing an icon for unrelated functionality, such as AOL’s Instant Messenger software, which does not provide printing or faxing functionality, in the list of “Printers and Faxes.” Jones ¶¶ 43-45. This limitation on OEM flexibility applies not to the general ability of an OEM to insert a particular icon into the Windows system, but only to the ability of an OEM to *locate* a particular icon within “any list . . . specified in the Windows documentation.” SRPFJ § III.C.1. Limitations imposed by Microsoft pursuant to this provision must be unbiased with regard to Microsoft and third-party products. *Id.* As a result, Microsoft cannot limit the parameters of functionality so as to exclude competing products entirely. *Id.* Therefore, contrary to the view of Plaintiffs’ witnesses, the exception to OEM flexibility with regard to the placement of icons, shortcuts, or menu entries in certain areas of Windows does not provide an advantage for Microsoft products over third-party products. Plaintiffs do not present sufficient evidence to establish that the minor limitation in § III.C.1 of Microsoft’s remedy proposal would hinder an OEM’s ability to configure Windows to promote third-party middleware.

Further differentiating the proposals is another exception or limitation in Microsoft's proposed remedy which permits Microsoft to limit an OEM's freedom to install and display desktop shortcuts which "impair the functionality of the user interface." *Id.* § III.C.2. Pursuant to this provision, Microsoft's remedy proposal permits OEMs to add icons of virtually any shape or size, but restricts the ability to add an icon which is so oversized that it covers the entire user interface, or so ill placed that it covers integral portions of the interface, such as the "start" menu. Jones ¶ 46. Microsoft Vice President in charge of the Windows Client Team of the Platforms Group, Christopher Jones, explained the language in § III.C.2, recounting that the preservation of Microsoft's ability to prohibit impairment of the functionality of the user interface attempts to balance Microsoft's product design concerns with OEM freedom. *Id.* Plaintiffs do not offer any evidence that the ability of OEMs to install icons or shortcuts which "impair the functionality of the user interface," SRPFJ § III.C.2, will have any positive effect upon competition.⁸⁶

3. *Automatically Launching Software*

In his *Findings of Fact*, Judge Jackson described the manner in which some OEMs "developed programs that ran automatically at the conclusion of a new PC system's first boot sequence" such that the "programs replaced the Windows desktop either with a user interface designed by the OEM or with Navigator's user interface." *Findings of Fact* ¶ 211. Although

⁸⁶Indeed, in their criticism of § III.C.2, the only *evidence* upon which Plaintiffs focus in their Proposed Findings of Fact is the inability of one of Microsoft's economic experts to identify a "real world" example of a shortcut that would impair the functionality of the user interface. Pl. Prop. Findings of Fact ¶ 496. In the Court's view, the inability of an economist to envision examples of extreme conduct in the context of software design is of little consequence. Moreover, Mr. Jones offered a rather clear example of product design which would be covered by the language in § III.C.2 of Microsoft's proposed remedy. Jones ¶ 46.

Judge Jackson originally condemned Microsoft's prohibition of the addition of such automatically launching programs, the appellate court reversed this holding on the grounds that replacement of the Windows user interface works a "drastic alteration of Microsoft's copyrighted work[, which] outweighs the "marginal anticompetitive effect" of the prohibition. *Microsoft*, 253 F.3d at 63.

Notwithstanding this holding, Plaintiffs presented evidence of other types of software programs which could launch automatically, but did not replace the Windows user interface.⁸⁷ Two examples of such automatically launched programs are Gateway's "Go-Back" technology, *see* Ashkin ¶¶ 55-56, and RealNetworks' "Tinkerbell," *see* Richards ¶ 119. The "Go Back" software, developed by Gateway in 1999 and 2000, enabled a consumer to restore his or her computer to a previous state if the computer "crashed" or if the consumer made an error that he or she wanted to reverse. Ashkin ¶ 55. To get the full benefit of "Go Back," it was Gateway's intention to have the application always running in the background on the computer, as its "automatic" ability to reverse errors or restore the system would be ineffective if it wasn't activated. *Id.* ¶ 56. In a similar vein, RealNetworks devoted significant engineering resources and time to the design of a new media player that included a utility, referred to internally at RealNetworks as "Tinkerbell," that automatically launches when the computer is started after the initial boot sequence. Richards ¶ 119. Mr. Richards, Vice President, Consumer Systems, of RealNetworks, Inc., *id.* ¶ 1, explained that "Tinkerbell" remains "dormant" on the computer

⁸⁷Mr. Jones of Microsoft explained that when a program launches automatically, at the end of the initial boot sequence, for example, the result is that once the computer has turned on and is presented for use by the end user, the automatically launched program is already started for the user, and the user need not take any action in order to invoke that program's capabilities. Tr. at 5129 (Jones).

during most use, but “wakes up” at certain intervals to trigger certain functions. *Id.* ¶ 119. For example, “Tinkerbell” triggers the messaging technology in RealOne Player to receive notifications that content or software updates are available. *Id.*

Products such as RealNetworks’ “Tinkerbell” utility and Gateway’s “Go Back” feature are most effectively utilized when they are automatically launched. *See* Ashkin ¶ 56; Richards ¶ 119; Tr. at 897-98 (Ashkin). A remedy provision which secures for OEMs the ability to install programs which launch automatically will provide a strong means by which to promote new and innovative software which may evolve into a middleware platform threat. Accordingly, Plaintiffs’ witnesses criticized Microsoft’s proposed remedy because it does not secure for OEMs the ability to freely install such automatically launching programs.

The remedy provision about which Plaintiffs complain, § III.C.3 of Microsoft’s remedy proposal, secures for OEMs the ability to install automatically launching software only where a “Microsoft Middleware Product that provides similar functionality would otherwise be launched automatically.” SRPFJ § III.C.3. The provision further permits Microsoft to require that the automatically launched third-party middleware appear either without a user interface or with a user interface of a “similar size and shape” to the Windows user interface which would have otherwise appeared. *Id.* Plaintiffs’ witnesses observed that § III.C.3 of Microsoft’s remedy proposal will do little to assist the most innovative new middleware products for which Microsoft has not yet developed a competing functionality.

Microsoft bristles at even the automatic launching of software which runs within the Windows user interface and offers testimony, as it did during the liability phase, that such automatic launching is harmful to consumers. Jones ¶ 51. Through the testimony of Mr. Jones,

Microsoft insists that it should be permitted to limit the software running at the conclusion of the initial boot sequence in order to preserve a consistent and pleasant “out-of-box” experience.”

Id. Mr. Jones claimed that consumer satisfaction will decrease and consumer frustration will increase if OEMs possess greater flexibility with regard to software launched automatically. *Id.* The appellate court effectively rejected these same arguments by Microsoft as a justification for other restrictions on OEM flexibility in configuring Windows which did not substantially alter Microsoft’s copyrighted product. *Microsoft*, 253 F.3d at 63-64. Mr. Jones’ arguments in this regard are indistinguishable from those rejected by the appellate court.

Plaintiffs’ remedy proposal adopts a position nearly as extreme as Microsoft’s with regard to the automatic launching of software. Section 2.c.iv of Plaintiffs’ remedy proposal does not permit Microsoft to impose any limitation upon the automatic launch of software or even the automatic launching of an alternative operating system. SPR § 2.c.iv. The flexibility provided to OEMs in this portion of Plaintiffs’ remedy proposal would permit conduct previously prohibited by a Microsoft license term which was expressly reviewed by the district and appellate courts and found by the appellate court *not* to be exclusionary. *Microsoft*, 253 F.3d at 63. As a result, the Court finds that Plaintiffs’ remedy proposal would permit OEMs to alter substantially Microsoft’s copyrighted product. Plaintiffs do not offer any evidence that such drastic alteration will promote competition, and the appellate court has already concluded that the competitive benefit derived from such alteration is “marginal,” *id.* Moreover, Plaintiffs do not offer evidence which supports a conclusion that the limitation of Microsoft’s legitimate restriction on the drastic alteration of its software products is necessary to the effective functioning of other remedial provisions which will clearly benefit competition.

The Court finds that innovative concepts in software design will benefit from a remedy provision which requires Microsoft to permit OEMs to install products which launch automatically, but do not replace the Windows user interface. The pro-competitive value of such a remedy would be significantly hampered if Microsoft were permitted to limit such automatic launching to circumstances in which Windows would launch a competing Microsoft software product. To permit Microsoft to impose such a restriction denies the new software product the advantage it rightfully deserves by being first to market. However, the Court finds that there is no factual basis upon which to conclude that Microsoft should be prohibited from protecting its copyrighted products from drastic alteration.

4. *Registration Sequences*

Both remedy proposals include a provision which enables OEMs to insert registration programs in the initial boot sequence. *See* SPR § 2.c.iv; SRPFJ § III.C.5. This provision serves to address the appellate court’s holding that “Microsoft’s prohibition on any alteration of the boot sequence” was anticompetitive because it “prevent[ed] OEMs from using that process to promote the services of IAPs, many of which—at least at the time Microsoft imposed the restriction—used Navigator rather than IE in their [I]nternet access software.” *Microsoft*, 253 F.3d at 61-62, 64. Evidence from the liability phase of the case establishes that the inclusion of IAP registration offers in the initial boot sequence provides a means by which OEMs can promote middleware with the potential to challenge the Windows platform. *Findings of Fact* ¶ 210. Microsoft’s remedy proposal in this regard is once again limited in that it reserves for Microsoft significant control over OEM ability to insert such registration sequences. SRPFJ § III.C.5. Specifically, § III.C.5 of the SRPFJ permits Microsoft to impose “reasonable technical

specifications” upon the presentation of IAP registration in the initial boot sequence. SRPFJ § III.C.5. Not surprisingly, Plaintiffs offer testimony critical of this limitation which asserts that Microsoft may effectively take back precisely what the remedy purports to give. That is, Plaintiffs’ witnesses complained that when Microsoft is permitted to impose “reasonable technical specifications,” Microsoft will do so in a manner which effectively prevents OEMs from utilizing the purported freedom to include IAP registration programs from the initial boot sequence. *See, e.g.*, Ashkin ¶¶ 52, 58-59.

Over Plaintiffs’ complaints, Microsoft, again through the testimony of Chris Jones, insists that it must be permitted to impose “reasonable technical specifications” upon IAP presentations in the boot sequence in order to protect the user experience and avoid consumer confusion. *See* Jones ¶ 50. Microsoft’s user experience argument in favor of the “reasonable technical specifications” limitation essentially repeats the argument offered by Microsoft during the liability phase to justify this very limitation. The appellate court rejected this same “consumer confusion argument” during the liability phase, based upon the observation that “[t]o the extent the OEMs’ modifications [during the boot sequence] cause consumer confusion, of course, the OEMs bear the additional support costs.” *Microsoft*, 253 F.3d at 64 (citing *Findings of Fact* ¶ 159 (“OEMs bear essentially all of the consumer support costs for the Windows PC systems they sell.”)). The appellate court further observed that because OEM “promot[ion of] programs in the boot sequence does not affect the code already in the product, the practice does not self-evidently affect either the ‘stability’ or the ‘consistency’ of the platform.” *Id.* at 63-64.⁸⁸

⁸⁸The appellate court noted that Microsoft’s claims regarding the need to preserve Windows’ “principal value . . . as a “stable and consistent platform . . . that is familiar to users,” were unsubstantiated. *Microsoft*, 253 F.3d at 63-64 (quoting Microsoft’s “Opening Br.” at 102). This observation continues to be true. Microsoft has not offered any evidence beyond the largely

Microsoft, through the testimony of its witnesses, fails to offer any new justification for the imposition of restrictions upon the ability of OEMs to offer IAP registrations during the initial boot sequence. Based upon the evidence presented to the Court, the Court is unable to conclude that there exists a legitimate justification for the continued restriction on the ability of OEMs to introduce IAP registration offers during the initial boot sequence of PCs running Windows.

B. Remedies Related to the “Binding” of IE and Windows

1. “Add/Remove” Utility

The parties’ respective remedy proposals once again offer somewhat similar remedies to redress Microsoft’s anticompetitive exclusion of IE from the “Add/Remove Programs” utility—an act which discouraged OEMs from distributing rival products. *See* SPR § 2.c.iv; SRPFJ § III.H.1. Both remedy proposals secure the ability of OEMs to remove end-user access to various types of Microsoft software. The provision of a mechanism by which an OEM can control the availability of end-user access to certain portions of functionality included in the Windows operating system will redress, from both a technical and an economic perspective, the finding of liability against Microsoft for its failure to provide such a mechanism with regard to its integrated Web-browsing functionality. Madnick ¶ 177; Murphy ¶ 200. In particular, the provision of a mechanism by which OEMs can hide end-user access to Microsoft functionality encourages OEMs to install middleware which competes with the concealable portions of Windows. *Findings of Fact* ¶¶ 159, 165.

self-serving testimony of its own software designers that instability and consumer confusion would result from the inclusion of IAP registration offers during the initial boot sequence. *See* Jones ¶ 50.

The significant difference between the two remedy proposals on this point results from the differing definitions in Plaintiffs' and Defendant's respective remedy proposals. Plaintiffs' proposed remedial decree incorporates a problematic definition of the term "end-user access." Plaintiffs' remedy proposal defines "end-user access" as "the invocation of Middleware directly or *indirectly* by an end user of a computer, or the end user's ability to invoke Middleware includ[ing] invocation of Middleware that the Operating System Product's design requires the end user to accept." SPR § 22.j (emphasis added). By including indirect invocation of middleware in the definition of "End-User Access," Plaintiffs' proposed remedy permits the disabling of potentially vital software code from Windows about whose invocations the user is unaware. *See* Bennett ¶ 87. In the course of normal operation, operating systems routinely invoke software code that falls within Plaintiffs' overly broad definition of "middleware." *See* Bennett ¶ 87; *see* Memorandum Opinion, Parts III.B.2.b; III.C (discussing Plaintiffs' treatment of middleware). As Plaintiffs have defined "middleware" and "Microsoft Middleware Products," very small blocks of software code, rather than portions of software code which are generally regarded as "products," fall within these definitions. *See* Memorandum Opinion, Part III.B.2.b; Bennett ¶¶ 30, 35-36; Gates ¶ 165; Madnick ¶ 136. As a result, the very basic invocation of these blocks of software code falls within the purview of Plaintiffs' definition of "end-user access." *See* Bennett ¶ 87. Attempting in some way to limit the "indirect invocation" of these blocks of code, is a substantial interference with the ordinary and expected design and functioning of *any* operating system. *See id.*

Furthermore, the inclusion of "indirect invocation" in Plaintiffs' definition of "end-user access" would result in the regulation of conduct, by § 2.c.iv of Plaintiffs' proposed remedy, for

which the appellate court declined to ascribe liability. The appellate court rejected Judge Jackson’s finding of liability against Microsoft for designing its Windows product to launch IE in certain circumstances, thereby overriding the “user’s choice of a default browser.” *Microsoft*, 253 F.3d at 67. In this rejection, the appellate court recognized that Microsoft had offered a justification for the override, namely that the “seamless[]” operation of the Windows product in some instances relies upon the invocation of Windows software code, rather than third-party code, and that this justification was unrebutted by Plaintiffs. *Id.* The appellate court further noted that Plaintiffs had not provided evidence demonstrating that this aspect of the Windows design had an anticompetitive effect. *Id.* Plaintiffs do not offer testimony which sufficiently explains the competitive benefit to be derived from regulating this otherwise legitimate Microsoft conduct.

The comparable portion of Microsoft’s remedy proposal adopts a more straightforward view of the provision and removal of end-user access to various software products. Section III.H.1 of Microsoft’s remedy proposal secures for OEMs and end users the ability to display or remove icons, shortcuts, and menu entries throughout Windows. SRPFJ § III.H.1. Plaintiffs, through the testimony of their witnesses, object to this portion of Microsoft’s proposal primarily⁸⁹ because it includes a reservation of rights similar to that which appears in § III.C.1 of Microsoft’s remedy proposal. *See* Barksdale ¶ 77; Schwartz ¶ 179. As with § III.C.1, discussed *supra* Part I.A, § III.H.1 permits Microsoft to limit the ability of OEMs and end-users to insert

⁸⁹To the extent that Plaintiffs’ witnesses offered testimony critical of § III.H.1 because it incorporates Microsoft’s more narrow definition of “Microsoft Middleware Product,” *see, e.g.*, Barksdale ¶¶ 78-79; Kertzman ¶ 85, these concerns are resolved by the Court’s preliminary discussion of appropriate treatment of “middleware” in the remedy for Microsoft’s anticompetitive conduct. *See* Memorandum Opinion, Part III.B-C.

icons, shortcuts, and menu entries into areas of Windows which are reserved for particular types of functionality. SRPFJ § III.H.1. Pursuant to this provision, therefore, Microsoft would be able to prohibit installation of an icon, shortcut, or menu entry where the product accessed by such icon, shortcut, or menu entry does not provide the functionality for which that area of Windows has been reserved. *See supra* Part I.A. Section III.H.1 would only permit Microsoft to impose limitations in a way that is non-discriminatory with respect to Microsoft and non-Microsoft products. As with § III.C.1, Plaintiffs have not proffered evidence that this aspect of Microsoft's proposal can be used to benefit Microsoft products over non-Microsoft products, nor have Plaintiffs established that there is any benefit to competition to be gained by denying Microsoft the ability to control this limited aspect of its product configuration.

2. *Default Settings*

The appellate court did not ascribe liability for Microsoft's use of default settings, nor for Microsoft's design of its product to override a user's preference of a non-Microsoft product as a default where Microsoft had a "valid technical reason" for doing so. *Microsoft*, 253 F.3d at 67. Notwithstanding this fact, both proposed remedies address the use of default settings in Windows, albeit to substantially differing extents. Section III.H.2 of Microsoft's remedy proposal addresses Microsoft's use of default settings to invoke functionality provided by "Microsoft Middleware Products." SRPFJ § III.H.2. This provision provides that, in any instance where Windows invokes the full functionality of a Microsoft Middleware Product in a "Top-Level Window," Microsoft shall allow end users and OEMs to designate a "Non-Microsoft Middleware Product" to be used in place of the "Microsoft Middleware Product." SRPFJ § III.H.2. Pursuant to § III.H.2, Microsoft reserves the right to restrict such replacement where

the “Microsoft Middleware Product” has been invoked solely for interoperation with a Microsoft server or where the non-Microsoft product fails to implement a “reasonable technical requirement.” *Id.* The substantial equivalent in Plaintiffs’ remedy, § 10, provides far more broadly that Microsoft may not designate “Microsoft Middleware” as the default unless OEMs and third-party licensees can override that designation and the “OEM, Third-Party Licensee, or non-Microsoft Middleware” has the ability to provide the end user with a neutral opportunity to designate other middleware as a default. SPR § 10.

As a direct result of the broad definition of “middleware” contained in Plaintiffs’ remedy proposal,⁹⁰ many of the ordinary functions of Windows, far removed from specifically identified functionality such as Web-browsing, require treatment as a “default” pursuant to Plaintiffs’ remedy proposal. Bennett ¶ 122. Microsoft’s witnesses testified consistently that Windows is not designed in accordance with Plaintiffs’ concept of “defaults.” *Id.* ¶¶ 122-23; Gates ¶ 372; Jones ¶ 124. This testimony is essentially a re-framing of the testimony which explains why Plaintiffs’ concept of middleware is flawed. *See* Memorandum Opinion, Part III.B-C; Gates ¶ 372. Just as Plaintiffs sought to parlay the limited distinction between Web-browsing functionality and operating system functionality into a more general distinction between middleware functionality and operating system functionality, *see* Memorandum Opinion, Part III.B-C, Plaintiffs propose to extend the notion that there can exist a “default browser” to mean that there exists a similar “default” for all “middleware.” SPR § 10. The notion of a “default browser” is grounded in Judge Jackson’s *Findings of Fact*, which explain that Windows 98

⁹⁰As the Court concluded in Part III.B.2.b of the attached Memorandum Opinion, Plaintiffs’ definition of “middleware” renders essentially any block of software code that exposes an API to be “middleware.”

provided the ability to select browsers other than IE as the “default” for a number of tasks.

Findings of Fact ¶ 171. Judge Jackson observed, however, that even this ability to set a browser “default” was imperfect, as some portions of Windows were not designed to accept a browser other than IE.⁹¹ *Id.*

Plaintiffs do not present evidence which establishes that Windows is similarly designed, with regard to the ability to set a default, for all of the pieces of software identified as “middleware” in Plaintiffs’ remedy proposal. Quite to the contrary, Microsoft offers repeated testimony that most of the blocks of software code which Plaintiffs have defined as “middleware” are not designed to be removed or replaced with alternate third-party software code.⁹² *See* Bennett ¶ 122; Gates ¶ 372; Jones ¶ 124. As Mr. Jones of Microsoft testified, the Windows operating system is not designed like an “à la carte restaurant menu” from which blocks of software may be included or excluded at the whim of the OEM. Jones ¶ 124. Rather, in predominant part, Windows is designed with the assumption that all blocks of software code that provide functionality to other parts of the operating system (as well as to software products running on top of the operating system) will be present in the product. *Id.* ¶ 123; *see also* Gates ¶¶ 369-73. This assumption cannot simply be removed or ignored so as to render the “middleware” replaceable. Jones ¶ 124. To do so in an attempt to accomplish the goal of § 10

⁹¹It is noteworthy, once again, that the appellate court rejected any imposition of liability based upon the aspect of Microsoft’s product design which overrode the user’s “default browser” based upon the “valid technical reasons” advanced by Microsoft to justify such an override. *Microsoft*, 253 F.3d at 67.

⁹²There are, however, limited portions of Windows unrelated to Web-browsing functionality, for which there already exists the mechanism, like that described by Judge Jackson in ¶ 171 of the *Findings of Fact*, to designate non-Microsoft software for invocation. Tr. at 5242-45 (Jones). This ability exists because Windows was designed to permit the designation of a non-Microsoft software to perform a particular function. *Id.*

of Plaintiffs’ proposed remedy, even assuming Plaintiffs had provided a well-defined list of components which comprise “middleware,” *see* Memorandum Opinion, Part III.B.2.b, “would require an enormous engineering effort—by no means assured of success given the varying designs of third-party products.” Jones ¶ 122; *see id.* ¶¶ 123-26; Bennett ¶¶ 122-23; Gates ¶¶ 372-79; Tr. at 4917-21 (Gates). “Assuming that it could be accomplished . . . such a complete ‘modularization’ of existing Windows operating systems would require all of the Windows development resources for years, halting work on new products and services.” Jones ¶ 126.

Plaintiffs present scant justification for a remedy provision which would require at least vast amounts of work by Microsoft to implement and more likely a complete redesign of Microsoft’s Windows product. Plaintiffs do not present any economic analysis regarding the benefit or harm to competition which will result from a redesign of Windows so as to permit the replacement of the various pieces of software code Plaintiffs identify as “middleware.” Indeed, Plaintiffs’ own economic expert, Dr. Shapiro, testified that a determination as to the procompetitive benefit of the broad provision of such defaults could not be ascertained without a balancing of the pro- and anticompetitive effects and a judgment akin to the liability judgment of the appellate court. Tr. at 3654-55 (Shapiro). Plaintiffs present only the testimony of Microsoft’s competitors, who observed as the appellate court did, though it declined to impose liability on this point, *Microsoft*, 253 F.3d at 65, that the override of the user’s default choices by a Microsoft product reduces the usage share of the non-Microsoft software and thereby reduces likelihood that such software will develop into a middleware platform threat. *See* Schwartz ¶ 160; *see also* Richards ¶ 158; Ashkin ¶ 145-47.

Although the anticompetitive effect of Microsoft’s override of the user’s default choices

was not enough to result in a finding of liability because of Microsoft's procompetitive justification, *Microsoft*, 253 F.3d at 67, Microsoft includes in its proposed remedy a provision which roughly corresponds to § 10 of Plaintiffs' proposed remedy and seeks to curtail the anticompetitive effect of the override. Microsoft's proposed remedy identifies the precise circumstances in which Microsoft must enable the substitution of a non-Microsoft software product to perform a function which would ordinarily be performed by a portion of Windows. SRPFJ § III.H.2. These instances are identified by the appearance of a "Microsoft Middleware Product in a separate Top-Level Window and [the] display [of] either (i) all of the user interface elements or (ii) the Trademark of the Microsoft Middleware Product." *Id.* This provision offers greater certainty to OEMs, as well as ISVs, regarding the functionalities in Windows for which non-Microsoft software may be invoked. This certainty should render the use of a non-Microsoft middleware product in place of Windows functionality a less "jolting experience," *Findings of Fact* ¶ 172; *see also Microsoft*, 253 F.3d at 65, as the occasions wherein the non-Microsoft middleware may be invoked will be far more predictable. This increased certainty and predictability, in turn, will enable middleware developers to draw attention away from the "middleware" functionalities included in Microsoft's operating system products. *See Microsoft*, 253 F.3d at 65.

A number of Plaintiffs' witnesses offered somewhat general criticism of § III.H.2 of Microsoft's proposed remedy because it does not require what § 10 of Plaintiffs' remedy proposal would require. *See, e.g.*, Ashkin ¶¶ 145-47; Barksdale ¶ 81; Richards ¶ 159; Schwartz ¶¶ 182-83. These criticisms are addressed largely, if not entirely, by the above determination that § 10 of Plaintiffs' remedy proposal has been shown to be neither workable nor beneficial to

competition. Advancing a not dissimilar criticism, Mr. Richards of RealNetworks testified that § III.H.2 denies protection to the newest and most innovative software. Richards ¶ 141. Mr. Richards' testimony in this regard, however, fatally ignores the structure of Microsoft's proposed remedy provision. The provision provides "protection" only when a Microsoft product would have otherwise been invoked because that is the only time "protection" would logically be needed. Where there exists no Microsoft product to invoke, there is no chance that anything other than the "innovative" product referenced by Mr. Richards will appear as the "default" in conjunction with the invocation of its innovative functionality. In other words, where the new product is truly innovative and unique, Microsoft will be unable to offer its own software as a "default." In this light, Mr. Richards' initial criticism is unfounded.

Mr. Richards' second criticism is somewhat more salient, but still unpersuasive. Mr. Richards complained that § III.H.2 of Microsoft's remedy proposal permits Microsoft to continue to control whether substitution of a particular Windows functionality will be permitted. Richards ¶ 142. In particular, Mr. Richards observed that "even if Microsoft does have competing middleware . . . Microsoft can simply choose not to launch its middleware in a separate top level window, or, even if it does, can choose to display only some of the user interface elements and no trademark (as Microsoft defines that term)." *Id.* ¶ 143. With this capability, argued Mr. Richards, Microsoft could avoid the obligation to substitute a non-Microsoft product for the Microsoft functionality which would have otherwise been invoked. *Id.* While Mr. Richards' observations about the functioning of § III.H.3 are correct, neither Mr. Richards, nor any other witness for that matter, explained with any clarity why Microsoft should not be permitted to have such control in the first instance. The Court notes in this context that

although the appellate court examined Microsoft's design of its products to override the selection of the default browser in certain instances for anticompetitive effect, the appellate court did not examine Microsoft's decisions with regard to the availability of defaults in general. *See Microsoft*, 253 F.3d 59-78. Therefore, there has been no conclusion by any court, thus far, that the failure to render replaceable particular portions of Windows unrelated to Web browsing is either anticompetitive or a violation of antitrust law.

Plaintiffs' computer science expert, Dr. Andrew Appel, joined Mr. Richards in offering an additional criticism of § III.H.2, observing that it permits Microsoft to override a user's choice of a "Non-Microsoft Middleware Product," *i.e.*, to replace it with a "Microsoft Middleware Product," when the designated "Non-Microsoft Middleware Product fails to implement a reasonable technical requirement," SRPFJ § III.H.2. Appel ¶ 139; Richards ¶ 145. Both witnesses contended that Microsoft may utilize this language to impose a requirement that the replacement software support a piece of Microsoft's proprietary technology, such as an Active X control. Appel ¶ 140; Richards ¶ 145. Dr. Appel argued, in this regard, that the "reasonable technical requirement" imposed by Microsoft may be unnecessary. Appel ¶¶ 139-41.

This testimony Plaintiffs proffer regarding the "reasonable technical requirement" exception to § III.H.2 of Microsoft's remedy proposal ignores the manner in which the exception tracks the appellate court's opinion. Once again, the appellate court held that, in the face of un rebutted technical justifications proffered by Microsoft, it could not find that Microsoft acted anticompetitively by enabling Windows 98 to override the choice of Navigator as the default browser upon the invocation of "the Windows 98 Help system and Windows Update feature"

because both features depended on ActiveX controls that Navigator did not support. *Microsoft*, 253 F.3d at 67 (quoting *Microsoft*'s "Opening Br. at 82). The appellate court deemed the absence of Active X controls to be a "valid technical reason[]" for overriding Navigator as the default browser. *Id.* Dr. Appel's and Mr. Richards' testimony cannot be squared with the appellate court's finding that the absence of "Active X controls" constitutes a "valid technical reason[]" sufficient to justify the override of default settings, *id.*

In sum, the Court finds that § III.H.2 of Microsoft's proposed remedy, in stark contrast to § 10 of Plaintiffs' remedy proposal, provides clear and workable rules for determining the instances in which Microsoft must provide the opportunity to substitute non-Microsoft software to perform a task ordinarily performed by a portion of Windows, despite the absence of a finding of liability with regard to Microsoft's use of "defaults" in Windows. Section III.H.2 further tracks the careful imposition of liability by the appellate court by permitting Microsoft to impose "reasonable technical requirements" in conjunction with providing the ability to replace the Microsoft functionality with third-party software in certain, well-defined circumstances. Conversely, the Court finds that § 10 of Plaintiffs' proposed remedy is largely unworkable. Even presuming that § 10's definitional flaws could be resolved, compliance with § 10 would still require the substantial redesign of Microsoft's Windows operating system products, the economic effect of which is uncertain at best and likely to be of minimal benefit to competition itself.

3. *Respect for OEM Settings*

In conjunction with other provisions designed to ensure OEM flexibility in the configuration of Windows, both remedy proposals contain provisions which prevent Microsoft

from designing its product in a manner which will automatically reset an OEM's choices to favor Microsoft's software. *See* SPR § 10; SRPFJ § III.H.3. Section III.H.3 of Microsoft's remedy proposal permits Microsoft to offer the end user an automatic, rather than user-initiated, alteration of an OEM's configuration, but requires Microsoft to ensure such alteration is not executed without first obtaining authorization from the end user for the change. SRPFJ § III.H.3. This automatic request for alteration must be unbiased with respect to Microsoft and non-Microsoft products and may not activate in Windows until 14 days after the initial boot-up of a new PC. *Id.* In contrast, the second paragraph in § 10 of Plaintiffs' proposed remedy prohibits Microsoft from virtually all "prompt[ing]" of the user to change his or her configuration of defaults. SPR § 10. The lone exception for such "prompt[ing]" arises when the end user has installed a "Microsoft Middleware Product." *Id.* In such a circumstance, the new product may neutrally ask the end user to designate that product as the default middleware. *Id.*

Plaintiffs' witnesses explained that, in the absence of protection from automatic changes by Microsoft, ISVs will be hindered in their ability to strike deals with OEMs for desktop placement. Barksdale ¶ 85; Richards ¶ 161. In this regard, Plaintiffs, through their witnesses, criticize Microsoft's proposed remedy because it permits Microsoft to neutrally offer a change in settings after 14 days. Barksdale ¶ 82; Richards ¶ 161. The current version of Windows includes a utility provided by Microsoft which offers to place the least used desktop icons into a folder, so as to, in effect, sweep the desktop clear of unused icons. Jones ¶¶ 34-38. The relevant Microsoft technology is activated 14 days after the end user turns on his or her computer. *Id.* ¶ 35. Plaintiffs' witnesses complained that the 14-day time period is too short for the user to have an opportunity to use and familiarize him/herself with a new product for which a corresponding

icon was placed by an OEM on the desktop. *See, e.g.,* Barksdale ¶ 82. However, beyond a prohibition of this kind of service entirely, Plaintiffs do not offer any suggestions as to what would be a more appropriate time period. Microsoft presents testimony which offers a contrary conclusion, primarily that the 14-day time period is sufficient and that even novice end users will understand that they are not obligated to allow the program to “clean-up” the desktop by moving icons into a folder, from which the icons can be retrieved later. Tr. at 5115 (Jones).

Plaintiffs’ witnesses similarly raised a concern that there is no limitation upon the number of times Windows may prompt the end user to alter his or her configurations in a manner which will coerce the user to switch. *See, e.g.,* Ashkin ¶ 152; Barksdale ¶ 85; Borthwick ¶ 39; Richards ¶ 160. The Court finds that Plaintiffs’ concern in this regard is unsupported by fact and, instead, is based upon an inaccurate reading of Microsoft’s proposed decree. The relevant portion of Microsoft’s proposed remedy requires that any prompt presented to a user be “unbiased” with respect to Microsoft and non-Microsoft products. SRPFJ § III.H.3. Therefore, even if a consumer is “likely to respond” to such prompts, as Plaintiffs’ witnesses have testified, there is no evidence that such a “response” would favor Microsoft given that the prompt must be unbiased. For example, it would not be “unbiased” for the prompt to be presented only when the user has chosen a non-Microsoft product as the default. SRPFJ § III.H.3. Rather, the request for alteration must function equally with regard to Microsoft and non-Microsoft products. Moreover, even if the icon for a product is swept from the desktop, the product does not disappear from the system entirely, but instead, the icon is simply moved to a different location. Jones ¶ 38. As a result, an end user may always reverse the alteration to which he or she agreed by retrieving the icon.

The Court finds that the evidence presented by Plaintiffs fails to establish a justification for a blanket prohibition on the inclusion of such a desktop clearing functionality in Windows. Rather, the Court concludes that so long as there are protections against Microsoft using the utility to undermine OEM flexibility in configuration by favoring Microsoft products, disfavoring OEM configuration, and pressuring end-users into changing OEM settings, there is insufficient evidence to justify a prohibition against inclusion of the utility. The Court further concludes that, although there is conflicting evidence regarding the propriety of the 14-day time period, there is no evidence with regard to the appropriateness of any other time period. With the evidence in equipoise and given the other safeguards provided in § III.H.3, the Court declines to find that the 14-day time period will devalue OEM ability to freely configure the Windows desktop.

II. UNIFORM OEM LICENSES

To provide security to OEMs in contracting with Microsoft, both proposed remedies include a provision which imposes a substantial degree of uniformity in Microsoft's Windows operating system licenses. SPR § 2.a; SRPFJ § III.B. Of all of the competing sections in the two proposed remedies, it is arguable that these two provisions bear the greatest likeness to each other. Plaintiffs' and Defendant's proposals for uniform licenses for Windows operating system products are remarkably similar, with each requiring uniformity in the terms and conditions of the licenses for the twenty OEMs with the highest volume of Windows operating system licenses. Both proposed remedies provide, in broad terms,⁹³ that a royalty schedule must be established, pursuant to which Microsoft may opt to charge a different royalty for different

⁹³Admittedly, there are minor differences in the two remedies even on these common points. *Compare* SPR § 2.a, *with* SRPFJ § III.B.

language versions of the Windows operating system, and Microsoft may provide reasonable volume discounts based upon the actual volume of licenses. SPR § 2.a; SRPFJ § III.B.

Despite these notable similarities, Plaintiffs have presented testimony which criticizes the first iteration of uniform licenses⁹⁴ as less favorable to at least one OEM, Gateway, than the previous licenses which were individually negotiated. *See generally* Fama ¶¶ 46-114; Tr. at 1178-1273 (Fama). Nothing in this testimony, however, evidences any impropriety by Microsoft. *Id.* Anthony Fama, Group Counsel, Partner Management at Gateway, Inc., Fama ¶ 1, complained that the new uniform terms were imposed without input from Gateway, *id.* ¶ 30, but acknowledged that Gateway did not provide Microsoft with the input it requested for over a month and even then, a few days after Microsoft had requested return of the *signed* agreement, Tr. at 1207-12 (Fama); Def. Ex. 1145; Pl. Ex. 59. Microsoft informed Gateway that it could not change the terms in response to Gateway's complaints because the terms had to be uniform, but Microsoft indicated that it would seek Gateway's input before issuing the next set of uniform licenses. Tr. at 1212-13 (Fama); *see also id.* at 1215-22, 1235-38.

Mr. Fama also complained about the timing of the imposition of the new licenses. Prior to the imposition of uniform licenses, Microsoft developed and implemented a system of interlocking licenses to govern OEM licenses for the Windows operating system, the use of certain Microsoft logos and certifications, as well as for the provision of discounts through marketing development programs. Fama ¶¶ 7-13; *see also* Ashkin ¶ 47. Mr. Fama described the interrelationship of the licenses as a "a hub and spokes arrangement, with the hub being the

⁹⁴Pursuant to its settlement agreement with the United States, on December 16, 2001, Microsoft commenced the use of uniform licenses. The terms of the settlement agreement match the terms of Microsoft's proposed remedy.

Business Terms Document (‘BTD’).” Fama ¶ 8. “The BTD contains the base legal terms that apply to all license agreements that incorporate the BTD by reference.” *Id.* Rather than devise an entirely new system of licenses, Microsoft incorporated its new uniform licenses into its interlocking license system. Mr. Fama complained that Microsoft did not impose the new uniform terms on all OEMs simultaneously, but instead imposed the new terms for each particular OEM as soon as one of that OEM’s interlocking licenses was due for renewal. Fama ¶ 44; Tr. at 1219-22 (Fama). Despite his complaint, Mr. Fama acknowledged that Microsoft could not simultaneously comply with the proposed consent decree it had entered into with the United States and continue to offer Gateway the same terms it had been working under once one of its licenses expired. Tr. at 1219-22 (Fama).

Lastly Mr. Fama complained about the levels for volume discounts established by Microsoft, charging that Microsoft unreasonably set the parameters for the discount tiers, such that only three OEMs would fall into the highest volume tier. *Id.* at 1267-72; Fama ¶¶ 105-08. Mr. Fama, however, could not articulate what was unreasonable about the tier, given that the first licensing tier, in fact, applied to the three highest volume OEMs. Tr. at 1267-72 (Fama). In sum, Mr. Fama’s testimony, though framed as an accusation, merely acknowledges that Microsoft has complied with the uniform licensing provision in the settlement agreement it entered into with the United States. Plaintiffs neither assert nor explain, through Mr. Fama or any other witness for that matter, the manner in which their proposal for uniform terms would lead to a more satisfactory outcome.⁹⁵

⁹⁵Mr. Fama reluctantly acknowledged that the gross royalty rates Gateway would pay under the new uniform licenses were lower than those previously paid by Gateway. Tr. at 1244-45 (Fama). Mr. Fama also acknowledged that the new uniform licenses included provisions which Gateway considered to be more favorable than under the negotiated licenses, but Mr.

The most notable point of divergence between the two proposed uniform license provisions arises in relation to Microsoft’s practice of using “Market Development Agreements” (“MDAs”), which are more recently referred to as “Market Development Programs” (“MDPs”), in conjunction with the royalty rates charged in OEM licenses.⁹⁶ Plaintiffs’ proposed remedy does not permit the use of such discounts, while Microsoft’s proposed remedy permits the use of MDPs where they are non-discriminatory, non-retaliatory, and are objectively verifiable.

Compare SPR § 2.a, with SRPFJ § III.B. Microsoft implemented MDPs to provide substantial economic incentives for OEMs to meet Microsoft-imposed conditions in their configuration of Microsoft’s Windows products. *See* Ashkin ¶ 46. Participation in MDPs is voluntary, but some OEMs regard participation as imperative given the financial benefits which are available through participation. *See id.* ¶¶ 46, 109; Fama ¶ 123. MDPs provide financial rebates to OEMs for reaching “milestones” established by Microsoft. The milestones vary from year to year, but generally include non-marketing, substantive restrictions on OEMs regarding, for example, “boot-times, computer memory allocation, and product configuration.” Ashkin ¶ 109; *see generally* Fama ¶¶ 115-32. The appellate court did not ascribe liability for Microsoft’s use of MDPs. *See Microsoft*, 253 F.3d 59-78.

Plaintiffs contend that Microsoft’s remedy is flawed because it permits Microsoft to utilize MDPs. Specifically, Plaintiffs argue that Microsoft’s use of MDPs allows Microsoft to favor certain OEMs. Mr. Fama testified that OEMs, like Gateway, could be coerced by the use of MDPs because they fear retaliation in the implementation of the discounts. Fama ¶¶ 109-12.

Fama insisted that such benefits were negligible. *Id.* at 1245-46.

⁹⁶For ease of reference, the Court refers to MDAs, MDPs, and similar discount programs collectively as “MDPs.”

This disapproval of MDPs is based entirely upon the view that Microsoft can use the terms and enforcement of the MDPs to retaliate against OEMs and exert other forms of control over OEMs in response to OEM action which favors non-Microsoft products. *See id.* ¶¶ 125, 130-31; Tiemann ¶ 82.

The MDPs which would be permissible under Microsoft’s remedy proposal and the discounts provided thereunder must be made available uniformly,⁹⁷ based on “objective, verifiable criteria,” and may not be awarded or imposed in a manner inconsistent with other terms of the remedy proposal. SRPFJ § III.B.3. By implication then, pursuant to these terms, Microsoft would not be able to use MDPs to discriminate or retaliate against OEMs, as such action would be inconsistent with other portions of the SRPFJ. *Id.* § III.A, B. Accordingly, Plaintiffs’ complaints regarding the availability of MDPs in Microsoft’s remedy proposal do not withstand scrutiny.

The economic testimony offered on the subject of uniform licenses and MDPs, from both Plaintiffs’ and Defendant’s witnesses, was tepid, at best. Plaintiffs’ economic expert, Dr. Shapiro, testified that uniform licenses would prevent Microsoft from rewarding or punishing OEMs based on whether they use, support, or distribute rival middleware, noting that reasonable, uniform volume discounts, in such a scheme are appropriate, as they are “pro-competitive.” Shapiro ¶ 157. Dr. Shapiro did not indicate that there was any benefit to be derived from an elimination of uniform, non-discriminatory MDPs in conjunction with the imposition of uniform licenses. *Id.* One of Microsoft’s economic experts, Dr. Kevin Murphy, acknowledged that the

⁹⁷The uniformity specified for MDPs is subject to two volume discounts: one uniform discount for the ten largest OEMs and the second for the eleventh through twentieth largest OEMs, with the size of the OEM measured by volume of licenses. SRPFJ § III.B.3.

provisions requiring uniform licenses in both proposed remedies could be viewed as “a kind of ‘fencing in,’ designed to reduce the potential for [Microsoft’s] evasion” of other portions of the remedial decree. Murphy ¶ 174. Dr. Murphy noted that such “fencing in” comes at the price of economic inefficiency resulting from the denial of the ability of Microsoft and OEMs to negotiate alternative terms that would benefit both parties. *Id.* ¶ 175. Another economic expert presented by Microsoft, Dr. Kenneth Elzinga, testified that, while he understood the rationale for uniform licenses, they were not particularly beneficial. Tr. at 6711-12 (Elzinga). Dr. Elzinga noted that if uniform licenses were to be imposed, they would be more economically favorable, in his view, if they permitted uniform, non-discriminatory MDPs. *Id.* at 6712. In sum, the economic testimony in favor and against the imposition of uniformity in Microsoft’s Windows licenses rests in equipoise, as there is substantial uncertainty as to whether “the gains from constraining Microsoft’s opportunities for subtle pressure or coercion” are outweighed by the loss of “the ability to customize deals and the inability to negotiate discounts.” Tr. at 4021 (Murphy). However, one conclusion is clear; the weight of the economic testimony favors preservation of Microsoft’s ability to offer MDPs, provided that Microsoft cannot impose the MDPs in a discriminatory or retaliatory manner.

Given the slim profit margins under which OEMs function, Barksdale ¶ 98, a limitation, through mandatory uniformity, on Microsoft’s ability to manipulate licensing prices will provide significant protection for OEMs, freeing them to exercise the other options provided in the remedy ultimately imposed by the Court. While certainly some OEMs would be happier with negotiated agreements, *see generally* Fama ¶¶ 46-87, there is insufficient evidence to conclude that Microsoft has used or will use the uniform license terms contained in its proposed remedy to

“increase its leverage,” *id.* ¶ 46, over OEMs. In more general terms, there is similarly insufficient evidence to support a finding that MDPs themselves, when applied in the absence of coercion, retaliation, or non-uniform enforcement, have any anticompetitive effect. Rather, MDPs, when applied uniformly and in the absence of coercion, retaliation, and the like, can benefit consumer welfare. The evidence supports a further finding, however, that if completely unregulated, the use of MDPs can effectively override provisions which strive to ensure uniform and non-discriminatory licensing terms.

III. PROTECTION FROM RETALIATION

A. Independent Software Vendors (“ISVs”) and Independent Hardware Vendors (“IHVs”)

The factual and liability findings in this case portray a practice by Microsoft of threatened and actual retaliation against software and hardware vendors for engaging in action which promotes or supports non-Microsoft middleware. *See, e.g., Microsoft*, 253 F.3d at 72-73 (discussing Microsoft’s dealings with Apple), 77 (describing Microsoft’s “threat to Intel”⁹⁸). To remedy this action, Microsoft offers § III.F.1 of its remedy proposal which prohibits retaliation against ISVs and independent hardware vendors (“IHVs”) for “developing, using, distributing, promoting or supporting any software that competes with Microsoft Platform Software or any software that runs on any software that competes with Microsoft Platform Software” or for “exercising any of the options or alternatives” secured by the injunctive decree entered in this case. SRPFJ § III.F.1. Plaintiffs propose a similar prohibition, but because Plaintiffs’ proposal bans action which “adversely affects” industry participants “based . . . on” their support for

⁹⁸In his *Findings of Fact*, Judge Jackson noted that Intel is both an IHV and an ISV. *Findings of Fact* ¶ 95 (“Although Intel is engaged principally in the design and manufacture of microprocessors, it also develops some software.”).

competing products, it addresses substantially more Microsoft conduct. SPR § 8. Plaintiffs’ proposed ban applies to action adverse to IAPs, ICPs, IHVs, ISVs, OEMs, and third-party licensees. *Id.*

Microsoft raises the concern that, although touted as an “anti-retaliation provision,” § 8 of Plaintiffs’ proposed remedy covers far more than “retaliation” and “could be read to ban Microsoft from competing in any product category.” Gates ¶ 355; *see also* Elzinga ¶ 118 (incorporating ¶¶ 33-34 by reference). In this regard, William H. Gates, III, Microsoft’s Chairman of the Board and Chief Software Architect, Gates ¶ 1, testified that:

Under [SPR § 8], nearly any act of competition could be seen as an adverse act. Competing means attempting to maximize sales, which often entails taking sales from a rival (adversely affecting them). At the very least, Microsoft would have no comfort that routine business acts would not violate Section 8.

Under Section 8, 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. If Microsoft entered into such a relationship, it could be charged with taking “adverse actions” against any competitors in the relevant category that it did not enter into the same relationship with, and thus did not receive the same “consideration” from, Microsoft. Section 8 explicitly states that Microsoft may not withhold “consideration” from a third party that uses, develops, etc. any non-Microsoft product or service.

Id. ¶ 356-57 (emphasis omitted); *see also id.* ¶¶ 358-66. Although extreme, the concerns raised by Mr. Gates are not unfounded. Plaintiffs’ witnesses’ description and characterization of § 8 of Plaintiffs’ proposed remedy as a bar on retaliation, *see, e.g.*, Ashkin ¶ 138; Barksdale ¶ 106; Borthwick ¶ 61; Kertzman ¶¶ 61-62; McGeady ¶¶ 86-87, cannot change the fact that the provision is written far more broadly as a bar on “adverse[.]” action. SPR § 8.⁹⁹ The distinction is a fine one, but significant because retaliation implies an illegitimate basis for the adverse

⁹⁹Plaintiffs’ arguments that § 8 is not intended to address the conduct cited as an example by Mr. Gates, along with Plaintiffs’ insistence that § 8 would not apply in such a circumstance, indicate that the provision is, if not overly broad, at least ambiguous on this point.

action, unlike “based directly or indirectly . . . on” which connotes only a cause and effect relationship. *Id.*

Notably too, § 8 of Plaintiffs’ remedy proposal is not limited in any way to actions by Microsoft that relate to its PC operating system products, the only segment of the software industry in which Microsoft has been found to have a monopoly. *Id.*; *see also Microsoft*, 253 F.3d 34. As a result, § 8 will regulate Microsoft’s business dealings in *all* aspects of its business, however unrelated to its monopoly product. *See* Elzinga ¶ 118 (incorporating ¶¶ 33-34 by reference). Plaintiffs’ witnesses have not offered any particular explanation or reasonable justification for § 8’s breadth in this regard. *See, e.g.*, Ashkin ¶ 138; Barksdale ¶¶ 105-06; Kertzman ¶¶ 61-62; McGeady ¶¶ 86-90; Tiemann ¶ 76. The Court observes, however, that if properly limited to *retaliation* in relation to the promotion of products which compete with Microsoft’s monopoly product, inasmuch as Plaintiffs’ remedy § 8 applies to ISVs and IHVs,¹⁰⁰ § 8 begins to resemble § III.F.1 of Microsoft’s proposed remedy.

Plaintiffs’ economic expert, Dr. Shapiro, criticized § III.F.1 of Microsoft’s remedy proposal by arguing that it does not address a wide enough range of products. To reiterate, § III.F.1 of Microsoft’s remedy proposal prohibits retaliation by Microsoft against ISVs and IHVs for their support of products which “compete[] with Microsoft Platform Software.”¹⁰¹

¹⁰⁰The Court considers the effect of SPR § 8 on OEMs *infra*.

¹⁰¹“Microsoft Platform Software,” as a defined term in Microsoft’s remedy proposal, means “(i) a Windows Operating System Product and/or (ii) a Microsoft Middleware Product.” SRPFJ § VI.L. In the attached Memorandum Opinion, the Court has addressed the definition of “Microsoft Middleware Product” in detail and determined that it is not inappropriately narrow. *See* Memorandum Opinion, Part III.B. The term “Windows Operating System Product,” is defined in the SRPFJ as the software code which constitutes the Windows operating system family of products including Windows 2000 Professional, Windows XP Home, Windows XP Professional, and “their successors, including upgrades, bug fixes, service packs, etc.” SRPFJ

SRPFJ § III.F.1. Dr. Shapiro criticized § III.F.1 based upon the assertion that “[t]ruly innovative middleware that Microsoft simply does not yet offer is not afforded protection from such retaliation by Microsoft.” Shapiro ¶ 199. Dr. Shapiro testified further, in this regard that, “under Microsoft’s Proposed Remedy[,] Microsoft can threaten to withdraw support from an ISV that develops new, cool software that Microsoft has not yet developed on its own.” *Id.*

The Court cannot discern the basis for Dr. Shapiro’s complaint. Dr. Shapiro did not assert that the term “Microsoft Platform Software” is too narrowly drawn, nor did he offer any logical explanation for why protection would be needed for new software which does not “compete” with Microsoft Platform Software. If the “new, cool software” *competed* with Microsoft’s operating system, it would be protected.¹⁰² The liability record in this case is limited to Microsoft’s actions in response to competing software platforms. If the software does not “compete” in some sense with Microsoft Platform Software, it bears little relation to the facts of this case. Moreover, the terms of § III.F.1 are broadly drawn to protect not only software which itself competes with Windows, but software which runs on top of software competing with Windows. Accordingly, the Court rejects Dr. Shapiro’s criticism of § III.F.1 as unsubstantiated.

A number of Plaintiffs’ witnesses criticized Microsoft’s proposed anti-retaliation provision relating to ISVs and IHVs because it does not prohibit *threats* of adverse action. *See,*

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¹⁰²For example, as the Court concluded in the attached Memorandum Opinion, Parts III.B.3.a, III.C.1, server operating systems—in the context of server/network computing—can be said to “compete” with Microsoft’s operating system because they serve as a platform for applications running for the PC. As a result, Microsoft’s proposed anti-retaliation provision would protect server operating systems from retaliation for supporting server capabilities which facilitate use of the server as a platform for applications running “for” the PC. *See* Memorandum Opinion, Parts III.B.3.a, III.C.1.

e.g., Barksdale ¶ 101; McGeady ¶ 87. In response, Microsoft’s economic expert, Dr. Elzinga, asserted that there is no need to protect against such threats. *See* Elzinga ¶ 140. In this regard, Dr. Elzinga reasoned that “if Microsoft is enjoined from retaliating, and potential targets are aware of this, any threats would be empty.” *Id.* In the Court’s view, Dr. Elzinga expects too much of third-parties that must do business with Microsoft. As Mr. Tiemann, explained, if an industry participant feels intimidated by threats or veiled threats, it will never take the action necessary to test whether Microsoft would actually retaliate. *See* Tiemann ¶ 80. Accordingly, the Court finds merit in Plaintiffs’ criticism of the failure of § III.F.1 of the SRPFJ to prohibit Microsoft from threatening the same retaliation which is prohibited by that section.

B. Original Equipment Manufacturers (“OEMs”)

A ban on Microsoft’s ability to retaliate against other industry participants, namely OEMs, for their support of competing products will assist in securing the ability of industry participants to support products which compete with Microsoft’s monopoly product. Borthwick ¶ 61. A prohibition on retaliation against OEMs will also bolster the effect of the freedom provided to OEMs in configuring Windows. Accordingly, both proposed remedies include provisions which bar retaliation by Microsoft against OEMs for exercising the other options provided in the final judgment, as well as, in general terms, for supporting software that competes with Windows or any aspect thereof. SPR § 8; SRPFJ § III.A. In the absence of such a ban, industry participants may be reluctant to engage in the very conduct which Microsoft was found to have prohibited with anticompetitive practices.¹⁰³

¹⁰³Although liability was not clearly ascribed by the appellate court for this conduct, *see* Memorandum Opinion, Part II.B, it is noteworthy that Microsoft has a history of using threats and retaliation as a means to coerce OEMs to prefer Microsoft products over non-Microsoft products. *See Findings of Fact* ¶ 236 (finding that Gateway’s refusal to switch internal use to IE

In particular, § III.A of Microsoft’s remedy proposal prohibits Microsoft from retaliating against an OEM because that OEM is or is contemplating (i) supporting a product that competes with Microsoft Platform Software, (ii) shipping a PC that includes both Windows and a non-Microsoft operating system, or (iii) exercising any option or alternative under Microsoft’s remedy proposal. SRPFJ § III.A. The same section further limits Microsoft’s ability to terminate a Windows operating system license unless the OEM has received two notices of termination and an opportunity to cure. *Id.* The provision is limited in that it authorizes Microsoft to compensate an OEM commensurate with the absolute level of the OEM’s support of the Microsoft product or service. *Id.* By comparison, Plaintiffs offer § 8 of their proposed remedy which, as discussed above, prohibits Microsoft from withholding any form of consideration “based directly or indirectly, in whole or in part, on any actual or contemplated action” by OEMs (and numerous other entities) to support a non-Microsoft offering or to exercise any of the options provided under the remedy in this case. SPR § 8.

Microsoft’s criticisms of § 8 of Plaintiffs’ proposed remedy apply equally with regard to the manner in which § 8 regulates Microsoft’s conduct toward OEMs. *See supra* Part III.A. Most apparent from the language of § 8 is the fact that it covers “adverse” action taken by Microsoft which bears no relation to Microsoft’s Windows operating system products and thus, is largely unrelated to the monopoly market. *See* Elzinga ¶¶ 118 (incorporating ¶¶ 33-34 by reference); Gates ¶¶ 176, 355. Moreover, § 8’s ban on “adverse[.]” actions will affect conduct

and stop shipping Navigator has resulted in the payment of higher prices for Windows by Gateway than its competitors), ¶ 203 (“Microsoft threatened to terminate the Windows license of any OEM that removed Microsoft’s chosen icons and program entries from the Windows desktop or the ‘Start’ menu. It threatened similar punishment for OEMs that added programs that promoted third-party software to the Windows ‘boot’ sequence.”).

beyond the parameters of “retaliation” as that word is commonly used. In short, a ban on adverse action is not the equivalent of a ban on retaliation. *See* Gates ¶¶ 356-66; *see also* Tr. at 2525-28 (Mace). As a result, § 8 of Plaintiffs’ proposed remedy threatens to prohibit vast amounts of legitimate business conduct because it is crafted too broadly. Dr. Elzinga cautioned that over-broad restrictions on Microsoft’s business dealings would hinder pro-competitive conduct. Tr. at 6749-52 (Elzinga) Plaintiffs have not established that the breadth of § 8 is either necessary or appropriate to achieve the goal of preventing Microsoft from retaliating against third-parties for their support of competing products.

James Barksdale, former President and Chief Executive Officer of Netscape Communications Corporation, Barksdale ¶ 1, complains that the latter portion of § III.A of Microsoft’s remedy proposal, which reserves Microsoft’s right 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,” is an exception which swallows the rule. Barksdale ¶ 98. Citing to the slim profit margins under which OEMs function, a fact acknowledged by Judge Jackson, *Microsoft*, 87 F. Supp. 2d at 39, Mr. Barksdale argues that because OEMs generally cannot afford to pass up even a slight reduction in the price for a Windows license, to permit Microsoft to provide consideration or price reductions to OEMs for carrying, supporting, or promoting the “middleware” portions of Microsoft’s operating system products is tantamount to coercing the OEMs to carry, support, and promote these same Microsoft products. Barksdale ¶¶ 98-99. Mr. Barksdale translates this allegedly effective coercion into the capacity “to prevent rival middleware from being distributed through the OEM

channel.” *Id.* ¶ 100.

Mr. Barksdale’s criticism in this regard fails to account for the fact that the appellate court persistently declined to impose liability upon Microsoft for “offering a customer an attractive deal,” *Microsoft*, 253 F.3d at 68, even where this “attractive deal” included the payment of “bount[ies],” *id.* at 67, “costly technical support[,] and other blandishments,” *id.* at 75 (quoting *Findings of Fact* ¶ 401), to industry participants for conduct which favors Microsoft products. *Id.* at 67-68, 75. Additionally, Microsoft’s economic expert Dr. Elzinga explained without contradiction that the proviso in the latter part of § III.A of Microsoft’s remedy proposal is necessary to preserve “an obviously beneficial and routine type of business practice.” Elzinga ¶ 141. Dr. Elzinga testified, by way of example, that were the Court to reject the above-described proviso, “an OEM who shipped 10 percent as much Microsoft software as another and consequently received only 10 percent as much marketing support could nonetheless claim ‘retaliation’ on a theory that the reason it received that level of marketing support was that it shipped more non-Microsoft software in the relevant category.” *Id.* Hence, absent the exception for “[c]onsideration commensurate with the absolute level of [an] OEM’s development, distribution, promotion, or licensing,” practices like the one described above, which are not true “retaliation,” might nevertheless be prohibited. *Id.*; *see also* Tr. at 6766 (Elzinga) (“I think it is within my competence to evaluate the merits of having the ‘nothing in this provision’ clause as part of III.A, because as an economist, I can see the importance of making explicit that Microsoft and the OEMs can still engage in contracts where there are differences between OEMs that are commensurate with that OEM’s . . . input into the process. That to me seems procompetitive and important to preserve.”).

To require Microsoft to provide equal compensation to all OEMs in complete disregard of the amount of support for Microsoft software products provided by the OEM would create an absurd result. The alternative—a complete ban on the provision of compensation for support of Microsoft products—is similarly absurd, as it prohibits routine, procompetitive business practices. A better result is produced by a provision which permits such compensation, but limits the permissible compensation to the absolute level of support for Microsoft products provided by the OEM. On these grounds, the Court rejects Mr. Barksdale’s complaint.

One of Plaintiffs’ witnesses’ central criticisms of § III.F.1 of Microsoft’s remedy proposal is repeated with regard to § III.A, namely that threats of retaliation are not prohibited. *See, e.g.*, McGeady ¶¶ 88-89; Tiemann ¶ 80. The Court’s analysis with regard to § III.F.1 of Microsoft’s remedy proposal is equally applicable to § III.A. Once again, the Court finds that Plaintiffs make a salient point, and the Court therefore rejects the Microsoft assertion that protection from threats of retaliation is superfluous where the retaliation itself is prohibited. *See supra* Part III.A.

Michael Mace, Chief Competitive Officer of PalmSource, Inc., a wholly owned subsidiary of Palm, Mace ¶ 1, levied criticism at both of the non-retaliation provisions in Microsoft’s remedy proposal, SRPFJ §§ III.A.1 and III.F.1.a., arguing that the types of industry participants that are protected against retaliation by Microsoft are too narrowly drawn. Mace ¶¶ 85-86. In particular, Mr. Mace expressed a concern that the parent company of his employer, Palm, is not protected against retaliation. *Id.* ¶ 85. Mr. Mace’s basis for this complaint is his assertion that Palm’s operating system, which is an operating system for handheld computing devices, competes with Windows. *Id.* ¶ 86. The Court addressed the general underpinning for

Mr. Mace’s assertion in the attached Memorandum Opinion, Parts III.B.3.c; III.C.3, and rejected such assertion based upon the conclusion that Plaintiffs have *not* established that the Palm operating system competes with Microsoft’s PC operating system, Windows.¹⁰⁴ Moreover, Mr. Mace’s argument in this regard contradicts his own view that handheld computing devices are, in fact, distinct from personal computers and provide an “alternative platform” to that of personal computers.¹⁰⁵ Mace ¶ 12 (text and heading). Accordingly, the Court finds Mr. Mace’s repeated criticism unavailing.

In summary, the Court finds that § 8 of Plaintiffs’ remedy proposal, despite Plaintiffs’ apparent intent to prohibit retaliation by Microsoft, as presently drafted, is likely to curtail a significant amount of conduct which is not truly retaliation. That conduct which exceeds the parameters of retaliation is likely to be legitimate business conduct, the prohibition of which is without justification. The Court further finds that § 8 of Plaintiffs’ remedy proposal, unlike Microsoft’s proposed anti-retaliation provisions, §§ III.A and III.F.1, is not tailored to reflect the

¹⁰⁴Mr. Mace acknowledged that Palm does not manufacture or distribute an Intel-compatible PC desktop operating system, nor any PC desktop operating system for that matter. Tr. at 1858-59 (Mace). Mr. Mace did not testify that Palm manufactured middleware with the potential to perform as a multi-purpose platform across multiple operating systems, nor that there exists middleware which enables applications written for a handheld device to run on a personal computer. See Memorandum Opinion, Part III.B.3.c. Instead, Mr. Mace argued that the handheld device has the capacity to supplant the personal computer as more applications become available on handheld devices. See generally Mace ¶¶ 12-18. As such replacement of products in the marketplace has not been shown to have an impact upon Microsoft’s monopoly in the market for Intel-compatible PC desktop operating systems, what Mr. Mace describes is not true competition with the Windows operating system. See Memorandum Opinion, Parts III.B.3.c, III.C.3.

¹⁰⁵The Court observes that, notwithstanding Mr. Mace’s assertions as to what should be deemed a “personal computer,” the definition of “personal computer” § VI.Q of Microsoft’s proposed remedy is consistent with Judge Jackson’s treatment of personal computers in this proceeding. See *Findings of Fact* ¶¶ 1, 3.

monopoly market and, instead, addresses all segments of Microsoft's business. Likewise, Plaintiffs' proposed bar on "adverse" action would unjustifiably prohibit compensation for OEMs which is commensurate with the OEM's absolute level of support for a Microsoft product. Compensation of this sort has been shown to be a procompetitive practice which the appellate court itself condoned. Lastly, the Court finds that industry participants will feel more secure in supporting products which compete with Microsoft's monopoly product if, along with a ban on retaliation, the remedy prohibits threats of retaliation by Microsoft.

IV. TERMINATION OF AN OEM'S WINDOWS LICENSE

In conjunction with its proposal to prohibit Microsoft's ability to retaliate against OEMs for their support of products that compete with Microsoft's monopoly product, Microsoft's proposed remedy suggests a restriction on Microsoft's ability to terminate an OEM's Windows license. SRPFJ § III.A. Plaintiffs' proposed remedy contains a similar provision which would also regulate Microsoft's ability to terminate an OEM's Windows license. SPR § 2.a. As there are few alternative PC operating systems presently available, to remain in business, an OEM must license and distribute the Windows desktop operating system. Fama ¶ 21. A Windows operating system license is necessary to the ability of an OEM to legitimately distribute computers containing copies of Windows. Tr. at 1218 (Fama). Therefore, without the necessary Windows license, an OEM would, in effect, be unable to continue selling PCs.

The necessity of the Windows license to OEM viability gives Microsoft great leverage over OEMs. Fama ¶ 22. Mr. Fama described a fear, arising from the inescapable dependence upon a license from Microsoft, that Microsoft will terminate the necessary license and

effectively put the OEM out of business.¹⁰⁶ See Fama ¶ 52; see also Ashkin ¶ 142. The provision of some degree of protection for OEMs against sudden termination of their Windows license will free the OEMs from this fear and enable them to engage in competition in which they might otherwise have been too fearful to consider.

Specifically, Microsoft's proposed remedy prohibits Microsoft from terminating an OEM's Windows license without first having given the OEM reasonable notice of the reasons for the proposed termination and opportunity to cure. SRPFJ § III.A. Where Microsoft has provided two or more such notices, even if the breach has been cured, Microsoft may immediately terminate the license. *Id.* While similar, the comparable provision in Plaintiffs' proposed remedy provides that Microsoft may only terminate a Windows license for "good cause" and specifies that Microsoft may not do so without giving notice of the breach and an opportunity to cure. SPR § 2.a. The rather absurd effect of this provision in Plaintiffs' proposed remedy is that it would prohibit Microsoft from terminating a Windows license, even where the licensee is persistently in material breach, so long as the licensee cures the breach within the specified period. *Id.*; see also Tr. at 1258-60 (Fama). Such a circumstance would, of course, be detrimental to Microsoft's ability to enforce valid provisions in its licenses and, thereby, the ability to protect its intellectual property from misuse. See Tr. at 1258-60 (Fama).

¹⁰⁶Mr. Fama attempted to illustrate this fear by reference to Gateway's receipt, in a single day, of four notices of termination of a license agreement with Microsoft. Fama ¶ 53; Pl. Exs. 1243-46 (all filed under seal). Mr. Fama's example is of limited relevance, as the notices of termination did not concern Windows or any part thereof, but instead concerned a separate Microsoft product. Tr. at 1260-62 (Fama). Moreover, the notices merely notified Gateway of its violation and demanded that Gateway cure the violation or face termination of the license. See Pl. Exs. 1243-46 (all filed under seal). Notably, Mr. Fama did not deny that Gateway, was in fact, in breach of the license, nor did Mr. Fama offer any evidence of bad faith on Microsoft's part in issuing the notices. Tr. at 1261-62 (Fama). Ultimately, no license was terminated as a result of the notices referenced by Mr. Fama. *Id.* at 1262.

Mr. Fama of Gateway, whose complaints are echoed by various other of Plaintiffs' witnesses, complained that the limitation in Microsoft's remedy proposal on Microsoft's ability to terminate an OEM's Windows operating system license is insufficient to protect OEMs from Microsoft's use of a termination threat as a tool for coercion. *See* Fama ¶¶ 49-50; *see also* Ashkin ¶ 142; Barksdale ¶ 101. Mr. Fama argued that Microsoft's proposed provision, unlike the comparable portion of Plaintiffs' proposed remedy, does not require a "material breach" before Microsoft may terminate an OEM's Windows license, and hence, Microsoft may terminate for a mere "ministerial" breach. Fama ¶ 50-51. As the Windows operating system licenses are essential to the viability of an OEM, a persistent fear that Microsoft may cancel the licenses for a non-material breach¹⁰⁷ may have a chilling effect on an OEM's willingness to engage in any action which displeases Microsoft, such as the promotion of software which competes with Windows or a Windows component. Fama ¶ 56. Mr. Fama's complaint in this regard ignores the fact that both remedy proposals would prohibit Microsoft from cancelling a Windows license in response to an OEM's support for a competing product, or for any other reason inconsistent with the other terms of the final judgment. *See* SPR § 8; SRPFJ § III.A. Accordingly, the Court finds that the "good cause" requirement proposed by Plaintiffs is largely redundant of other proposed protections.

¹⁰⁷The Court observes that Mr. Fama's testimony refers only to a "material breach," despite the fact that the comparable provision in Plaintiffs' remedy proposal, § 2.a, does not include any requirement of materiality, but instead requires "good cause" for termination. In this regard, Mr. Fama appears to have conflated the concept of "good cause" with the separate and distinct concept of a "material breach." This conflation is again reflected in Plaintiffs Proposed Findings of Fact. *See, e.g.*, Pl. Prop. Findings of Fact ¶ 410. The concept of "good cause" is broader than that of "material breach." For example, a company which discontinues a particular product line has "good cause" to terminate its supply contract, despite the absence of a "material breach."

V. OTHER PARTICIPANTS IN THE ECOSYSTEM

A. Agreements Limiting Support for Competing Products

The appellate court imposed liability upon Microsoft for its First Wave Agreements inasmuch as they extracted a promise from ISVs to “refrain from distributing to Windows users JVMs that complied with Sun’s standards” and the corresponding promise that the ISVs would create their Java applications to be reliant upon the Windows-specific JVM. *Microsoft*, 253 F.3d at 75 (quoting *Findings of Fact* ¶ 401). Although 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 appellate court agreed with the district court that the exclusionary effect of the agreements was significant. *Id.* Microsoft offered no procompetitive justification for this portion of the First Wave Agreement. *Id.* at 76.

To remedy this finding, both parties propose injunctive provisions which prohibit Microsoft from entering into agreements predicated upon a promise by an ISV to refrain from taking action to advance the development of software which will compete with Microsoft platform software. In general, a prohibition on Microsoft’s ability to extract promises from ISVs not to support software platforms which compete with Microsoft’s PC operating system products will promote the ability of non-Microsoft software platforms to develop and compete with Microsoft’s PC operating system products.

Section 11 of Plaintiffs’ proposed remedy proffers a complete ban on *all* agreements that exchange consideration for a promise to refrain from “developing, licensing, promoting or distributing any Operating System Product or Middleware product competitive with any

Windows Operating System Product or Microsoft Middleware Product.” SPR § 11.¹⁰⁸ The substantial counterpart to this provision is § III.F.2 in Microsoft’s proposed remedy. Like § 11 in Plaintiffs’ proposed remedy, § III.F.2 of Microsoft’s proposed remedy prohibits Microsoft from entering into agreements predicated on a promise not to support competing software. Microsoft’s proposed remedy, however, is substantially more circumscribed, as it only limits agreements between Microsoft and ISVs relating to a “Windows Operating System Product,” as that term is defined in Microsoft’s proposed remedy. SRPFJ § III.F.2. In addition, this portion of Microsoft’s proposed remedy permits agreements wherein Microsoft limits an ISV’s support for competing 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.” *Id.*

Microsoft, through the testimony of its witnesses, complains vigorously that § 11 of Plaintiffs’ proposed remedy is overly broad and will prohibit legitimate competitive behavior, and Plaintiffs correspondingly complain that § III.F.2 of Microsoft’s proposed remedy is too narrowly drawn and contains significant exceptions. In particular, Microsoft, through the testimony of its witnesses, complains that § 11 of Plaintiffs’ remedy impinges upon Microsoft’s ability to enter into routine “work-for-hire” agreements with ISVs. *See, e.g.,* Gates ¶ 384. Under a typical “work-for-hire” arrangement, Microsoft hires an ISV to create software for Microsoft

¹⁰⁸Strikingly similar to § 11 of Plaintiffs’ proposed remedy is § 6.a, which prohibits Microsoft from entering into agreements “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.” SPR § 6.a. Plaintiffs do not offer testimony which distinguishes the specific effect of § 6.a from § 11 in their proposed remedy.

according to particular Microsoft specifications, and when the software is complete, Microsoft retains full ownership of the resulting “work-for-hire” code. *Id.* In many instances, Microsoft will include the resulting code in its own products. *Id.* In conjunction with such an agreement, it is not uncommon for Microsoft to provide the ISV with access to Microsoft’s source code and other intellectual property in order to facilitate the creation of the new software. *Id.* This mode of “outsourcing” software design is facilitated by an agreement that the ISV’s employees who worked on the project would be prohibited, for a reasonable period of time, from developing for the benefit of Microsoft’s platform competitors software similar to the work-for-hire project. *Id.*; *see also* Elzinga ¶ 142.

Plaintiffs do not dispute that such “work-for-hire” arrangements would be prohibited by § 11 and notably, Plaintiffs’ economic expert, Dr. Shapiro, conceded that by doing so, § 11 of Plaintiffs’ proposed remedy would likely deter procompetitive business agreements. *See* Tr. at 3290-91 (Shapiro). For this reason, Plaintiffs’ economist refused to endorse § 11 as an economically beneficial remedy in this case. *Id.* The testimony offered by Plaintiffs’ fact witnesses in support of § 11 is cursory and, therefore, unpersuasive. *See, e.g.,* Barksdale ¶ 141; Richards ¶¶ 2, 209; Tiemann ¶ 125. None of this testimony specifically explains the justification for prohibiting clearly procompetitive conduct. In short, Plaintiffs have failed to provide evidence which indicates that the benefit to be gained by § 11 of their proposed remedy outweighs the potential harm which will likely result from the elimination of a significant amount of legitimate business conduct.

Conversely, Plaintiffs criticize § III.F.2 of Microsoft’s proposed remedy on the grounds that it does not go far enough in remedying the clearly established anticompetitive conduct.

Plaintiffs first complain, through testimony such as that of Mr. Barksdale, that the exception in § III.F.2 which permits the kind of “work-for-hire” agreements discussed above has the capacity to nullify the restrictive portion of the provision. Barksdale ¶ 114 (“This exception means that Microsoft is permitted to do precisely what the first part of [§] III.F.2 says Microsoft cannot do—to 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.”). Mr. Barksdale’s reading of this provision overstates the parameters of the exception and fails to take note of the significant fact that an acceptable limitation on an ISV’s support for competing products is permissible *only* where such limitation is “reasonably necessary . . . and of reasonable scope and duration in relation” to the work-for-hire agreement with Microsoft. SRPFJ § III.F.2. Beyond his misguided reading of § III.F.2, Mr. Barksdale did not offer any explanation for why Microsoft should be limited in its ability to enter into “work-for-hire” agreements, which would be permitted pursuant to § III.F.2 of Microsoft’s proposed remedy. Mr. Richards, on behalf of Plaintiffs, offered the same unsupported criticism as Mr. Barksdale and, likewise, failed to explain the benefit to be derived by competition from a severe limitation on Microsoft’s ability to enter into “work-for-hire” and similar agreements. Richards ¶ 209.

In the absence of the exception in § III.F.2 of Microsoft’s remedy proposal, observed Dr. Elzinga, “it would be difficult or impossible for Microsoft to enter into lawful joint ventures relating to platform software.” Elzinga ¶ 142. Joint development agreements in the software industry typically provide that the parties to the agreement will not develop, promote or distribute products that compete with the products being jointly developed and/or marketed. *See* Elzinga ¶ 142; Jones ¶ 128. Such limitations are often necessary to enable beneficial commercial

transactions to occur, Elzinga ¶ 142, as they provide the participants to the agreement some assurance that their contributions to the joint venture will not be turned against them. Jones ¶ 128. As even one of Plaintiffs' witnesses admitted, legitimate joint development programs advance innovation and benefit competition. *See* Ashkin ¶ 132; *see also* Elzinga ¶ 142; Jones ¶ 128.

Mr. Barksdale also complained about the scope of § III.F.2 of Microsoft's proposal, noting that Microsoft's ability to enter into agreements is limited only with regard to agreements related to a "Windows Operating System Product" as that term is used in Microsoft's proposed remedy. Barksdale ¶ 115. Mr. Barksdale interpreted the provision to mean that what "Microsoft could not accomplish using inducements related to Windows, it could still accomplish using inducements related, for example, to Internet Explorer." *Id.* Mr. Barksdale's complaint in this regard is based upon a misunderstanding of the use of the term "Windows Operating System Product" in the SRPFJ. "Windows Operating System Product" as defined in Microsoft's proposal *includes* IE and any other so-called "middleware" functionality which is distributed as part of the products known as Windows 2000 Professional, Windows XP Home, Windows XP Professional, and all of their successors. SRPFJ § VI.U; *see also* Tr. at 5212 (Jones). Accordingly, the Court rejects Mr. Barksdale's above-described complaint.

In sum, there is little disagreement that a remedy which curtails Microsoft's ability to enter into agreements wherein another industry participant agrees not to support any products competitive with Microsoft's monopoly product will foster competition. The Court finds, however, that a prohibition drawn too severely will hamper Microsoft's incentive to enter into joint venture, joint services, and work-for-hire agreements. These agreements have been shown,

without dispute, to be valuable tools for the industry and beneficial to competition and, therefore, should not be discouraged.

B. Exclusive Agreements

1. Independent Software Vendors (“ISVs”) and Original Equipment Manufacturers (“OEMs”)

As the findings of liability with regard to Microsoft’s agreements with ISVs and Apple, which is both an ISV and an OEM, *Microsoft*, 253 F.3d at 71, in conjunction with the First Wave Agreements, are predicated upon the First Wave Agreements’ effect of exclusivity, *Microsoft*, 253 F.3d at 75-76, both remedy proposals offer provisions which curtail substantially Microsoft’s ability to enter into agreements that include an exclusivity provision. Microsoft’s remedy proposes a general limitation on Microsoft’s ability to enter into exclusive agreements relating to “Microsoft Platform Software” not only with ISVs and OEMs, but also with IAPs, ICPs, and IHVs. SRPFJ § III.G.1. Similarly, Plaintiffs’ remedy proposal includes a provision which would ban Microsoft from entering into contracts in which another party agrees to “distribute, promote or use any Microsoft product, service, feature or technology exclusively or in a minimum percentage.” SPR § 6.c. In contrast to the corresponding provision in Microsoft’s remedy proposal, however, the provision in Plaintiffs’ proposed remedy is meant to eradicate Microsoft’s use of exclusivity in any aspect of the corporation’s contracting, whether or not related to its operating system products. *Id.*

Plaintiffs have not offered testimony specific to § 6.c of their proposed remedy. In fact, Plaintiffs presented only very limited testimony from three witnesses regarding § 6 in general. Mr. Richards of RealNetworks testified broadly that “Section 6 . . . contains an unconditional ban on exclusive dealing that is widely drawn to extend to the setting of defaults and restrictions

on the use of redistributable code.”¹⁰⁹ Richards ¶ 195. Similarly, Mitchell Kertzman, the Chief Executive Officer of Liberate Technologies, a company which supplies interactive television software, Kertzman ¶ 1, testified that § 6 “broadly prohibits any Microsoft exclusive contracts, including those to ‘distribute, promote or use any Microsoft product or service, feature or technology exclusively or in a minimum percentage.’” *Id.* ¶ 58 (quoting SPR § 6.c). The only justification for this admittedly broad provision was offered by Plaintiffs’ economist, Dr. Shapiro, who testified that “the broad language of Provision #6 should help make it more easily, and effectively, enforceable.” Shapiro ¶ 167. Dr. Shapiro could not, however, endorse § 6 as written without noting that the provision “could be narrowed so that it does not cover agreements wholly unrelated to Microsoft Platform Software.” *Id.* n.147. Upon further inquiry Dr. Shapiro acknowledged that the unnecessary breadth of § 6 rendered the provision inconsistent with his view, as an economist, of the principles which should guide the crafting of a remedy in this case. Tr. at 3655-59 (Shapiro). The sum of this testimony is wholly inadequate to explain the need for, and usefulness of, a remedy provision which would ban many legitimate and likely procompetitive contracts in markets unrelated to Microsoft’s monopoly in the market for Intel-compatible PC operating systems. *See id.*; *see also* Gates ¶¶ 338-52; Murphy ¶ 237.

The closest counterpart to § 6 of Plaintiffs’ remedy proposal is § III.G.1 of Microsoft’s proposed remedy, which prohibits Microsoft from entering into agreements that require fixed-percentage or exclusive distribution, promotion, use, or support of “Microsoft Platform Software.” SRPFJ § III.G.1. The general prohibition extends beyond ISVs and OEMs and

¹⁰⁹Plaintiffs’ remedy proposal uses the term “redistributable code,” but does not define the term. SPR § 6.b. “Redistributable code” is understood to be the code that Microsoft distributes separately from its Windows operating system in order to update portions of the operating system. *See* Tr. at 5166-67 (Jones).

thereby extends beyond the specific liability findings entered in this case. Murphy ¶ 173. The provision excepts from this prohibition “agreements in which [the third party] 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.” SRPFJ § III.G.1. For example, SRPFJ § III.G.1 would permit an agreement with a particular Web site to offer 100 percent of its music content in Microsoft’s media formats because such an agreement would not limit the site’s ability to offer the content in other formats as well. Elzinga ¶ 132. Such contracts, testified Dr. Elzinga, are unlikely to have an exclusive effect. *Id.*

Both Mr. Barksdale and Mr. Richards raised concerns that, if imposed, the exception in § III.G.1 would undercut the effectiveness of the provision and would enable Microsoft to foreclose channels of distribution through the use of fixed percentage agreements. *See* Barksdale ¶ 117; Richards ¶ 196. In particular, Mr. Richards intimated that the “commercially practicable” representation provision in § III.G.1 is problematic, because Microsoft, as a powerful monopolist, can forcefully obtain such a representation. Richards ¶ 196. This complaint, of course, ignores the requirement that Microsoft obtain the representation in “good faith.” SRPFJ § III.G.1. Were Microsoft to take any action, whether subtle or overt, to improperly induce the “commercially practicable” representation required by § III.G.1, it would violate the “good faith” provision in the remedy proposal and render the representation ineffective for compliance with the proposed decree. *Id.*

Taking a different tack, Mr. Barksdale contended that the “commercially practicable

portion” of § III.G.1 of Microsoft’s remedy proposal is “rather meaningless” because it requires only a “representation” and does not affect whether the entity will, in fact, “provide equal or greater distribution, promotion, use or support for software that competes with Microsoft Platform Software,” SRPFJ § III.G.1. Barksdale ¶ 117. In response, Dr. Elzinga observed that an ISV’s provision of such a representation indicates that a fixed percentage agreement will not have any exclusive effect. *See* Elzinga ¶ 132. As Mr. Barksdale’s complaint fails to explain the benefit to competition to be derived from a ban on fixed percentage agreements which do not have an exclusive effect, the Court rejects Mr. Barksdale’s criticism on this point.

Mr. Barksdale further complained about the latter portion of § III.G of Microsoft’s remedy proposal, which permits Microsoft to enter into bona fide joint ventures or joint development agreements with third-party industry participants wherein such third parties agree not to compete with the object of the joint venture. Barksdale ¶ 116. As with Mr. Barksdale’s criticism of § III.F.2, the Court observes that Mr. Barksdale failed to explain the benefit to be derived by limiting Microsoft’s ability to enter into legitimate joint venture agreements. As the Court observed previously, limitations on a third party’s distribution or use of competing software are often necessary to enable beneficial commercial transactions to occur and are not unusual in the context of a bona fide joint development or joint services agreement. Elzinga ¶ 142; Gates ¶ 383; Jones ¶ 128. There is insufficient evidence to support a finding that a complete ban of all such joint ventures would benefit competition.

Mr. Richards raises a concern that a proviso at the end of § III.G of Microsoft’s proposal threatens to nullify the prohibition in § III.G.1 on exclusive deals. *See* Richards ¶ 198. The relevant portion of Microsoft’s proposed remedy provides that “[t]his section does not apply to

any agreements in which Microsoft licenses intellectual property in [sic] from a third party.” SRPFJ § III.G. Although he did not criticize the general principle that Microsoft should be permitted to include an exclusivity provision in conjunction with the license of intellectual property, Mr. Richards, observing that “[m]any software deals involve the licensing of intellectual property as a matter of course,” testified that Microsoft could utilize this exception to “legitimize any deal in which intellectual property is licensed by Microsoft from a third party, even if it is a very small or incidental part of the overall transaction.” Richards ¶ 198.

The proviso in the latter part of § III.G ensures that Microsoft is not discouraged from licensing third-party software, which is conduct that is beneficial to competition. However, Mr. Richards makes a salient point that, as written, § III.G may be readily circumvented by the gratuitous inclusion of a license of third-party intellectual property in an agreement so as to avoid the restrictions that § III.G would otherwise impose. Microsoft does not proffer any testimony which explains the necessity of such a broadly drawn exception in § III.G. As Mr. Richards testified, the exception can be narrowed so as to prevent Microsoft from evading the restrictions imposed by the earlier portion of the provision.

As the Court concluded with regard to agreements that limit competition, discussed above, a prohibition on agreements containing a term of exclusivity will benefit competition, provided that such a prohibition addresses only those agreements with an actual effect of exclusivity. Moreover, there are undoubtedly instances where a joint development agreement or license of intellectual property is appropriately accompanied by a term of exclusivity. Such exclusive terms are often the norm in the industry and have not been shown to have a detrimental effect upon competition. Accordingly, the Court finds that such agreements should be preserved,

and even encouraged.

2. Internet Access Providers (“IAPs”)

In the case of IAPs, the appellate court condemned Microsoft’s contracts which extracted from IAPs a promise of exclusivity—meaning a promise to refrain from and/or sharply limit promotion or distribution of a non-Microsoft browser, in exchange for prominent placement of the IAP’s product in the configuration of Microsoft’s Windows operating system. *Microsoft*, 253 F.3d at 68-71. To remedy this finding, in general terms, the parties propose similar injunctive provisions specifically aimed at Microsoft’s use of valuable placement on the desktop in conjunction with exclusionary contracts. Plaintiffs offer § 6.e of their remedy proposal, which provides that Microsoft may not enter into agreements “in which another party . . . [is] granted consideration to[,] . . . 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.” SPR § 6.e. Microsoft’s remedy proposal suggests language which prohibits Microsoft from entering into any agreement with “any IAP or ICP that grants placement on the desktop or elsewhere in any Windows Operating System Product to that IAP or ICP on the condition that the IAP or ICP refrain from distributing, promoting or using any software that competes with Microsoft Middleware.” SRPFJ § III.G.2.

Because of the broad definitions used in Plaintiffs’ proposed remedy, § 6.e is not limited to the placement of icons and the like within the Windows operating system products, but concerns placement in virtually any Microsoft software product. *See* SPR § 6.e; Gates ¶ 352. As a result, contends Microsoft, “Section 6.e would make it much harder for IAPs and ICPs to obtain promotional opportunities in a wide range of Microsoft software products.” Gates ¶ 352.

Again, Plaintiffs' economist, Dr. Shapiro acknowledged the unnecessary breadth of § 6 and its inclusion of products and markets unrelated to the liability in this case. Tr. at 3655-59 (Shapiro). Based on this fact, Dr. Shapiro conceded that § 6 did not comport with his expert view of the principles which should guide the crafting of a remedy in this case. *Id.* Notably too, § 6.e of Plaintiffs' remedy proposal does not contain any reference to exclusivity or other forms of limiting competition. SPR § 6.e. Instead, the provision simply identifies a particular form of consideration—placement on the desktop—with which Microsoft may not trade. Plaintiffs have not offered sufficient evidence to justify the breadth of this particular provision in their remedy proposal.

As noted above, § III.G.2 of the Microsoft's remedy proposal addresses Microsoft's use of placement on the desktop in conjunction with exclusionary agreements. Like the pertinent portion of Plaintiffs' proposal, Microsoft's proposed remedy extends beyond agreements with IAPs and includes agreements with ICPs as well. Unlike Plaintiffs' proposal, however, § III.G.2 of Microsoft's remedy proposal prohibits the use of placement on the desktop as consideration only in agreements in which the IAP or ICP promises not to promote, distribute, or use software which competes with "Microsoft Middleware." SRPFJ § III.G.2. In this regard, the provision does not completely prohibit Microsoft from offering placement in a Windows product as consideration, but focuses instead upon those agreements which were found to have a substantial anticompetitive effect.¹¹⁰ In short, § III.G.2 appropriately addresses the finding of liability

¹¹⁰Mr. Richards, of RealNetworks, asserts that § III.G.2 of Microsoft's proposed remedy is flawed because it does not extend its terms to software developers. Richards ¶ 210. Mr. Richards argues that the provision would not stop Microsoft from offering an ISV placement on Windows for the ISV's software on the condition that it refrain from promoting middleware that competes with a Microsoft offering. *Id.* Mr. Richard's criticism, though technically accurate, ignores the fact that such agreements, because they condition consideration on refraining from

against Microsoft for entering into exclusive agreements with IAPs regarding the placement of icons on the desktop, but the provision does not unnecessarily curtail legitimate competitive behavior.

VI. DISCLOSURE OF APIs AND COMMUNICATIONS PROTOCOLS

Both proposed remedies include provisions mandating that Microsoft disclose certain technical information for purposes of enabling interoperation. The term or concept of “interoperation” can apply both to the exchange of information and/or services between two different devices, as well as to the exchange of information and/or services between two different software programs running on the same device. Neither side maintains that the interoperability disclosures which appear in the two competing proposals are directly related to the imposition of liability. Rather, the disclosure provisions are aimed at the broader goals of unfettering the market and restoring competition.

A. Plaintiffs’ Disclosure Proposal

Plaintiffs’ interoperability-related provision is substantially more broad in scope than the comparable portions of Microsoft’s proposed remedy. *Compare* SPR § 4, *with* SRPFJ § III.D-E. Plaintiffs’ proposed remedy mandates the disclosure of “all APIs, Technical Information and Communication Interfaces” used by Microsoft to enable interoperation between any Microsoft application and Microsoft Platform Software on the same personal computer; each Microsoft Middleware Product and Microsoft Platform Software on the same personal computer; and each Microsoft software program installed on any type of computing device, including personal computers, servers, handheld devices, and set-top boxes, and the Microsoft Platform Software

supporting a competing product, would be prohibited pursuant to § III.F.2 of Microsoft’s proposed remedy. *See infra* Part V.A; Tr. at 6753-54 (Elzinga).

installed on any of these devices. SPR § 4. Most notable from even a cursory review of § 4 of Plaintiffs’ proposed remedy is the fact that it mandates disclosures relating to interoperation between software which is not part of the Windows operating system and a number of non-PC devices. *See* Gates ¶ 296; Madnick ¶¶ 148-49, 151. This Court addressed, as a preliminary matter, the relevance of these non-PC devices to the instant proceeding and concluded that, with one significant exception, these non-PC devices bear little relevance to the instant proceeding and, therefore, will not be addressed in the remedy. *See* Memorandum Opinion, Parts III.B.3, III.C. Nevertheless, the Court examines the impact of any portions of § 4 of Plaintiffs’ proposed remedy which survive the Court’s preliminary determination as to the scope of the remedy.

As the Court observed earlier, the definition in Plaintiffs’ proposed remedy of “Microsoft Middleware Product” appears to include almost every Microsoft software product, without regard to the relationship of such software to Microsoft’s PC operating system. *See* SPR §§ 4; 22.x; *see also* Memorandum Opinion, Part III.B.2.b. Plaintiffs incorporate the definition of “Microsoft Middleware Product” into the definition of “Microsoft Platform Software.” SPR § 22.y. As a result, the requirement in § 4 of Plaintiffs’ remedy proposal that Microsoft document and disclose the technical information that enables interoperation between a “Microsoft Middleware Product” and “Microsoft Platform Software” effectively requires Microsoft to document and disclose information relating to the exchange of services between virtually *any* two pieces of Microsoft software which run on a PC. Gates ¶ 296; Madnick ¶¶ 148-49, 151. Addressing only this aspect of § 4 of Plaintiffs’ proposed remedy, the breadth of the definition in Plaintiffs’ proposal would require Microsoft to disclose vast amounts of its intellectual property across product lines unrelated to the relevant market in this case. *See* Gates ¶¶ 281, 294-302;

Madnick ¶ 152.

The breadth of these disclosures is reinforced, and expanded, if possible, by Plaintiffs' definition of "interoperate." Section 22.q of Plaintiffs' proposed remedy defines "interoperate" to mean "the ability of two products to effectively access, utilize, and/or support the full features and functionality of one another." SPR § 22.q. As this Court found in the attached Memorandum Opinion, Part III.B.3.a, the term "interoperate" is understood generally as the ability to exchange information and to use the information that has been exchanged. *See* Ledbetter ¶ 65; Madnick ¶ 46. Implicit in the term, as it is commonly used in the industry, is the concept that interoperability encompasses a continuum, rather than an absolute standard. *See* Madnick ¶ 46, Tr. at 7108-09 (Bennett); Tr. at 5782-83 (Madnick); Tr. at 5477 (Short); *see also* Ledbetter ¶¶ 65-66; Tiemann ¶ 179. Plaintiffs' definition of "interoperate" describes an aspiration of perfect interoperation, *see* Tr. at 5480-83 (Short), which does not exist in most contexts, particularly in a heterogeneous context. *See* Madnick ¶¶ 86-89.

The concept evoked by Plaintiffs' definition of "interoperate" equates interoperability with "interchangeability." Madnick ¶ 86; *see also* Gates ¶ 305; Tr. at 3229 (Appel) ("[T]he disclosure [in § 4] would be helpful in making things that are . . . functional substitutes for the Microsoft platform software."); Tr. at 7111-12 (Bennett) ("Well, if you read, it says: Effectively, access, utilize and/or support the full features and functionality of one another. That, to me, taken in its entirety, which is the only way I can consider this definition, means the ability to clone."); Tr. at 2930-31 (Schwartz) ("I believe that [the definition of 'interoperate' and its use in Plaintiffs' remedy proposal] is designed to enable the creation of substitutes."). The definition of "interoperate" in Plaintiffs' remedy proposal serves to further Plaintiffs' apparent goal of

enabling “drop-in” or “plug-in” replacements for Microsoft’s products, or portions thereof. Madnick ¶ 86; *see also* Tr. at 3229-31, 3168-75 (Appel); Tr. at 2930-31 (Schwartz). Pursuant to Plaintiffs’ definition of “interoperate,” a Windows client would not be “interoperable” with a non-Microsoft server unless Microsoft’s competitors have the information necessary to ensure that their server operating systems can provide Windows clients with every service that a Microsoft server operating system provides. Madnick ¶ 86; *see also* Gates ¶ 305. If the definition of “interoperate” includes the ability to use all of the features that are in a Microsoft system on a third party’s system that has not yet implemented those features, the expectation would be that Microsoft has to provide sufficient information to enable the third party to develop in its own product an implementation of the features in the Microsoft system. Tr. at 5483 (Short); *see also* Tr. at 3229-31 (Appel); Tr. at 2930-31 (Schwartz).

This kind of “interchangeability” exceeds the normal industry usage of the term “interoperate.” *See* Madnick ¶¶ 86-90. The presently existing lack of interchangeability of products reflects “a host of technical and business factors on both the vendor-and customer-side of the equation.” *Id.* ¶ 91. From a technical perspective, the fact that there are many different ways to accomplish any given task means quite basically that different vendors will often accomplish the same task, however complex, in a different manner, such that the differing solutions are not typically interchangeable. *Id.* ¶ 92. From a business perspective, there is an incentive to develop a product with features that are distinct from other products, such that the new features appeal to consumers and generate sales. *Id.* ¶ 93. In addition, differences in consumer demand often lead to the creation and success of a product with strengths and weaknesses different from those of another product. *Id.* ¶¶ 93-94. Uniformity in features among

the products of various firms and complete interchangeability defeat these aspects of competition. *Id.*

If implemented, the consequences of § 4 would be substantial and far reaching, such that the disclosures required under § 4 would enable the cloning of Windows. Gates ¶¶ 285, 289; Tr. at 6027-28 (Madnick). A “clone” is a piece of software that replicates the functions of another piece of software, even if that replication is accomplished by something other than the literal repetition of the same source or binary code. Madnick ¶ 160. “Clone” is not necessarily a technical term, but it can be described as action which makes one piece of software function identically to, or fully replicate, another piece of software without copying the precise code to enable that function. Madnick ¶¶ 33, 160. Cloning is typically accomplished through reverse engineering, meaning studying the functionality of the other products and attempting to produce products that have similar functionality. Tr. at 6027 (Madnick).

The most obvious negative consequence of a provision which facilitates the cloning of Microsoft’s technology is that it reduces Microsoft’s incentive to innovate. Plaintiffs’ own economic expert, Dr. Shapiro, acknowledged that the mandated release of technology can have the undesirable side effect of reducing the monopolist’s return on innovation. Shapiro ¶ 92. Dr. Shapiro went on to say that he did not think that the remedy imposed in this case should enable the cloning of Microsoft’s technology. Tr. at 3321 (Shapiro). However, Microsoft presents ample testimony illustrating that the mandatory disclosures in § 4 of Plaintiffs’ proposed remedy will have precisely that undesirable effect.

Microsoft’s intellectual property is one of its primary assets. *See* Elzinga ¶ 104; Gates ¶¶ 124-25; Murphy ¶ 221; *see also* Tr. at 3329 (Shapiro). Microsoft does not appear to have

substantial assets in the form of factories or natural resources, traditional revenue drivers of “old economy” firms, *Microsoft*, 253 F.3d at 49. In fact, Mr. Gates testified that Microsoft does not have *any* physical assets which he considers to be “important” to the success of the company. Gates ¶ 124. Instead, Microsoft’s products consist almost entirely of information Microsoft creates—“primarily instructions to microprocessors on how to perform various functions.” *Id.* Absent protection for intellectual property, there exists little reason to invest in developing software. Gates ¶ 126; *see also* Frei ¶ 24; Ulmer ¶ 21.

Enabling cloning is a windfall for competitors. *See* Elzinga ¶ 85-86; Tr. at 3478 (Shapiro). Even absent literal copying of software code, software innovations developed by one firm can be implemented by competitors writing their own code.¹¹¹ Gates ¶ 127. The more information one firm has about a competitor’s product, the easier it is to replicate the key features and other innovations of the product. *Id.*; *see also* Bennett ¶ 117. The broad API disclosures required by § 4 would likely provide other software companies with the equivalent of the blueprints not only to the Windows operating system for PCs, but also to the server version of Windows. Gates ¶ 289; *see also* Tr. at 3168-75 (Appel). Once provided with the equivalent of the blueprints for Windows, competitors would have little trouble, and comparatively less cost, writing their own implementation of everything valuable in Windows, including the capabilities it provides to developers via APIs. Gates ¶¶ 289-90; Tr. at 3168-75 (Appel).

In the software industry, some information about competitors’ products is available and other information is protected by intellectual property laws. The mandated disclosures in § 4 of

¹¹¹Plaintiffs’ computer science expert, Dr. Appel, coyly avoids the cloning issue by utilizing the term “copy” in his testimony. Appel ¶¶ 99-100. As a “clone,” meaning a replicate functionality, can be created in the absence of literal copying, Dr. Appel’s selective word choice serves only to obscure the issue.

Plaintiffs' proposed remedy (and the related enabling provisions) would enable Microsoft's competitors to clone many features without violating intellectual property laws. *See* Elzinga ¶ 86. Competitors could thus develop products that implement Microsoft's Windows technology at a far lower cost since they would have access to all of Microsoft's research and development investment. Gates ¶¶ 124-27, 289-90. Moreover, technological advancement would be largely simplified for Microsoft's competitors because it is comparatively easier to mimic all the functionality rather than to create something new. Gates ¶¶ 289-90. In this light, § 4 of Plaintiffs' proposed remedy is exposed as an intellectual property "grab" by Microsoft's competitors. Elzinga ¶ 85. Such a "grab" has been shown to assist competitors by relieving them of the costly burden of reverse engineering and new innovation, far more than has been shown to advance competition.

Plaintiffs' economic expert, Dr. Shapiro, acknowledged that Microsoft has a legitimate interest in protecting against a technology grab and that such an interest should be protected. Tr. at 3315 (Shapiro). Although Dr. Shapiro, in his direct testimony, endorsed the notion of API and communications protocol disclosures because such disclosures would assist the performance of networks with non-Windows servers and Windows clients and would facilitate the platform capabilities of cross-platform middleware and server operating systems, *see* Shapiro ¶¶ 145-51, 184, he did so without any real understanding of what § 4 of Plaintiffs' remedy proposal would entail in practice, Tr. at 3314-15 (Shapiro). Dr. Shapiro acknowledged Microsoft's "interest" in protecting against the "misappropriat[ion]" of its technical information and conceded a complete inability to understand the effect of § 4 of Plaintiffs' remedy upon that "interest." *Id.* at 3315. Indeed, seeming somewhat aware of the significant ambiguities in Plaintiffs' remedy proposal,

Dr. Shapiro envisioned a kind of ongoing negotiation between the parties regarding the implementation of § 4 of Plaintiffs' proposed remedy in practice. *Id.* at 3317-18. Further, Dr. Shapiro viewed § 4 as a mere extension of the type of disclosures already made by Microsoft as part of its usual course of business, Shapiro ¶¶ 147-48, and could not envision or understand the depth of change which would be required by the extremely broad disclosures required by § 4 of Plaintiffs' remedy proposal, Tr. at 3314-15 (Shapiro). This lack of understanding rendered Dr. Shapiro wholly unable to value the quantum of intellectual property which Microsoft would be required to relinquish as a result of § 4 of Plaintiffs' remedy proposal. Tr. at 3320-22 (Shapiro). Dr. Shapiro's lack of economic analysis of § 4 renders uncontroverted the analyses of Drs. Elzinga and Murphy, who concluded that § 4 of Plaintiffs' remedy proposal works an expropriation of substantial amounts of Microsoft's intellectual property which is harmful to both consumers and competition. Elzinga ¶ 113; Murphy ¶¶ 219-21; Tr. at 4028, 4059-60 (Murphy).

Beyond the clearly negative economic consequences of § 4, the disclosures mandated by § 4 of Plaintiffs' proposed remedy will have significant negative effects on Microsoft's technology. There is no dispute that it is presently Microsoft's practice to publish APIs after they have been tested and where they have broad applicability. *See* Shapiro ¶ 148; *see also* Borduin ¶¶ 35-37; Frei ¶ 19; Gates ¶ 99; Hofstader ¶ 58; Short ¶ 27. Likewise there is little dispute that Microsoft chooses not to publish APIs where the interfaces are unstable. *See* Shapiro ¶ 148. Reliance upon such interfaces has the potential to cause third-party software not to work or Windows to crash. Frei ¶ 25; Gates ¶ 323; Hofstader ¶ 59; Madnick ¶ 153. It is a well-understood rule in the industry that once an API is published, the software developer

publishing the interface guarantees a certain result when it is called with certain parameters such that it cannot be substantially altered without effectively “breaking” applications which rely on the API. *See* Short ¶ 8; *see also* Bennett ¶¶ 92-93; Madnick ¶ 153; Tr. at 4214-15 (Borduin); Tr. at 174-76 (Green).

Because of this rule, not every interface in a particular software product is “published.” Instead, it is common to implement two versions of an interface, a private interface for “trusted” software components, meaning the components that are known to behave in a particular manner, and a public interface for “untrusted” components that are not presumed to be so well behaved. Bennett ¶ 91. In this model, trusted components are typically other parts of the operating system, while untrusted components are more likely third-party programs, such as applications, written to call upon operating system services. *Id.* ¶¶ 91-92. One of Microsoft’s computer science experts, Dr. John Bennett, explained in this framework:

[S]ystem calls that directly access critical operating system components would typically be part of the private interface; system calls that indirectly access critical operating system components in a restricted manner would typically be part of the public interface. One of the advantages of this approach to software development is that the internal details of data representation are hidden from the user of that data representation. The operating system developer is free to make changes to this internal data representation as long as the external interfaces relied upon by third parties are preserved. There is also an advantage to having information about the private interface be closely held. If the number of modules using the private interface is small, it is easier to make changes in the private interface in order to improve system performance or reliability, or to add new functionality.

Once published, it is difficult to change the public interface used to access operating system services. This is because programmers who have written code that relies on that public interface expect it not to change. Significant changes to the public interface may even necessitate a complete rewriting of the original application program, a costly and time-consuming undertaking.

Bennett ¶¶ 92-93; *see also* Jones ¶ 108. The computer science experts that testified in this case universally agree that the broad disclosure of purely unpublished, or “internal,” interfaces is a

dangerous undertaking because of the potential to destabilize applications and the operating system. *See* Bennett ¶¶ 93-94; Madnick ¶ 153; Tr. at 3179-80 (Appel). Furthermore, the broad disclosure of internal interfaces eliminates the operating system designer’s ability to alter the interface, which in turn will impede product flexibility and innovation. *See* Madnick ¶ 153. Lastly, a number of witnesses agreed that the broad disclosure of internal interfaces, as enforced by examination of Microsoft’s source code, SPR § 4.c, could pose a substantial threat to the security and stability of Microsoft’s software. Allchin ¶ 39; Bennett ¶¶ 100, 139-40; Gates ¶ 326; Tr. at 4639-43 (Gates); *see also* Tr. at 1555-56 (Ledbetter).

Microsoft is not unusual in that it maintains internal interfaces, Tr. at 1555-56 (Ledbetter), nor is the number of such undisclosed interfaces unusual. Madnick ¶ 153. Section 4 of Plaintiffs’ proposed remedy would mandate that the documentation and disclosure of a vast number of Windows’ internal interfaces.¹¹² Bennett ¶ 96; Gates ¶ 323; Madnick ¶ 152. The Court heard extensive technical testimony detailing why such a result is highly undesirable. Moreover, the lone economist to endorse § 4 of Plaintiffs’ proposal did so pursuant to the misconception that the provision would “not require Microsoft to publish unstable, internal APIs.” Shapiro ¶ 148. Given this evidence, the Court finds that the broad disclosures, including the disclosure of internal interfaces, advanced by Plaintiffs pose a risk of substantial harm not only to Microsoft, but to other participants in the industry, as well as to consumers.

Having concluded that there are substantial, negative consequences which are likely to result from the broad disclosures required pursuant to § 4 of Plaintiffs’ remedy proposal, the

¹¹²The disclosure provisions in Microsoft’s remedy proposal, § III.D, would result in the documentation disclosure of some interfaces which are presently “internal” or undisclosed but plainly this disclosure would not be of a quantum comparable to that associated with Plaintiffs’ remedy proposal. *See* Jones ¶ 107.

Court turns its attention to whether the justification proffered for requiring such disclosures as part of a remedy in this case outweighs this harm. Plaintiffs' economic expert advances the "parity principle" as the economic rationale underlying the disclosures. Shapiro ¶ 122. The parity principle posits that information should be shared to ensure that a non-Microsoft product interoperates with Windows as effectively as does a Microsoft product. *See id.* ¶¶ 122, 139. "Applying the parity principle," argues Dr. Shapiro, "will clearly improve the performance of non-Microsoft middleware, to the benefit of consumers and, thus, make it easier for innovative middleware to lower the applications barrier to entry." *Id.* ¶ 146.

The "parity principle" advocated by Dr. Shapiro is borrowed from the telecommunications context. Tr. at 3680 (Shapiro). In that context, for example where "there has historically been a monopolist controlling local telephone service," pursuant to the "parity principle," long distance carriers are ensured equal access to "whatever services" the local carrier provides to its own "long distance arm." *Id.* Dr. Shapiro noted that the "parity principle" in the telecommunications context applied as part of a regulatory scheme, rather than a context of "pure antitrust." *Id.* at 3681. Although Dr. Shapiro borrowed his guiding economic principle from another field, he offered little testimony to explain why such borrowing was appropriate. Dr. Shapiro's explanation provided, in full, that "here in a remedy phase we are putting in some rules that are not completely dissimilar to regulatory rules." *Id.* at 3681.

Despite his certainty that application of the "parity principle" is appropriate in this case, Dr. Shapiro was unable to assess the "competitive effects and consumer welfare effects, to understand exactly what the operation of [the 'parity principle'] in practice is going to mean, not just for Microsoft, but for Microsoft's customers, for Microsoft's competitors, and for the

marketplace as a whole.” Tr. at 3315 (Shapiro). This uncertainty exists despite Dr. Shapiro’s own acknowledgment that the “remedy ultimately should be judged based on its impact on consumers.” Shapiro ¶ 49.

Defendant’s economic expert, Dr. Elzinga, disputed that the “parity principle” is an appropriate guide to the parameters of a remedy in this case. Elzinga ¶¶ 50-52; Tr. at 6868 (Elzinga). Dr. Elzinga took the view that the principles applicable in the field of public utility regulation were unlikely to be particularly appropriate for application to the software industry, which presents its own unique dynamics. Tr. at 6868 (Elzinga). Dr. Elzinga expressed concern that adherence to the “parity principle” would result in a massive regulatory regime. *Id.* Such a regime threatens to place the judiciary in a role for which it is not well-suited. *United States v. Paramount Pictures*, 334 U.S. 131, 163 (1948) (noting that a remedy which “involve[s] the judiciary in the administration of intricate and detailed rules” is undesirable because “[t]he judiciary is unsuited to affairs of business management . . .”).

Given the testimony of all of the economic experts, the Court cannot conclude that the parity principle is appropriately applicable to this case. Most troubling is the lack of explanation for why a principle which has been applied in the field of telecommunications is appropriate for consideration in the software market, which is more often noted for its unusual features than for its similarity to other markets. Compounding this concern is Dr. Shapiro’s inability to foresee the precise manner in which the principle would operate. In at least one regard, the disclosure of APIs, for example, Dr. Shapiro’s assumption that disclosures made pursuant to the “parity principle” would not require Microsoft to disclose internal interfaces has been shown to be erroneous. Given these concerns, the Court cannot subscribe to the “parity principle” as the

appropriate guide for a remedy in this case.

Aside from the now-rejected “parity principle,” Plaintiffs have not offered any other justification for the creation of a market wherein Microsoft’s technologies, or portions thereof, can be cloned by competitors so as to enable the ready substitution of these cloned technologies for the Microsoft technologies. Jonathan Schwartz, Chief Strategy Officer for Sun Microsystems, Inc. (“Sun”), Schwartz ¶ 1, testified that Sun adheres to a business model wherein competing companies produce multiple implementations of a standard set of Sun APIs. Tr. at 2931 (Schwartz). Mr. Schwartz testified that the disclosures required by § 4 of Plaintiffs remedy proposal were intended to implement just such a model for Microsoft’s APIs. *Id.* Similarly, Dr. Appel testified that the purpose of enabling the creation of functional substitutes is to permit the sale of “platform software to a user who might have otherwise bought the Microsoft platform software,” because the functional substitute “could run the set of applications that the end-user wants to run.” Tr. at 3229 (Appel). Neither witness, however, nor any witness with economic expertise, testified that there exists any economic justification for enabling the creation of functional substitutes (clones) of Microsoft’s technology. Indeed, Plaintiffs’ own economic expert, Dr. Shapiro, expressly rejected the creation of functional substitutes as an appropriate goal for the remedy in this case:

I would not favor remedies in this case permitting rival operating systems to clone Windows or to copy the Windows source code. . . . [M]y refusal to support such remedies . . . flows from my view that permitting the cloning of Windows would go beyond “restoring competition” in the monopolized market.

Shapiro ¶ 87 (footnote omitted). In sum, Plaintiffs have not established that the creation of functional substitutes of Microsoft technology in a variety of product markets, as implemented through § 4 of Plaintiffs remedy proposal will enhance competition in the monopolized market in

any way.

B. Microsoft's Disclosure Proposals

Microsoft's proposed interoperability disclosures are two-fold. Section III.D of Microsoft's remedy proposal requires Microsoft to make disclosures of "APIs and related Documentation that are used by Microsoft Middleware" which are to be used "for the sole purpose of interoperating with a Windows Operating System Product." SRPFJ § III.D. Section III.E of Microsoft's remedy proposal mandates that Microsoft disclose "for the sole purpose of interoperating or communicating with a Windows Operating System Product . . . any Communications Protocol that is . . . (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." SRPFJ § III.E.

"Communications protocols," as that term is used in the computing industry, refers to the rules for the transmission of information between different systems or devices. *See* Appel ¶ 54; *see also id.* ¶ 55; Gates ¶ 101; Ledbetter ¶ 31; Tr. at 170 (Green); Tr. at 5498 (Short). A protocol can be comprised of several layers, with the lower layers providing simple, low-level, basic services, and the upper layers repackaging the lower-layer services into higher-level, more complex and detailed services. Appel ¶ 54. By using communications protocols supported in Windows, or other communications protocols that developers can add to Windows, via the installation of software, information can be exchanged between Windows-based PCs and computers running other operating systems. Gates ¶ 102.

"Native" communication is one of at least five basic approaches to achieving

interoperability between Windows client operating systems and non-Microsoft server operating systems. Short ¶ 35. Native means without the addition of software code to the client. Tr. at 975, 1146 (Tiemann); *see also* Short ¶¶ 36-38. Hence, where communication between a Windows client and a particular server is native, there is no additional software code running on Windows which is necessary to the communication. Likewise, where a particular communications protocol is “supported natively,” the implication is that the device can communicate or interoperate with another device using that protocol without the addition of software to assist in the communication.

Despite Microsoft’s inclusion of §§ III.D and III.E in its remedy proposal, Microsoft presented the testimony of Dr. Elzinga that the inclusion of the provisions merely reflects the “give-and-take” of Microsoft’s settlement with the United States in *United States v. Microsoft*, No. 98-1232 (D.D.C.). Elzinga ¶ 138. In contrast to this “party line,” however, Dr. Elzinga acknowledged that the provisions in Microsoft’s remedy which concern interoperation are “designed to look forward to restore a middleware threat” to Microsoft’s PC operating system dominance and “to ensure a level of interoperability between clients and servers that would . . . restore, promote, enable that threat to be effectuated in the marketplace, but . . . without requiring Microsoft to give up all of its intellectual property.” Tr. at 6873 (Elzinga).

Beyond their general complaints that Microsoft’s proposed remedy does not accomplish the cloning enabled by Plaintiffs’ remedy proposal, Plaintiffs’ witnesses criticized § III.E of Microsoft’s proposed remedy more specifically based upon the view that the disclosures which are required by Microsoft’s proposed remedy are unjustifiably limited to *native* communication with a Microsoft server operating system product. *See, e.g.*, Schwartz ¶ 165; Tiemann ¶ 184. As

the Court recounted above, “native” communication, means communication that is accomplished without the addition of software code to the client. In other words, where Windows provides “native” support for a particular communications protocol, no additional software must be added to the operating system in order to enable interoperation between the Windows client and the server. *See* Tr. at 1146 (Tiemann). Mr. Tiemann testified that he is aware of only limited instances where Windows communicates natively with a server. Tiemann ¶ 184. Of course, where the communication is not “native” it does not exclusively involve a Windows client and a Microsoft server, but incorporates another software product that is added to run on “top” of Windows. *See, e.g.*, Tr. at 1155-56 (Tiemann) (discussing communication between Microsoft’s “Outlook” software product installed on a Windows client and a “Microsoft Exchange Server”).

Underlying the disclosure of technology which enables interoperation in a network context is the theory that the alternative platform provided by a non-Microsoft server operating system will not develop into a platform threat if it is unable to interoperate well with Windows clients. *See* Shapiro ¶ 144 (treating server operating systems as “middleware”). Because Microsoft can ensure successful interoperation between Windows clients and its own server operating systems, the disclosure of the protocols used for such interoperation will enable similarly successful interoperation between Windows clients and non-Microsoft server operating systems. *Id.* ¶ 145. However, where software code is added to Windows to achieve interoperation with Windows servers, the means of interoperation no longer involves the capabilities of the monopoly product—the PC operating system, but instead involves some other software product which runs on Windows, but is not part of Windows itself. In this light, the limitation to “native” interoperation in § III.E appears to flow directly from a recognition of the

fact that Microsoft's anticompetitive behavior in this case is tied to its monopoly in a carefully defined market, rather than to some more general dominance in the broader software industry.

Finally, Plaintiffs' witnesses were critical of Microsoft's proposed disclosure provisions because the Microsoft remedy proposal does not define "interoperate." *See, e.g.*, Barksdale ¶ 133; Pearson ¶ 67; Richards ¶ 91; Tiemann ¶ 179. The concerns raised in this context derive from the fact that interoperation generally encompasses a continuum. *See* Memorandum Opinion, Part III.B.3.a. As Mr. Barksdale testified, for example, there is a concern that Microsoft will not recognize all portions of the continuum in determining what information to disclose pursuant to § III.D and E. *See* Barksdale ¶ 133. With regard to § III.D of Microsoft's proposal, the term "interoperate" is used to circumscribe the appropriate use for which the technical information must be disclosed, and therefore, the term is not central to Microsoft's understanding of its obligations under that provision. SRPFJ § III.D; Tr. at 6128 (Poole). The obligations imposed by § III.D are determined by the definition of "API," which is provided in Microsoft's remedy proposal. SRPFJ § III.D; Tr. at 6128 (Poole). With regard to § III.E, Microsoft's proposal includes a concise definition of "interoperate" in its text, stating that Microsoft shall make available communications protocols used to "interoperate, or communicate," with a Microsoft server operating system product. SRPFJ § III.E. This use of a basic definition incorporates the continuum of what is reasonably understood in the industry to constitute "interoperation." *See* Tr. at 7110 (Bennett). This continuum, of course, stops short of requiring the type of perfect interchangeability connoted by Plaintiffs' definition of "interoperate." *See* Madnick ¶¶ 86, 88. Based on the foregoing, the Court finds the criticism of the absence of a definition of the term "interoperate" in Microsoft's remedy proposal to be

without merit.¹¹³

VII. ENABLING LICENSES

Both remedy proposals contain provisions which address the issue of licenses and appropriate royalties for the use of intellectual property released pursuant to the dictates of the remedy in this case. Not surprisingly, however, the two proposals are polar opposites in the way they resolve the issue. Pursuant to § 15 of Plaintiffs' remedy proposal, "all intellectual property rights owned or licensable by Microsoft that are required to exercise any of the options or

¹¹³The vast majority of Plaintiffs' criticisms of § 4 are rendered irrelevant by the Court's ruling regarding the scope of the remedy, *see* Memorandum Opinion, Part III.B-C. Plaintiffs offer one additional, very narrow criticism of § III.D of Microsoft's proposed remedy, however, which is not addressed by the Court's rulings on the issue of the scope of the remedy. This criticism rests upon the assertion that, at present, Microsoft will not be required to make disclosures of APIs relied upon by the most recent version of the Windows Media Player, which was included with Windows XP. Richards ¶ 87. This criticism arises from the fact that, despite its inclusion in Microsoft's most recent version of the Windows operating system, Windows Media Player XP (also known as Windows Media Player 8.0) has not been distributed separately from Windows. As a result of the definition of "Microsoft Middleware," *see* Memorandum Opinion, Part III.B.2.a.iv, complain Plaintiffs, the APIs which permit "Windows Media Player" to interact with other portions of Windows do not fall within the API disclosure requirements in Microsoft's proposed remedy.

In the Court's view, this criticism overstates the issue. The fact that Microsoft has not yet distributed Windows Media Player XP separately from Windows XP will not excuse Microsoft from providing API disclosures with regard to the APIs used by the separately distributed code from Windows Media Player 7.0 to interact with Windows 2000 Professional. As a factual matter, Windows Media Player XP uses essentially the same interfaces to interoperate with Windows XP that Windows Media Player 7.0 uses to interoperate with Windows 2000 Professional. Poole ¶ 75. Microsoft is already in the process of identifying those interfaces for disclosure. *Id.* Microsoft's Vice President of Media Platforms, Will Poole, *id.* ¶ 1, testified that Microsoft will "distribute the next major version of [Windows Media Player], code-named the 'Corona player,' separately from the rest of the Windows operating system." *Id.* ¶ 76. The "Corona player," which will be called Windows Media Player 9.0, is the successor to both Windows Media Player 7.0 and Windows Media Player XP. *Id.* Mr. Poole testified that the commercial release of Windows Media Player 9.0 will occur during the second half of this year. *Id.* By virtue of its separate distribution, the APIs relied upon by Windows Media Player 9.0 to interact with Windows would have to be disclosed pursuant to § III.D. *Id.* ¶ 77. Based upon this testimony, there appears to be little, if any, impact flowing from the fact that Windows Media Player XP has not been distributed separately from Windows XP.

alternatives provided” under the Final Judgment are to be licensed on a royalty-free basis. SPR § 15. In contrast, § III.I of Microsoft’s remedy proposal requires that the intellectual property rights “required to exercise any of the options or alternatives expressly provided to them” under the Final Judgment must be licensed pursuant to “reasonable and non-discriminatory” terms. SRPFJ § III.I. Therefore, § III.I leaves open the possibility that Microsoft may charge a “reasonable and non-discriminatory” royalty for such licenses. *Id.* Both proposed provisions can be viewed as “enabling provisions” in that they serve to ensure that the other provisions in the remedy function as expected. *See* Tr. at 3292-93 (Shapiro).

It is undisputed that one of Microsoft’s primary assets, probably its primary asset, is its intellectual property. Elzinga ¶ 104; Tr. at 3329 (Shapiro). Indeed, as noted earlier, Mr. Gates testified that Microsoft does not have *any* physical assets which he considers “important” to the success of the company. Gates ¶ 124. Royalty-free licensing would divest Microsoft of intellectual property assets without the provision of compensation to Microsoft. Elzinga ¶ 104. Plaintiffs’ economic expert, Dr. Shapiro concedes that any forced divestiture of assets is a structural remedy. Tr. at 3328-29 (Shapiro); *see also* Elzinga ¶ 104. Section 15 is an unusual structural remedy in that it does not provide Microsoft with *any* compensation for its forced relinquishment of assets. *See* Elzinga ¶ 104.

In his direct testimony, Dr. Shapiro did not offer an opinion with regard to § 15 of Plaintiffs’ remedy. Tr. at 3292-93 (Shapiro). When asked, Dr. Shapiro indicated that he viewed § 15 of Plaintiffs’ proposed remedy as an “important enabling provision” which “did not have a life of its own.” *Id.* at 3293. Dr. Shapiro explained that the provision existed so as to prevent Microsoft from having “the ability to inhibit [the] proper operation [of other remedial

provisions] through certain terms and conditions of intellectual property licenses.” *Id.* In addition to Dr. Shapiro’s testimony regarding § 15, Plaintiffs present the testimony of three industry participants. Mr. Richards of RealNetworks offered the rationale that the royalty-free nature of the license would “ensure that Microsoft cannot use royalty schemes to thwart the development of middleware capable of lowering the applications barrier to entry.” Richards ¶ 110. Mr. Schwartz from Sun, though he did not offer any independent justification for the denial of royalty payments to Microsoft, attempted to bolster Mr. Richards’ view by noting that “Microsoft does not typically charge anything for licenses of APIs and protocols, as opposed to software products.” Schwartz ¶ 141. Finally, Larry Pearson, Associate Director of Product Design and Strategic Marketing for SBC Operations, Inc.,¹¹⁴ Pearson ¶ 1, observed quite basically that the royalty-free nature of § 15 would be useful to competitors because it makes competition with Microsoft less costly. *Id.* ¶ 89.

Neither Dr. Shapiro, nor any of the other witnesses who offered testimony regarding § 15, explained why the mandate of non-discriminatory and reasonable license terms provided in § III.I of Microsoft’s remedy proposal was insufficient to accomplish Dr. Shapiro’s goal of preventing Microsoft from imposing terms and conditions upon its intellectual property licenses which would inhibit the effectiveness of the other remedy provisions. In fact, none of Plaintiffs’ witnesses explained the manner in which *competition* would be enhanced by royalty-free licenses of Microsoft’s intellectual property. In contrast, the testimony makes very clear that Microsoft’s competitors stand to benefit greatly from royalty-free licenses.

¹¹⁴SBC Operations, Inc. is a wholly-owned subsidiary of SBC Communications Inc. Pearson ¶ 1

VIII. SECURITY EXEMPTION

Just as § III.I of Microsoft’s remedy proposal and § 15 of Plaintiffs’ proposed remedy can be viewed as enabling provisions, § III.J of Microsoft’s remedy proposal serves a similar enabling purpose.¹¹⁵ Pursuant to § III.J.1 of Microsoft’s remedy proposal, Microsoft is relieved of its obligations to “document, disclose or license [portions of APIs or Documentation or portions or layers of Communications Protocols] to third parties” where such documentation, disclosures, or licenses would “compromise the security of a particular installation . . . of anti-piracy, anti-virus, software licensing, digital rights management, encryption or authentication systems.” SRPFJ § III.J. Concomitantly, § III.J.2 entitles Microsoft to place certain conditions on its licenses of “any API, Documentation, or Communications Protocol related to anti-piracy systems, anti-virus technologies, license enforcement mechanisms, authentication/authorization security, or third-party intellectual property protection mechanisms of any Microsoft product.” *Id.* § III.J.2. Pursuant to § III.J.2 Microsoft may condition a license on the requirement that the licensee:

(a) has no history of software counterfeiting or piracy or willful violation of intellectual property rights, (b) has a reasonable business need for the API, Documentation or Communications Protocol for a planned or shipping product, (c) meets reasonable, objective standards established by Microsoft for certifying the authenticity and viability of its business, (d) agrees to submit, at its own expense, any computer program using such APIs, Documentation or Communication [sic] Protocols to third-party verification, approved by Microsoft, to test for and ensure verification and compliance with Microsoft specifications for use of the API or interface, which specifications shall be related to proper operation and integrity of the systems and mechanisms identified in this paragraph.

Id. This provision, observed Dr. James Allchin, Group Vice President for Platforms at Microsoft, Allchin ¶ 1, enables Microsoft to protect the security of computer installations by

¹¹⁵Plaintiffs’ remedy contains no substantial counterpart to § III.J of the SRPFJ.

addressing “three major security concerns, all of which pose serious problems for both Microsoft and its customers: (i) hackers; (ii) viruses; and (iii) piracy.” *Id.* ¶ 17; *see generally* Allchin ¶¶ 18-38. That hackers, viruses, and piracy pose substantial security concerns to Microsoft and consumers is not disputed.

Dr. Allchin explained Microsoft’s view that “[s]ecurity mechanisms must walk a careful balance between being open for review and being secret to protect specific information.” Allchin ¶ 20. In this regard, Dr. Allchin acknowledged, as Plaintiffs’ witnesses have asserted, Appel ¶ 122; McGeady ¶¶ 71-72, 74-77, that “many ‘eyes’ examining the specification of a security protocol or a reference implementation of that protocol will eventually lead to a better protocol.” Allchin ¶ 20. Dr. Allchin, however, insisted that there is another “side of the balance” which dictates that non-disclosure of the “specifics of the implementation of a security mechanism” is also a good practice. Allchin ¶ 21. As an example, Dr. Allchin pointed to Microsoft’s Digital Rights Management (DRM) systems, wherein a “standard or proprietary algorithm is implemented in an ‘obfuscated’ way to protect digital content.” Allchin ¶ 27. In this model, the encoding format may be widely known, while the algorithms and keys used to decode that data remain secret. *Id.*

Plaintiffs’ witnesses criticized § III.J of Microsoft’s remedy proposal largely because they disagree with Dr. Allchin’s and Microsoft’s philosophical approach to security. Steven McGeady, a former software developer and Vice President of Intel Corporation, McGeady ¶ 1, who testified on behalf of Plaintiffs and in opposition to § III.J of the SRPFJ, stated:

It is well understood in the software industry that Microsoft’s security system relies on the secrecy of the underlying APIs and protocols. If this secret is discovered, either by a software hacker or through other means, the security of tens or hundreds of millions of computer systems is compromised. In my experience in developing

security and authentication protocols, it is rarely advantageous to employ this type of “security through obscurity” mechanism.

Id. ¶ 76. Mr. McGeady instead advocated a model of security which Microsoft acknowledges, but to which Microsoft does not adhere exclusively. *Id.*; Allchin ¶ 21. “The most secure information systems,” testified Mr. McGeady, “do not rely on the secrecy of the APIs or protocols, but rather rely on the underlying mathematical algorithms—algorithms that are available in the public domain.” McGeady ¶ 74. Plaintiffs’ computer science expert echoed this preference, asserting that “[t]he best and most prevalent method for achieving secure communication is public disclosure of the APIs and communications protocols underlying a security algorithm in conjunction with the issuance of private authentication keys.” Appel ¶ 122. In this regard, Dr. Appel testified that exceptions from disclosures, even the broad disclosures mandated by Plaintiffs’ proposed remedy, would not be necessary to protect “the security of a *properly designed* computer software or system.” Appel ¶ 128 (emphasis added).

Notwithstanding this testimony, Mr. McGeady acknowledged that “Microsoft is correct” that there are instances in which disclosure of certain algorithms will defeat security. McGeady ¶ 77.

Dr. Appel testified that § III.J.1 of Microsoft’s proposed remedy is broader than necessary, Appel ¶ 126, and that if broadly interpreted, the provision could “exempt Microsoft from disclosing interfaces that are needed for interoperation based on technically unjustified ‘security’ issues,” *id.* ¶ 128. Dr. Appel’s fear that Microsoft will rely upon “unjustified ‘security’ issues” ignores the language of the provision. As Dr. Allchin noted repeatedly, § III.J.1 protects from disclosure only that information which “*would compromise* the security of a particular installation . . . of anti-piracy, anti-virus, software licensing, digital rights management, encryption or authentication systems.” SRPFJ § III.J.1 (emphasis added); Tr. at

6451, 6459, 6466 (Allchin). The provision will not excuse disclosures based upon hypothetical concerns of a security compromise. SRPFJ § III.J.1. If the “security issue” is truly unjustified, Microsoft will not be able to claim, much less establish, that release of the particular information “would compromise” security. SRPFJ § III.J.1. Having heard the testimony with regard to § III.J.1, the Court finds that Microsoft presents a legitimate concern with regard to protecting security and that there is insufficient evidence to establish that § III.J.1 is more broadly drawn than appropriate.

Plaintiffs’ witnesses also criticized § III.J.2 of Microsoft’s proposed remedy, asserting that it would enable Microsoft to discourage or delay disclosures required in other portions of Microsoft’s remedy proposal. *See generally* Shapiro ¶ 195; Barksdale ¶ 136. The Court finds these criticisms to be vague and speculative. Plaintiffs’ own economic expert acknowledged that the inclusion of the “some checks,” such as those in § III.J.2, is “reasonable.” Shapiro ¶ 195. Absent more, the criticisms advanced by Plaintiffs’ witnesses are insufficient to engender a conclusion that § III.J.2 undermines the affirmative obligations imposed in the remainder of Microsoft’s remedy proposal.

IX. TERM OF THE DECREE

The parties offer limited evidence on the subject of the proper term for the remedial decree in this case. Plaintiffs’ economic expert, Dr. Shapiro, testified that the “current strength and likely durability of Microsoft’s monopoly” counsels in favor of “a relatively long” term for the remedy. Shapiro ¶ 203. This lengthy term, argued Dr. Shapiro, is appropriate because, in the presence of network effects, entry into the market for Intel-compatible PC operating systems “may well occur through a multi-stage process.” *Id.* ¶ 204; Tr. at 3415 (Shapiro). Dr. Shapiro

asserted that a decree which curtails Microsoft's ability to stifle competition in the monopolized market for a substantial amount of time will provide the necessary assurances to industry participants that attempts at entry into the market are worthwhile and will not be hampered by Microsoft. *See* Shapiro ¶ 204; Tr. at 3415 (Shapiro). Based upon these assertions, Dr. Shapiro opined that five years is an insufficient amount of time in which to encourage competition in the monopolized market. *See* Shapiro ¶ 204; Tr. at 3415 (Shapiro). Despite his conviction that more than five years is appropriate to permit new "technologies . . . to evolve," Dr. Shapiro did not offer any basis for a determination as to what number of years, if not five, would be more appropriate. Tr. at 3415-16 (Shapiro) ("I don't know how to say it really, whether five is the right number or eight or ten. . . . [T]en is a round number. I can't say that its obviously better than eight.").

Notably, in his assessment of the appropriate term of the conduct restrictions imposed by this Court, Dr. Shapiro did not allude to the undisputed fact that the pace of development in the relevant industry is exceedingly rapid. In stark contrast, Dr. Murphy, one of Microsoft's economic experts, based his assessment of the appropriate term for a remedial decree almost entirely upon the rapid pace of development and change in the industry. Murphy ¶ 242. Dr. Murphy observed that it is exceedingly difficult to anticipate the nature of the "important issues" in the industry five years from now, let alone ten. *Id.* Mr. Gates echoed this view, observing the dramatic change in the PC industry in the past ten years and predicted that the industry will experience still greater change in the ten years to come. Gates ¶ 463.

Based upon this testimony, the Court finds that Dr. Shapiro's ultimate conclusion that five years is insufficient is flawed in that it does not take into account the unusually rapid pace of

change in this industry. *See* Shapiro ¶ 203. Dr. Shapiro correctly articulates a primary goal of the remedial decree—to foster competition—and appropriately raises the concern that the network effects¹¹⁶ at play in the relevant market will make that goal difficult. *See id.* However, the network effects upon the relevant market do not necessarily outweigh consideration of the rapid pace of change in the industry. Indeed, Dr. Shapiro does not appear to have balanced the two in reaching his determination as to the appropriate term of the remedial decree. *See id.*

Conversely, Dr. Murphy does not appear to have considered entirely the interaction between network effects and the rapid pace of technological development, and so, his testimony also is flawed in this limited respect. *See* Murphy ¶ 242. In this regard, the evidence regarding the propriety of a five-year term rests in equipoise, and there is a dearth of evidence regarding the imposition of some term other than a five-year term.

X. OTHER PROVISIONS IN PLAINTIFFS’ REMEDY PROPOSAL

Plaintiffs’ proposed remedy includes a number of provisions for which there is no substantial counterpart in Microsoft’s proposed remedy. In this portion of the opinion, the Court examines the factual testimony offered for and against the imposition of each such provision.

¹¹⁶Judge Jackson explained network effects as follows:

Consumer 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.

Findings of Fact ¶ 39. The appellate court referred to this phenomenon as the “chicken-and-egg” situation: “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.

A. Plaintiffs' Proposed Remedy §§ 12, 14

In addition to § 15 of Plaintiffs' proposed remedy, Plaintiffs have proposed two other injunctive provisions that have the direct and indirect effect of divesting Microsoft of its valuable intellectual property assets. *See* SPR §§ 12, 14. Section 12 of Plaintiffs' proposed remedy requires Microsoft to "disclose and license all source code for all Browser software." *Id.* § 12. Plaintiffs' witnesses referred to this provision as a mandatory "open-source" of IE. When software is "open-sourced," the source-code for the software is made publicly available, often pursuant to terms which grant a license free of charge, with the proviso that any redistribution of the source code, whether modified or unmodified, must also be made publicly available for license free of charge. Tiemann ¶¶ 12-14, 33. For example, the Linux operating system, discussed *infra*, is open-sourced. *Id.* ¶ 33.

Section 14 of Plaintiffs' proposed remedy also imposes a forced divestiture of assets upon Microsoft, but this provision is slightly different from § 12 in that it holds the possibility that Microsoft will receive some compensation for its intellectual property. This portion of Plaintiffs' proposed remedy obligates Microsoft to "continue to port or otherwise make available Office¹¹⁷ to the Macintosh Operating System" and to "offer for sale, at an auction . . . [at least three] licenses to sell Office for use on Operating Systems other than Windows and Macintosh, without further royalty beyond the auction price." SPR § 14. Pursuant to § 14 of Plaintiffs' remedy proposal, the "winning bidders" at such an auction shall receive "all information and tools required to port Office to other Operating Systems." *Id.* Although the licenses to port

¹¹⁷"Microsoft Office" is software which provides an "office productivity suite," which typically includes a word processor, a spreadsheet application, a database, and presentation software." Tiemann ¶ 86; *see also Microsoft*, 253 F.3d at 73.

Office will be auctioned, there is no guarantee that Microsoft will obtain substantial revenue from such an auction. Elzinga ¶¶ 79, 81; *see also* Tr. at 1044, 1051-52 (Tiemann).

Plaintiffs do not offer testimony which establishes a clear link between the liability in this case and the open source of IE or the required porting of Office. Instead, Plaintiffs' witnesses have testified somewhat generally that both provisions will affirmatively "lower" the applications barrier to entry, Tiemann ¶ 85, and restore competition to the market. Shapiro ¶ 86; *see also* Shapiro ¶¶ 101-04, 110-18; Tiemann ¶¶ 85, 87-95, 112.¹¹⁸ In this regard, both Mr. Tiemann and Dr. Shapiro focus upon two existing non-Microsoft operating systems available for personal computers, namely the Linux operating system and Apple Mac OS, and the potential benefits which would accrue to these systems if Microsoft were divested of IE and forced to port Office. *See* Shapiro ¶¶ 98-101, 105-118; Tiemann ¶¶ 85-114. Dr. Shapiro identifies Apple and Linux as "the two most promising direct competitors" to Windows, Shapiro ¶ 5, but Plaintiffs acknowledge that of the two, only Linux actually falls within the monopoly market of Intel-compatible personal computer operating systems. Pl. Prop. Findings of Fact ¶ 32. In the relevant market, Linux has a market share of less than 2 percent. Tiemann ¶ 31. In the *Findings of Fact*, Judge Jackson acknowledged the presence of Linux and observed that "Linux's

¹¹⁸Other witnesses testifying on behalf of Plaintiffs contend that the release of IE into the public domain will ensure that Microsoft does not use its control over the browser market to control other technology markets, such as the market for Web services. Schwartz ¶ 159; Pearson ¶¶ 10, 48, 96 (asserting that § 12 of Plaintiffs' proposed remedy "ensures" that Microsoft will not "modify IE by adding proprietary or other non-disclosed protocols or extensions in such a way that they would prevent or degrade interoperability with non-Microsoft server operating systems."). These assertions reflect an attempt to argue either a new attempted monopolization claim or the previously court-rejected "monopoly-leveraging" theory of liability by extending that "leveraging" argument to emerging areas of technology. *United States v. Microsoft Corp.*, 1998 WL 614485 (D.D.C. Sept. 14, 1998), at *26-28. The Court therefore declines to enter factual findings relating to this testimony on the grounds that it is irrelevant. *See* Memorandum Opinion, Parts III.B.3.d, III.C.4; III.D.

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.” *Findings of Fact* ¶ 50. Judge Jackson observed more generally that “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.* ¶ 51. Michael Tiemann, Chief Technology Officer and Senior Executive of Red Hat, Inc., Tiemann ¶ 1, the largest distributor of the Linux operating system, *id.* ¶ 36, confirmed the continued accuracy of Judge Jackson’s findings with regard to Linux and the open-source movement. Tr. at 1102 (Tiemann).

Despite the acknowledgment that Linux, on its own merits, has not shown the ability to compete with Windows for developer attention, Mr. Tiemann testified that the open-sourcing of IE and the auction to port Microsoft Office will enable Linux to mount a more promising challenge to Microsoft’s monopoly. Tiemann ¶ 85. Mr. Tiemann expounded upon the benefits which would accrue to Linux if it is able to support Microsoft Office, but did not contend that the portion of the applications barrier to entry which exists because of the success of Microsoft Office is attributable in any way to Microsoft’s anticompetitive conduct. *See id.* ¶¶ 99-105. Similarly, Mr. Tiemann noted the success of IE and contended that its porting to Linux will “lower” the applications barrier to entry.¹¹⁹ *Id.* ¶¶ 6, 106-107, 112. Yet, Mr. Tiemann does not

¹¹⁹Mr. Tiemann testified further that the divestiture of IE was an appropriate kind “justice” because, “Microsoft never had the right to the intellectual property of the dominant browser; they secured the rights to the dominant browser through illegal tactics.” Tiemann ¶ 113. Mr. Tiemann argued that “Microsoft should not be heard to complain when restoring the right to the dominant browser to the community.” *Id.* Mr. Tiemann’s position in this regard is unsupported. Mr. Tiemann does not offer or identify any empirical evidence which quantifies

explain how the direct porting of Microsoft applications, like Microsoft Office and IE, comports with the “middleware” theory of competition which gives rise to the liability in this case. Once again, the “middleware” theory, pursuant to which Plaintiffs prevailed, posits that third-party middleware which runs on multiple operating systems can overcome the existing applications barrier to entry by serving as a platform for other applications, such that the applications will run on any operating system where the middleware is present. *See Microsoft*, 253 F.3d 34.

It appears that §§ 12 and 14 of Plaintiffs’ remedy have been proposed for the benefit of Linux, specifically Red Hat Linux, and to a similar—though lesser—extent, for the benefit of Apple. For example, if Red Hat purchases one of the auctioned Office licenses, as it plans, *see* Tiemann ¶ 100, Red Hat will benefit from Microsoft’s twenty years of heavy investment in Microsoft Office. Gates ¶ 418. Such a benefit relieves Red Hat of the burden of developing its own office productivity suite. Red Hat would receive this benefit despite the fact that it has not devoted any effort or money to the development of an office productivity suite to compete with Microsoft Office and run on Linux. Tr. at 1034-35 (Tiemann).¹²⁰ Similarly, to make Microsoft’s IE and Office technologies available on a Linux platform relieves Red Hat of the need to devote significant resources “evangelizing” or promoting the benefits of Linux to applications developers in an effort to induce developers to write applications for the Linux platform. *Id.* at

the success of IE and attributes that success to Microsoft’s violations of § 2 of the Sherman Act. Contrary to Mr. Tiemann’s unsupported implication, the precise factors which led to IE’s present success are unclear on the existing record. *See Findings of Fact* ¶ 358. At a minimum, the present record belies this attempt to attribute IE’s success *entirely* or predominantly to Microsoft’s illegal conduct. *Id.*

¹²⁰In this regard, the Court observes that if Microsoft Office is truly the “albatross around Red Hat’s neck,” Tiemann ¶ 87, it appears it is so largely because of Red Hat’s own business decisions. Tr. at 1034-35 (Tiemann).

1021 (Tiemann). “Evangelizing” is an activity in which Red Hat scarcely engages, *id.*, despite the fact that it is recognized in the industry as one of the primary means by which to advance a platform, Tr. at 3555-56 (Shapiro). This evidence raises a concern that Red Hat looks to this proceeding as a means by which to alleviate some of the burdens inherent in vigorous competition.

The economic testimony presented in support of §§ 12 and 14 of Plaintiffs’ remedy proposal focuses almost exclusively upon the benefit to particular competitors from the imposition of these proposed remedy provisions, specifically Red Hat Linux. *See* Shapiro ¶¶ 110-17. Dr. Shapiro conceded in his direct testimony that § 14a, which specifically requires that Microsoft continue to port Office to the Apple Mac OS “will not do a great deal to affirmatively enhance competition.” Shapiro ¶ 98. Rather, testified Dr. Shapiro, the provision would “assure actual and potential users of Apple computers that a very popular and important application, Microsoft Office, will continue to be available on Apple computers” and, thereby, “help prevent Microsoft from weakening a direct rival.” *Id.* This testimony, similar to that offered by Mr. Tiemann, illustrates that Plaintiffs’ remedy singles out particular participants in the industry and offers provisions which will ease the difficulty of competing against Microsoft for these participants.

Plaintiffs offer the additional *argument* that divestiture of IE is appropriate because it is the “fruit” of Microsoft’s illegal conduct. *See, e.g.*, Pl. Prop. Findings of Fact ¶ 1112. In so arguing, Plaintiffs do not direct the Court to any new *evidence* to support this assertion, but instead rely exclusively upon Judge Jackson’s factual findings from the liability phase. Contrary to Plaintiffs’ assertion, Judge Jackson’s factual findings do not make “clear” that IE’s success is

the “fruit” of Microsoft’s illegal conduct. *Id.* Judge Jackson found that:

The period since 1996 has witnessed a large increase in the usage of Microsoft’s browsing technologies and a concomitant decline in Navigator’s share. This reversal of fortune might not have occurred had Microsoft not improved the quality of Internet Explorer, and some part of the reversal is undoubtedly attributable to Microsoft’s decision to distribute Internet Explorer with Windows at no additional charge. The relative shares would not have changed nearly as much as they did, however, had Microsoft not devoted its monopoly power and monopoly profits to precisely that end.

Findings of Fact ¶ 358. Many of the acts which comprised Microsoft’s “devot[ion of] its monopoly power” to promoting IE to the detriment of Navigator, *id.*, including the free provision of IE along with Windows, were found by the appellate court *not* to violate antitrust law. *See Microsoft*, 253 F.3d 34. This fact, in conjunction with Judge Jackson’s express finding that Microsoft’s qualitative improvements to IE were a necessary factor in IE’s rise to dominance, renders Plaintiffs’ assertion lacking in basis in the factual record of the case.¹²¹

Dr. Elzinga observed that the forced auction of Microsoft Office appears to be a “textbook example of a measure designed to help competitors, not competition.” Elzinga ¶ 79. The auction would provide a “windfall for competitors” who would subsequently lose their “incentive to continue development of competing office productivity applications apart from their versions of Office, because that would require more effort, developing features from scratch, rather than porting features already developed by Microsoft.” *Id.* ¶ 80. Simultaneously, the auction of Office discourages innovation by setting the “bad precedent” that the “fruits of R&D and development investments can be expropriated on the grounds that it would help

¹²¹Moreover, Plaintiffs did not offer any testimony in the remedy phase to establish that IE was the “fruit” of the anticompetitive conduct affirmed by the appellate court. *See, e.g.*, Tr. at 3596 (Shapiro) (“I understand a significant—a component of how—why it’s in the remedy is under the notion of denying Microsoft the fruits of its illegal activity, and I’m not addressing that part of it, and I’m discussing how I think it will affect competition going forward.”).

competitors compete in a complementary product market.” *Id.* ¶¶ 83. This outcome, concluded Dr. Elzinga, is expressly “bad for competition.” *Id.* The same is true with regard to the purported open-source of IE mandated by § 12 of Plaintiffs’ proposed remedy, as this provision “is the most transparent ‘IP grab’” by Microsoft’s competitors. *Id.* ¶ 85.

Dr. Shapiro, Plaintiffs’ economic expert, conceded that §§ 12 and 14 of Plaintiffs’ proposed remedy mandate the divestiture of Microsoft’s assets and are appropriately labeled as structural remedies. Tr. at 3324, 3328 (Shapiro); *see also* Elzinga ¶ 104 (describing Plaintiffs’ proposed remedy as “a ‘structural remedy,’ albeit an unusual one.”). Plaintiffs do not offer additional evidence regarding a causal link between Microsoft’s illegal conduct and its maintenance of its monopoly to support their proposal of these divestiture provisions. Dr. Shapiro unsuccessfully attempted to distinguish the “structural” nature of the forced divestiture of intellectual property assets from the reorganization of a company with the testimony that the structural effect of §§ 12 and 14 means “putting in place something that will change the structure of the industry in the sense that . . . market structure will be changed.” Tr. at 3325. (Shapiro). Ultimately, however, Dr. Shapiro could not offer any basis for his insistence that the forced divestiture of intellectual property assets is no less significant for a software company like Microsoft than the forced divestiture of tangible assets from an industrial line of business. *Id.* at 3327-29. Indeed, Dr. Shapiro agreed even in his direct testimony that he could conceive of “no economic reason why copyrights and patents should receive any special treatment in comparison with other commercial assets.” Shapiro ¶ 85.

Another of Microsoft’s economic experts, Dr. Murphy, agreed with Dr. Shapiro that §§ 12 and 14 were structural remedies. However, Dr. Murphy observed with regard to § 12, the

open-source of IE, that this type of structural remedy is “even more severe than a typical divestiture requirement” because the provision requires divestiture “at a zero price.” Murphy ¶ 222. Dr. Murphy further testified that § 12 merely “engineer[s] a specific outcome, the open-source model of software development.” *Id.* ¶ 223. With regard to § 14, Dr. Murphy testified that “the *form* of the Office auction . . . violates basic economic principles.” *Id.* ¶ 227 (emphasis in original). The result of the auction, testified Dr. Murphy, would be an effective “subsidy,” at Microsoft’s expense, for the provision of Office on other operating systems, a result which lacked “rational economic reason.” *Id.* ¶¶ 227, 229.

In sum, the Court finds that the testimony offered by Plaintiffs on the subject of the open-source of IE and the mandatory auction of Office licenses is insufficient to establish that such remedy provisions would accrue to the benefit of competition. Nothing in the testimony presented by Plaintiffs’ witnesses in support of §§ 12 and 14 articulates coherently the manner in which the forced divestiture of Microsoft-created technology will foster the development of cross-platform middleware. Instead, Plaintiffs’ evidence offers a subsidy for competing operating systems—a benefit to particular competitors, wholly unrelated to the middleware theory of liability in this case.

B. Plaintiffs’ Proposed Remedy § 1

Section 1 of Plaintiffs’ remedy proposes that Microsoft be required to unbind any “Microsoft Middleware Product,” as Plaintiffs define the term, from the “Windows Operating System.” SPR § 1. The provision mandates that if Microsoft chooses to sell a “bound” version of its PC operating system, meaning its Windows operating system as presently configured, it must also provide an “unbound” version of the operating system from which the “binary code for

each Microsoft Middleware Product . . . may be readily removed,” such that this identical but “‘unbound’ Windows Operating System Product performs effectively and without degradation (other than the elimination of the functionalities of any removed Microsoft Middleware Products).” *Id.* Section 1 further sets forth a pricing schedule, pursuant to which, the price of the “unbound” Windows will be reduced for each “Microsoft Middleware Product” that is removed. *Id.* Plaintiffs offer § 1 in the absence of any economic analysis of the effect of § 1 upon the monopolized market.

Plaintiffs’ basis for the “unbinding remedy” rests upon the view that there exist some characteristics which are exclusive to “operating systems” and some characteristics which are exclusive to “middleware” such that the two can be clearly divided. Plaintiffs’ remedy, in this regard, builds upon the separation identified by Judge Jackson in his *Findings of Fact*:

While the meaning of the term “Web browser” is not precise in all respects, there is a consensus in the software industry as to the functionalities that a Web browser offers a user. Specifically, a Web browser provides the ability for the end user to select, retrieve, and perceive resources on the Web. There is also a consensus in the software industry that these functionalities are distinct from the set of functionalities provided by an operating system.

Findings of Fact ¶ 150. Because of this separation of functionality, Judge Jackson and the appellate court were able to ascribe liability to Microsoft for its act of commingling the code that enables Web-browsing “functionality,” imprecisely defined, and the code that enables “operating system” functionality in its Windows operating system. *Microsoft*, 253 F.3d at 65-66; *see also Microsoft*, 87 F. Supp. 2d at 39; *Findings of Fact* ¶¶ 159-64, 174, 192. As is apparent from the language of the proposed remedy, Plaintiffs seek to parlay the distinction between Web-browsing functionality and operating system functionality into a far broader distinction between middleware functionality, as Plaintiffs define it, and operating system functionality. Plaintiffs

fail, however, to establish that there exists any agreement, let alone a “consensus,” that all such middleware functionality, again as defined by Plaintiffs, is distinct from operating system functionality.

Plaintiffs’ computer science expert, Dr. Appel, advanced Plaintiffs’ view, defining an operating system generally as “software that manages and controls a computer’s hardware and provides a platform on which application programs (or middleware) can run.” Appel ¶ 26. Dr. Appel identified a component of the Windows operating system called the “kernel” which operates in “privileged mode” on the computer hardware, meaning that it “has access to all of the computer hardware devices so that it can mediate services to applications.” *Id.* ¶ 27. From this definition, Dr. Appel espoused the view that software code in Windows that is not part of the operating system kernel can be viewed as a species of “application or middleware or . . . library code.” Tr. at 2969 (Appel); *accord* Appel ¶ 28. Nevertheless, Dr. Appel acknowledged that applications that “perform general utility functions” are often included with an operating system and are conventionally identified as part of the operating system product. Appel ¶ 28. Though he articulated a certainty regarding the distinction between operating system and application, Dr. Appel wavered throughout his testimony on the subject of whether the kernel constitutes the entire operating system once the middleware is removed, or whether the kernel is merely a portion of the operating system, such that even after removal of the middleware, the operating system would consist of kernel and other software code.

Uncertainty as to which functionalities and their corresponding code comprise the true “operating system,” assuming for purposes of discussion there is such a thing, is not unique to Dr. Appel. For example, Windows includes software which provides the function of “HTML

rendering.” Tr. at 3084 (Appel). The function of HTML rendering is “one of the several functions of the [Internet] browser,” and therefore, removal of the “browser” would result in removal of the HTML renderer. *Id.* at 3084-85. Tom Greene, Assistant Attorney General of California, testified that he viewed the functionality provided by the HTML rendering engine in Windows to be “pretty much a basic utility in a sort of laymen’s sense in the operation of most operating systems.” Def. Ex. 1530 at 83 (Greene). Nevertheless, concluded Mr. Greene, § 1 of Plaintiffs’ remedy proposal requires the removal of the HTML renderer from Windows because it is part of the “Internet browser,” SPR §§ 1 (requiring the unbinding of “Microsoft Middleware Products), 22x (defining “Microsoft Middleware Product” to include as “Internet browsers”). *See id.* at 83-84. Once removed, remaining portions of Windows, such as the “Windows Help” system and “Windows Explorer,” both of which rely upon the HTML rendering engine included in Windows for necessary functionality, would not function. *See Madnick* ¶ 183. If the HTML renderer was added back into Windows, Microsoft would be subject to a claim that it had not truly removed all of the “Internet browser.” Conversely, if removed, Microsoft would be subject to a claim that it had provided a “degraded” operating system because Windows Help and Windows Explorer would not function, even though the OEM had requested only the removal of the “Internet browser.” SPR § 1.

From the example of the HTML rendering engine, which arises in conjunction with the unbinding of the “Internet browser,” some of the difficulties inherent in Plaintiffs’ unbinding proposal become clear. Mr. Greene acknowledged the difficulty in complying with Plaintiffs’ proposed unbinding of the Internet browser and attempted to minimize the significance of this difficulty with the assertion that Internet browsing functionality is somehow a “peculiar”

example of how the unbinding proposal would work. Def. Ex. 1530 at 83 (Greene). Tellingly, however, it is only with regard to Web-browsing functionality that Judge Jackson determined there to exist a “consensus” with regard to a distinction between that functionality and “operating system” functionality. *Findings of Fact* ¶ 150. Based on this finding, the appellate court was able to impose liability for the commingling of code related to operating system and browsing functionality, two seemingly separate types of functionality. Given the close relationship between IE and the liability imposed for commingling, in comparison to the lack of a direct relationship between other middleware and the commingling liability, there is little comfort to be taken from an assertion that the remedy for the commingling of browsing specific code with operating system code is merely a “peculiar” example. Def. Ex. 1530 at 83 (Greene). Quite to the contrary, if Plaintiffs’ unbinding remedy is at all workable, the “unbinding” of browsing functionality should be a *good* example of the remedy’s operation. Instead, the example of the “Internet browser” serves only to illustrate the inherent flaws in § 1 of Plaintiffs’ remedy proposal. Plaintiffs’ witnesses could not establish with any certainty the manner in which Microsoft could comply with § 1 with regard to its “Internet browser.” Concomitantly, there is no basis upon which to conclude that the unbinding of all of the other types of “Microsoft Middleware Products” specified in Plaintiffs’ remedy proposal will prove more readily attainable.

Section 1 of Plaintiffs’ remedy proposal is deficient in that it does not provide any rule, or even guidance to Microsoft, for determining which code within Windows constitutes the various “Microsoft Middleware Products,” both individually and as a group. Dr. Appel was unable to offer a hard and fast rule for distinguishing operating system functionality from

application (or middleware) functionality. Instead, he offered a “rule of thumb” for distinguishing applications from the “kernel” of an operating system. Appel ¶ 29. This “rule of thumb” divides applications from the “kernel” on the basis that application programs execute in an unprivileged hardware mode (meaning they cannot directly access the computer hardware, but must rely on the operating system to provide hardware services), and the kernel executes in privileged mode (meaning it can directly control computer hardware). *Id.* Even adhering to this “rule of thumb,” however, Plaintiffs’ expert displayed significant uncertainty as to the exact line between the “operating system” and “middleware” applications. *See* Tr. at 3123 (Appel). In sum, the evidence presented in the remedial phase does not support a finding that there exists anything close to a “consensus” that all of the other types of “middleware”¹²² identified by Plaintiffs can be similarly distinguished from the “operating system.”

Even if there were such a consensus, there is little doubt that the physical distinction between modules of code for such middleware and the operating system would be far more difficult to define than the conceptual distinction between types of functionality. Compounding this difficulty would be the need to distinguish among and between various types of middleware functionality in order to enable the removal of particular pieces of middleware (as opposed to all of the middleware at once) as required by § 1 of Plaintiffs’ remedy proposal. Plaintiffs’ proposed remedy does not identify the boundaries between particular middleware products, nor does it provide Microsoft with a rule for doing so. Dr. Appel conceded that “at the moment, there is no way to draw boundaries around the components that correspond to a particular

¹²²As the Court observed previously, *see* Memorandum Opinion, Part III.B.2.b, Plaintiffs’ proposed remedy defines middleware very broadly, such that virtually any block of software code which exposes an API constitutes middleware.

Microsoft middleware product,” as that term is used in Plaintiffs’ proposed remedy. *Id.* at 3217; *accord* Bennett ¶ 65; Gates ¶ 168; Madnick ¶ 134; *see also* Memorandum Opinion, Parts III.B.2.b, III.C.5. In the absence of such guidance, § 1 of Plaintiffs’ proposed remedy is ambiguous, as there is no clear path for Microsoft to follow in order to comply with this aspect of Plaintiffs’ proposed remedy. Such vagueness renders § 1 largely unenforceable.

Microsoft’s witnesses were broadly critical of this portion of Plaintiffs’ proposal, insisting that it proceeds on the faulty premise that Windows consists of a “small, self-contained and fully functional operating system (which [Plaintiffs] sometimes refer to as the ‘kernel’ or the ‘core operating system’) and a collection of readily identifiable, add-on middleware products that might just as easily be distributed separately from the operating system.” Gates ¶ 168; *see also* Jones ¶¶ 65-70; Madnick ¶¶ 143-47. The theory of § 1 fails to account for the fact that, pursuant to this view, nearly all, meaning in excess of 90 percent—likely 98 percent—of the Windows operating system is “middleware,” as Plaintiffs have defined it. *See* Madnick ¶ 142; *see also* Tr. at 2971 (Appel); Tr. at 5915-16, 5929-30 (Madnick). Within this large majority of the Windows operating system there exist countless interdependencies between the various “Microsoft Middleware Products.” Because of the vast interdependencies in Windows, Microsoft’s witnesses insist that the portion of Plaintiffs’ remedy proposal which requires the remaining unbound operating system to function “without degradation” following the removal of the “Microsoft Middleware Products,” renders compliance with § 1 virtually impossible. *See* Bennett ¶ 33; Gates ¶ 193; Jones ¶ 62.

Dr. Appel contended that the unbinding of Microsoft “middleware” without degradation to the remaining operating system is feasible because Windows adheres to a “modular”

construction, which means that related functions are contained within the same unit of programming code while unrelated functions reside in separate units of code. Microsoft does not deny that its Windows code is modular, Madnick ¶ 167, but insists that this aspect of the product’s design does not render § 1 of Plaintiffs’ proposed remedy workable. *Id.* ¶¶ 167-188. As one of Microsoft’s computer science experts, Dr. Stuart Madnick, explained, and the Court credits his testimony, Windows has many functional “components,” meaning subsets of functionality which are accessible through APIs. *Id.* ¶ 167. Each component will likely rely on several modules of code, and the same module of code is often used by multiple components to provide various functionalities. *Id.* ¶ 168. A more componentized system includes a greater number of interdependencies. *Id.*; *see also* Tr. at 3157-58 (Appel). Because of these interdependencies, the removal of a particular component may cause the failure of other components that relied upon the removed component, such that the remaining components do not function “without degradation,” SPR § 1. Bennett ¶¶ 37-73; Madnick ¶¶ 177-79; Tr. at 3157-58 (Appel).

Plaintiffs’ witnesses responded to this dilemma with the assertion that Microsoft should be able to identify the interdependencies within Windows and account for them in a manner which renders code removal possible. Plaintiffs’ witnesses contended that the “component definitions” created by Microsoft in its XP Embedded product and identified by a tool called the “Target Designer” are useful for defining which software code constitutes the middleware components that Plaintiffs’ remedy proposal would require Microsoft to make “removable” from Windows. Windows XP Embedded is an operating system that Microsoft markets for OEMs to support applications that perform a very specific function for a non-PC, limited use device,

Bennett ¶¶ 61, 68; Short ¶¶ 108, 110; Tr. at 3212-13 (Appel), such as a video game console or a set-top box. Tr. at 3212-13 (Appel); *see also* Bennett ¶ 61 Short ¶¶ 108, 110; *see generally* Bennett ¶¶ 59-73. Windows XP Embedded, and the suite of tools which accompany the product, enable the creation of a smaller, specialized operating system that provides only the necessary functionality for the particular limited use device. Short ¶ 110; *see also* Tr. at 3212-13 (Appel). Microsoft created Windows XP Embedded from the “binary code,” rather than the “source code” of Windows XP Professional. Short ¶ 111. Binary code is the product which results when the underlying source code is compiled and linked together. *Id.*; *accord* Bennett ¶ 62. The “binaries” in Windows XP Embedded are “identical” to those in Windows XP. Tr. at 5639 (Short).

The developers of Windows XP Embedded identified “component definitions” which identify the individual files that comprise a particular component and the cross-dependencies that the component has on other blocks of software code in Windows XP. Bennett ¶ 66; Short ¶ 112. The Target Designer tool supplied with the Windows XP Embedded operating system identifies the cross-dependencies that a component has upon other components of Windows XP Embedded. Short ¶ 113; *see also* Bennett ¶ 67. Having identified these dependencies, in order to enable proper functioning, the Target Designer ensures that when a particular component of the embedded operating system is selected, all of the other components upon which the selected component depends will be included in the runtime. Short ¶ 113; *see also* Bennett ¶ 70. Therefore, the Target Designer does not remove the interdependencies, when a particular component is selected for inclusion in an embedded runtime. Bennett ¶¶ 62, 70; *see also* Short ¶ 113; Tr. at 3216-17 (Appel). Instead, it merely ensures that all of the necessary code

accompanies the designated component. *See* Bennett ¶ 70; Short ¶ 113; Tr. at 3216-17 (Appel).

Even assuming that the component definitions in Windows XP Embedded would comport with Plaintiffs' definition of "Microsoft Middleware Product," and there is no evidence that they would, Plaintiffs have not established that Microsoft's embedded operating system and the tools which accompany that embedded operating system will enable the removal of a single such component at the behest of an OEM in a manner compliant with § 1 of Plaintiffs proposed remedy. This is so because the embedded operating system does not remove interdependencies among components. If a component were removed and that component provided a service to any other component remaining in the operating system, the remaining component would likely cease to function. *See* Bennett ¶¶ 70-71. Such a result would violate the requirement in § 1 of Plaintiffs' proposed remedy that the "unbound" operating system must function "without degradation." SPR § 1.

Plaintiffs' witnesses speculated that the very existence of the XP Embedded operating system and the accompanying tools are a significant first step toward the "unbinding" of the "middleware" from the "core operating system." *See, e.g.,* Appel ¶ 138; Tr. at 1806-10, 1814-15 (Ledbetter). In this regard, however, Plaintiffs' computer science expert, Dr. Appel, conceded that the basic and fundamental assumption built into the XP Embedded operating system and Target Designer that "if you're going to include one component, then you also need to include any other component on which it depends," Tr. at 3216 (Appel), would have to change for the system and the tools to be useful in complying with § 1 of Plaintiffs' proposed remedy. *Id.* at 3216-17. None of Plaintiffs' witnesses convincingly explained how the tools would have to be changed or "adjusted," nor do any witnesses establish that such changes could be made within a

reasonable time and with a reasonable amount of effort. In contrast, Microsoft offers evidence, which the Court credits, that notwithstanding the existence of the embedded operating system and its tools, it would be “exceedingly difficult” to remove “middleware” from Windows “without causing serious malfunctions.” Bennett ¶ 73. Based upon this evidence, the Court is not satisfied that Microsoft can readily account for the existing interdependencies so as to render various “Microsoft Middleware Products” removable without degrading the remaining portion of the operating system.

Dr. Appel identified four other ways, apart from relying upon Windows XP Embedded, in which Microsoft could comply with § 1 of Plaintiffs’ proposed remedy.¹²³ Each of these propositions is flawed significantly. The first option, “to simply let the Microsoft middleware product be removable,” Tr. at 3208 (Appel), does not itself explain how the remaining portions

¹²³The colloquy proceeded as follows:

Q. (by Plaintiffs’ Counsel Mr. Hodges): Could you explain what ways in your opinion Microsoft could comply with Section 1 of the States’ proposed remedy?

A. (by Plaintiffs’ computer science expert Dr. Appel): One way is to simply let the Microsoft middleware product be removable.

Another way is to let subcomponents of the Microsoft middleware products be removable. The States remedy doesn’t require that, but it permits that. And then in the case of, for example, MS HTML, the rendering engine the subcomponent of the browser, an OEM might choose to leave that component in even if they want to substitute a different browser, and then there’s no chance of degradation of the functionality of other components that depend on that HTML rendering.

Another option, as I have explained, is to take necessary fragments of functionality and embed them in other products, other than Microsoft middleware products, so they don’t expose APIs.

Another kind of way to comply is just to reduce the inherent commingling, or I should say interdependence between the Microsoft middleware products. This would be not really a mechanical engineering task; one requiring some design to make the Microsoft middleware products a little less dependent on each other, and Microsoft might choose to do this, for example, if it doesn’t like the other options because it doesn’t want to be dependent for functionality on a non-Microsoft substitute.

Tr. at 3208-09 (Appel).

of Windows will continue to function effectively in the absence of an interdependent middleware product. *See* Bennett ¶ 80; Gates ¶ 218. The second proposition is “to let the subcomponents of the Microsoft middleware products be removable” such that the subcomponent remains after the “middleware” is removed. Tr. at 3208-09 (Appel). While this solution potentially resolves the interdependency issue, it creates a compliance issue, as it is possible, if not likely, that the subcomponent which has been left behind is itself a “Microsoft Middleware Product,” pursuant to Plaintiffs’ very granular definition, *see* Memorandum Opinion, Part III.B.2.b, which must be made removable at the option of the OEM. *See* Bennett ¶ 80. Accordingly, the second solution creates as many problems as it solves. The third potential solution offered by Dr. Appel is to move the necessary pieces of code into other portions of Microsoft’s operating system product such that they are present, but do not expose APIs. Tr. at 3209 (Appel). This solution also creates more problems than it solves, as it would require Microsoft to create multiple copies of the same functionality and include those multiple copies in the Windows operating system. *See* Bennett ¶ 80; Madnick ¶¶ 180-85. This solution would result in significant and inefficient code duplication, increase the size of the operating system, and impair the performance of the operating system by slowing its operation. *See* Bennett ¶ 80; Jones ¶ 69; Madnick ¶ 180; *see generally* Madnick ¶¶ 180-85. In addition, this solution would render the resolution of problems and “bugs” in the repeated components far more difficult. Bennett ¶ 80; Madnick ¶ 184. Dr. Appel himself acknowledged that such a scheme “could lead to a waste of system resources.” Tr. at 2995 (Appel). Finally, Dr. Appel proposed “just reduc[ing] the inherent . . . interdependence between Microsoft middleware products.” *Id.* at 3209. This last solution was accompanied by little explanation, particularly with regard to how Microsoft would accomplish

this task without completely redesigning its product. *See* Gates ¶ 218. Moreover, inasmuch as the interdependencies are considered an advancement in technology, *see, e.g.*, Madnick ¶¶ 180, 184, Dr. Appel’s solution in this regard proposes backward motion. Therefore, the Court finds that, although unbinding as required by § 1 may not be technologically impossible, it has not been shown to be a reasonable option, as it would likely require the complete or substantial redesign of Windows.

Ignoring all of these difficulties for purposes of discussion, Plaintiffs’ witnesses theorized that ready removal of all of the “middleware” in Windows will enable the substitution of the Microsoft middleware with third-party middleware. *See, e.g.*, Appel ¶¶ 131, 138; Schwartz ¶ 158; Tr. at 427 (Barksdale); Tr. at 1547 (Ledbetter); *see also* Tr. at 4825 (Gates) (discussing Dr. Appel’s testimony). While an attractive notion in theory, Dr. Madnick, one of Microsoft’s computer science experts made clear that this model of computing is largely unworkable in practice. Dr. Madnick explained:

The concept of a completely modular operating system has been a “holy grail” for computer scientists for decades, one frequently sought but never found. Even in their dreams, however, computer scientists have not imagined a modularity as granular as that embodied in [Plaintiffs’] Proposal. Modularity has generally meant being able to replace major elements, such as the file system or the graphical user interface, not the code supporting arbitrary combinations of individual APIs. And even the far more modest vision has largely failed in practice. Although the idea of building an operating environment with “best of breed” components obtained from various vendors has some superficial appeal, getting them all to work together smoothly requires an enormous effort that creates ongoing support problems. Each time one component changes, it may create incompatibilities with others. When things go wrong, as they inevitably do, it is hard to figure out where the problem lies or which vendor is at fault. Often the fault lies not in any individual component, but in the interactions among them.

Madnick ¶ 187 (footnote omitted). The Court credits this portion of Dr. Madnick’s testimony, which is unrebutted. Plaintiffs fail to offer evidence that modularity of the type contemplated by

§ 1 of Plaintiffs' proposed remedy has ever been attained. It would appear that the very model of this section of Plaintiffs' proposed remedy is largely aspirational.

Contrary to the view advanced by Plaintiffs' witnesses, Microsoft does not consider portions of Windows to be "middleware" while other portions are "operating system." In Microsoft's view, Windows with some of its "middleware" functionality removed is still Windows, but it is a different version of Windows. In general, Microsoft's witnesses argued uniformly that the removal of any middleware functionality from Windows would result in multiple versions¹²⁴ of Windows.¹²⁵ From this background, Microsoft's witnesses contended that the imposition of § 1 will result in the "balkanization" or "fragmentation" of Windows. Microsoft presents evidence that such fragmentation would hinder, or even destroy, Microsoft's ability to provide a consistent API set. *See* Borduin ¶ 61; Elzinga ¶ 102; Madnick ¶ 197. This loss hinders the ability of Windows to serve as a "platform for applications that supports new functionality while providing backward compatibility¹²⁶ for most existing applications." Madnick ¶ 197. Such fragmentation appears to be the goal of § 1 of Plaintiffs' proposed remedy,

¹²⁴Dr. Bennett estimated "conservative[ly]" that § 1 of Plaintiffs' proposed remedy would produce more than a thousand variants of Microsoft's PC operating system due to the fact that each OEM could choose a different combination of middleware components. Bennett ¶¶ 47, 55; *accord* Gates ¶ 200-01.

¹²⁵Plaintiffs, of course, ignore Microsoft's view of its own products and insist that because Windows is sold as an "operating system," any "middleware" functionality which accompanies that sale is extraneous and can be removed without creating a different version of "Windows." From Plaintiffs' perspective then, the addition or removal of Microsoft's middleware products still leaves the "operating system"—plus or minus a Microsoft middleware product that, like any other application, can be added or removed. Tr. at 422-24 (Barksdale).

¹²⁶"Backward compatibility" can be understood to mean that the APIs that are exposed by older versions of Windows are also supported by the new Windows versions. Tr. at 5093 (Jones).

as Mr. Barksdale testified, because it will ease the way for other middleware products to try to fill the gaps created by the “Microsoft Middleware Products” removed from Windows. *See* Barksdale ¶ 60 (“This . . . will bring an end to developers’ certainty that no matter what, Microsoft middleware code will be resident on virtually all PCs.”); *see also id.* ¶¶ 61-62.

The weight of the evidence indicates that the fragmentation of the Windows platform would be significantly harmful to Microsoft, ISVs, and consumers. Plaintiffs’ computer science expert, Dr. Appel, opined that Microsoft would remain responsible for testing at least a “representative sample” of the various configurations of the newly “unbound” Windows, but was uncertain as to exactly what such testing would entail. *Tr.* at 3130-31, 3135 (Appel). Dr. Bennett, one of Microsoft’s computer science experts, testified that Microsoft would be unable to test, on a level comparable with the present level of testing, the various configurations of its operating system product created by § 1 of Plaintiffs’ remedy. Bennett ¶ 50; *accord* Jones ¶ 81. Similarly, Dr. Bennett testified that § 1 of Plaintiffs’ proposed remedy would impose an “intractable” support burden upon Microsoft. Bennett ¶ 56; *accord* Jones ¶¶ 75-77.

Plaintiffs’ witnesses attempted to challenge Microsoft’s fragmentation argument by likening the fragmentation which would be caused by § 1 to the fragmentation which is caused by Microsoft’s periodic release of new versions of Windows. Plaintiffs’ attempt in this regard is misguided, as there is little similarity between the two types of fragmentation. Most obviously, the present state of fragmentation is minuscule in comparison to the more than 1000 possible versions of Windows that might exist if the Court were to adopt § 1 of Plaintiffs’ remedy proposal. *See* Bennett ¶¶ 47, 55; *accord* Gates ¶ 201. More fundamentally, because of the relatively small degree of fragmentation between successive versions of Windows, Microsoft is

able to work towards maintaining backward compatibility with previous versions. Tr. at 5093 (Jones). Microsoft attempts to maintain this backward compatibility by not altering documented APIs in ways that will prevent them from functioning with older applications. *See* Gates ¶ 325; Jones ¶ 17; Madnick ¶ 153; Short ¶ 8. For example, Microsoft has been able to conduct compatibility tests, though costly and time consuming, even with the minimal amount of fragmentation that presently exists, in order to ensure that the thousands of applications designed to run on Windows 95, Windows 98, Windows 98 SE and Windows ME would continue to function on Windows XP. *See* Jones ¶ 17. In contrast, Plaintiffs' remedy mandates the removal of code, which will result in the absence of the API. In such a scheme, there is no way to maintain this kind of backward compatibility for each and every variation of Microsoft's PC operating system which would result from the imposition of § 1 of Plaintiffs' remedy proposal.

Seeming to fare worst in the scenario envisioned by § 1 of Plaintiffs' remedy are the ISVs, who, following the imposition of § 1, would not have any assurance that a particular functionality was present in any given configuration of the new unbound Windows. *See* Borduin ¶ 64; Frei ¶ 33; Jones ¶¶ 88, 91. As a result, at least in the short term, an unbound version of Windows would likely cause existing applications to fail. Gates ¶ 62; Bennett ¶ 86; Tr. at 428-29 (Barksdale); Tr. at 7048-49 (Bennett); Tr. at 4521-22 (Gates); *see also* Tr. at 3136-37 (Appel). Plaintiffs' witnesses theorized that any such malfunctioning will be temporary, as competitors create products which will substitute for the middleware which has been removed. *See, e.g.*, Tr. at 3138 (Appel). This duplication of effort among Microsoft and individual ISVs has the potential to lead to many different implementations of the same functionality. Such a circumstance creates a risk that the software code distributed with one ISV's application would

conflict with that distributed with another ISV's application, leading to the so-called "DLL Hell" problem that results when multiple versions of the same basic components try to coexist on a single PC. *See* Borduin ¶¶ 73, 75-77; Jones ¶ 79; Tr. at 6431-35 (Averett). There is no indication that there is any competitive or economic advantage to such a situation and, quite to the contrary, such a result would likely be detrimental to the consumer.

Plaintiffs' witnesses implied that, with regard to any problems that arise because of the vast modularity they envision, it would be the burden of the ISV to address those problems and to ensure that its products would work effectively with the unbound version of Windows. *See, e.g.,* Def. Ex. 1530 at 39-41 (Greene). Scott Borduin, Vice-President and the Chief Technology Officer at Autodesk, Inc., Borduin ¶ 1, testified that his company would be unable to ensure that its applications work on all versions of the newly unbound Windows. *Id.* ¶ 66. Mr. Borduin went on to explain that the unbinding remedy would heap a massive and unwanted testing burden upon ISVs, who would be required to create multiple versions of their own products to work on the multiple versions of Windows. *Id.* ¶¶ 67-68. Similar testimony was offered by Mr. Hofstader, Vice President of Software Engineering for Freedom Scientific Inc. Hofstader ¶¶ 1, 43-46. Furthermore, explained Mr. Frei, Chief Executive Officer of Onyx Software Corporation, Frei ¶ 1, the removal of code from Windows would require the addition of code to the ISVs' products. *Id.* ¶ 36. This additional code would render the ISVs' products "larger and more complex," slow development, increase the cost of development, and increase the likelihood that such products would malfunction. *Id.* Dr. Appel, Plaintiffs' computer science expert, acknowledged these results and further noted the possibility that when the OEM's substitution of technology formerly implemented in the "bound" Windows was inadequate or defective, the

performance of the application calling upon that technology will suffer. Tr. at 3136-37 (Appel). Despite this acknowledgment, Dr. Appel had not investigated whether ISVs were prepared or willing to undertake the burden imposed upon them to resolve the issues that would likely result from Plaintiffs' unbinding proposal in § 1 of their proposed remedy.¹²⁷

Plaintiffs fail to offer evidence which counterbalances the difficulties inherent in § 1 of their remedy and the abundance of adverse effects upon ISVs and potentially, consumers. Not surprisingly, therefore, Plaintiffs fail additionally to offer any evidence that § 1 will benefit competition. Indeed, Plaintiffs' sole economic expert refused to endorse *any* aspect of § 1 of Plaintiffs' proposed remedy. Compounding this absence of economic evidence to support such a radical remedy is the testimony of one of Microsoft's economists that there exists no economic rationale for the code removal required by § 1 of Plaintiffs' proposed remedy. Murphy ¶ 204. Dr. Murphy noted that, "[t]he incremental competitive gain from requiring actual removal of code is small or non-existent," while in comparison, "[t]he potential costs of requiring the removal of code are far greater in terms of the costs it will impose on design and testing and the reliability problems it is likely to impose on users." *Id.* Plaintiffs fail entirely to contradict this testimony.

In summary, Plaintiffs' unbinding proposal imposes an entirely new model of product design for Microsoft's operating system products without any showing that such a model is economically justified, beneficial to competition, and technologically feasible. Quite to the

¹²⁷Defendant presented additional un rebutted evidence that server vendors would be harmed by the fragmentation which would result from Plaintiffs' unbinding proposal. Richard Ulmer, a Vice President of Unisys Corporation, a provider of server and server-related products, Ulmer ¶¶ 1, 7, testified that interoperation between clients and servers will be severely hindered as a result of the removal of code from the Windows operating system. *Id.* ¶¶ 29-32.

contrary, the Court finds that § 1, if imposed, would likely inflict significant harm upon industry participants—ISVs in particular—and potentially, consumers. Plaintiffs new model for Microsoft’s operating system products extrapolates extensively from Judge Jackson’s determination that there exists a “consensus” as to a distinction between operating system functionality and Web-browsing functionality: Plaintiffs have expanded Judge Jackson’s determination by insisting that there exists such a distinction between all middleware (broadly defined) functionality and operating system functionality. Plaintiffs have not established, however, that there exists any similar “consensus” with regard to all middleware functionality. The provision in Plaintiffs’ proposed remedy which would impose this new regime does not provide Microsoft with any degree of guidance regarding the manner in which it is to comply. In particular, § 1 of Plaintiffs’ remedy proposal is insufficiently precise in providing definitions which separate the “kernel” or “core operating system” from the “Microsoft Middleware Products,” as well as the various “Microsoft Middleware Products” from one another. Even if such definitions were provided, Microsoft has established that there is presently no reasonable means by which Microsoft can remove the middleware portions of its operating system product and still provide a product in which the remaining functionality is not “degrad[ed].” SPR § 1.

C. Plaintiffs’ Proposed Remedy § 5

Section 5 of Plaintiffs’ remedy proposal enjoins Microsoft from engaging in “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.” SPR § 5. The provision further requires Microsoft, at least sixty days before taking such action, to provide notice to the affected

ISV(s) of the action and the reason for doing so. *Id.* Plaintiffs’ economic expert explained that § 5 is intended to provide some “protections” to ISVs that their products will work well with Windows. Shapiro ¶ 152. Advocates of the provision attested that the notification requirement would not hinder Microsoft’s ability to innovate and change its products accordingly, but would reduce the harm to Microsoft’s rivals by providing notice and an opportunity to re-engineer products to avoid damage in the marketplace. *See* Kertzman ¶ 75; Shapiro ¶ 153.

Unable to link § 5 to any finding of liability in this case, Plaintiffs justify the inclusion of this provision with allegations of other instances of such “knowing interference” which have adversely affected Microsoft’s competitors. *See, e.g.*, Richards ¶¶ 180-87 (describing problems encountered by RealNetworks); Ledbetter ¶¶ 142-43 (linking the need for § 5 in Plaintiffs’ remedy proposal to the MUP problem, described in Memorandum Opinion, Part III.D). The Court has already concluded that allegations of new “bad” acts, including those regarding interoperability, are largely irrelevant because they cannot be fairly characterized as mere extensions of conduct already found to be anticompetitive. *See* Memorandum Opinion, Part III.D . Because the Court has not weighed these allegations for anticompetitive effect, the Court cannot arbitrarily determine that such conduct requires a remedy. *Id.*

Notwithstanding this fact, Microsoft provides evidence which establishes that § 5 of Plaintiffs’ proposed remedy is overly regulatory and an unjustified imposition upon Microsoft’s lawful business practices which have not been shown to hinder competition. In this regard, § 5 is yet another example of a remedy provision characterized by Plaintiffs’ witnesses to address very specific Microsoft conduct, which in practice, addresses a far more expansive amount of conduct, such that the remedy regulates even the most basic design decisions. For example, one

of Microsoft's computer science experts, Dr. Madnick, testified that virtually any "non-trivial" change to Windows will fall within the parameters of § 5 of Plaintiffs' proposed remedy. Madnick ¶ 205. For any such change, Microsoft must be prepared to provide "good cause" for its change. *Id.* Mr. Gates expressed a concern that Microsoft's decisions about software design, its weighing of the pros and cons of a particular change, would be exposed to "second-guessing" by a bevy of ISVs who were displeased with the change. Tr. at 4652 (Gates). As a result, testified Mr. Gates, Microsoft might be reluctant to make the change out of a desire to avoid the second-guessing of its decision and, at a minimum, would incur additional costs in conjunction with such changes. *Id.* at 4653; Elzinga ¶ 30. In this regard, Mr. Gates pointed out that "reasonable men [may] disagree" over whether or not changes are justified by good cause, such that there would be a constant battle over enforcement of the provision. Tr. at 4654 (Gates).

Neither side's evidence with regard to the viability of § 5 is particularly convincing. The concerns raised by Mr. Gates regarding vagueness and enforcement problems in the provision are certainly valid, though their effects upon Microsoft's product design appear to be overstated. However, Plaintiffs' justifications for the provision are weak at best, with a non-existent link to the liability in this case and an insufficiently clear benefit to competition. Given this balance, the Court finds, as a factual matter, that the regulatory interference with Microsoft's legitimate business dealings which would result from § 5 of Plaintiffs' remedy proposal has not been shown to be outweighed by the benefit to competition.

D. Plaintiffs' Proposed Remedy § 3

The third section in Plaintiffs' proposed remedy requires Microsoft to "support, both directly and indirectly," the immediate predecessor of any new Windows release for a period of

five years following the release of the new version. SPR § 3. In addition, § 3 of Plaintiffs' remedy proposal requires that Microsoft continue to "support, both directly and indirectly," Windows 98 SE for a period of three years after the entry of judgment in this case. *Id.* The royalties charged by such mandatory licenses are limited to the "lowest royalty paid by the OEM or Third-Party License . . . prior to the release of the new version." *Id.*

Plaintiffs offer the testimony of two witnesses to support this provision: John Borthwick, a Vice President at America Online Inc. ("AOL") Advanced Services, Borthwick ¶ 1, and Plaintiffs' economic expert, Dr. Shapiro. Mr. Borthwick testified that § 3 would enhance § 2.c of Plaintiffs' proposed remedy, which allows for greater customization of Windows products, by ensuring that third-party investing in customization is not "thwart[ed] by a "sudden announc[ement of] the release of a new superceding version." Borthwick ¶ 59. Mr. Borthwick's testimony does little to advance Plaintiffs' proposal given the Court's finding *supra* that the third-party customization portion of Plaintiffs' proposed remedy is without justification and discordant with the appellate court's opinion in this case. Moreover, Mr. Borthwick's testimony is based entirely upon speculation that Microsoft would "suddenly" release a new version of an operating system in order to hinder customization. There is no evidence that Microsoft has ever "suddenly" released a new version of its operating system. In fact, the evidence in this case establishes that the development and release of a new operating system is an arduous process which takes approximately three years for each new version of an operating system. *See* Gates ¶ 203. The Court, therefore, does not regard the reasons advanced by Mr. Borthwick as either valid or persuasive.

Dr. Shapiro testified that § 3 will benefit consumers because it provides greater consumer

choice. Shapiro ¶ 155. Notably, Dr. Shapiro did not explain the benefit to competition in increasing consumer choice between different versions of *Microsoft's products*. Dr. Shapiro further acknowledged that he would not endorse § 3 of Plaintiffs' proposed remedy if it were shown that the remedy imposed substantial costs upon Microsoft. Tr. at 3642 (Shapiro). Dr. Shapiro did not undertake to estimate the cost to Microsoft of supporting a predecessor version, *id.* at 3643, but instead chose to base his view upon his reading of Dr. Madnick's expert report to indicate that "most operating system vendors support their current version or that version and the one preceding it." Shapiro ¶ 155. Dr. Shapiro's conclusion, in this regard, is an unsupported extrapolation from Dr. Madnick's report, which, even as cited by Dr. Shapiro, merely indicates that "IBM offers two versions of its AIX operating system and Sun offers two versions of its Solaris Operating Environment." *Id.* n.135 (citing Madnick Expert Report ¶ 59, marked for identification as Pl. Ex. 1410 (Tr. at 5884)). Based upon this testimony, the Court rejects as unsupported Dr. Shapiro's conclusion that mandatory support for predecessor versions of Windows would not impose substantial costs upon Microsoft. *See* Bennett ¶¶ 88-89 (testifying that support for predecessor versions of Windows will result in enormous expense to Microsoft).

In contrast to Plaintiffs' view, Dr. Elzinga, one of Microsoft's economic experts, testified that § 3 of Plaintiffs' proposed remedy would harm consumers by raising costs for Microsoft, which will eventually translate into higher prices. Elzinga ¶ 29; *see also* Bennett ¶¶ 88-89. Dr. Elzinga also testified that the beneficial aspects of network effects will be hindered by the mandatory provision of predecessor versions of the operating system. Elzinga ¶ 29. Dr. Elzinga further noted with concern the absence of a liability finding to justify the increased regulation of Microsoft's business. *Id.* Plaintiffs' economic expert did not counterbalance the absence of

direct link to the liability in this case by arguing that the substantial benefit to be gained by § 3 justified its intrusion into legitimate business practices. Quite to the contrary, Dr. Shapiro disclaimed that § 3 of Plaintiffs' proposed remedy would have a "substantial effect on promoting competition" in the market for Intel-compatible PC operating systems. Tr. at 3647 (Shapiro). Emphasizing all of the above concerns, is Mr. Gates' uncontradicted testimony that § 3 has the potential to cause consumer confusion and slow the pace of technology development. Gates ¶¶ 277-78. Based upon all of this testimony, the Court is doubtful that the benefit to be gained by the imposition of § 3 of Plaintiffs' proposed remedy would outweigh its costs. This balance is particularly troublesome given that § 3 will govern conduct which is wholly unrelated to any finding of liability in this case.

E. Plaintiffs' Proposed Remedy § 7

Section 7 of Plaintiffs' remedy proposal is entitled "Ban on Contractual Tying" and provides quite simply that "Microsoft shall not condition the granting of a Windows Operating System Product license, or the terms . . . or administration of such license . . . on a licensee agreeing to license, promote, distribute, or provide an access point to, any Microsoft Middleware Product." SPR § 7. Mr. Richards of RealNetworks explained that the purpose of § 7 was to "enhance middleware developers' ability to deal directly with OEMs." Richards ¶ 199. Rather than identify any finding of liability for which § 7 provides a direct remedy, Mr. Richards recounted summarily, relying in part upon Judge Jackson's *Findings of Fact* ¶¶ 113-14, and in part upon inadmissible hearsay, various "bad" acts in which Microsoft is alleged to have engaged. Richards ¶¶ 204-08. Once again, the Court recounts its determination that these types of allegations of "bad" acts, even if proven, merit little weight, if any, because they cannot be

treated as conduct which is the same or similar to the illegal conduct identified by the appellate court, and they have not been subjected to the rigorous Sherman Act assessment of whether the anticompetitive effect outweighs Microsoft's procompetitive justification. *See* Memorandum Opinion, Part III.D.

The only other witness to testify in support of § 7 of Plaintiffs' remedy offered a distinct justification for his endorsement. Dr. Shapiro took the position that "contractual tying" should be entirely banned because it "can impede the adoption of non-Microsoft middleware." Shapiro ¶ 168. Dr. Shapiro linked this conclusion to Paragraph 155 of the *Findings of Fact*, which recounts that Microsoft bound IE to Windows with the intent of preventing Navigator "from weakening the applications barrier to entry." *Findings of Fact* ¶ 155. Paragraph 155 in Judge Jackson's *Findings of Fact* was identified by the appellate court as one of the "key District Court findings" in conjunction with its imposition of liability upon Microsoft for illegal tying in violation of § 1 of the Sherman Act. *Microsoft*, 253 F.3d at 84. The appellate court was unable to affirm Judge Jackson's finding of liability for tying. *Id.* Because the claim was not pursued on remand, there exists no finding that Microsoft illegally "tied" any product to Windows. When pressed, Dr. Shapiro acknowledged that the only connection between § 7 of Plaintiffs' remedy and the findings of liability in this case was Microsoft's prohibition on the removal of end-user access to IE, a liability finding which is addressed by other portions of both parties' proposed remedies. Tr. at 3663-64 (Shapiro). Given that Dr. Shapiro's endorsement of § 7 is cursory and devoid of any true economic analysis of the effect or justification for the provision, the evidence is insufficient to support a finding that § 7 of Plaintiffs' proposed remedy will promote competition in the monopolized market.

Indeed, in his economic analysis, Dr. Elzinga noted the appellate court’s observation in this case that tying in software markets may produce efficiencies not previously considered by the courts. Elzinga ¶ 25 (citing *Microsoft*, 253 F.3d at 93, 95). In this regard, Dr. Elzinga concluded that a blanket ban on such tying was likely to harm consumers. *Id.* ¶¶ 25, 34. Specifically, Dr. Elzinga explained, “[m]any contractual ties benefit consumers through higher output and reduced transaction costs.” *Id.* ¶ 34; *see also id.* ¶ 117. Dr. Murphy echoed this view, noting that Plaintiffs’ imposition of § 7 is based upon a presumption that all tying is *per se* anticompetitive, rather than evidence that “specific ties have anticompetitive effects that outweigh pro-competitive benefits.” Murphy ¶ 238. In sum, the evidence presented by Plaintiffs is insufficient to establish that competition will benefit from the imposition of § 7 of Plaintiffs’ proposed remedy, while the evidence presented by Defendant indicates quite clearly that this portion of Plaintiffs’ proposed remedy would likely prohibit beneficial contracts.

F. Plaintiffs’ Proposed Remedy § 9

Section 9 in Plaintiffs’ proposed remedy is nearly identical to § 8 of Plaintiffs’ remedial proposal, which bans Microsoft from taking “adverse[.]” action against industry participants “based directly or indirectly . . . on” their support of competing products. SPR § 8. Section 9 differs only in that it bans “adverse[.]” action against any participants in this litigation¹²⁸ “based directly or indirectly . . . on” such participation. SPR § 9. As a result of this similarity, the Court’s assessment of § 8 applies equally to § 9. In short, § 9, like § 8, holds the potential to prohibit significant amounts of legitimate business conduct, notwithstanding Plaintiffs’ witnesses’ characterization of the provision as a ban on retaliation. *See supra* Part III. However,

¹²⁸Section 9 of Plaintiffs’ proposed remedy also bans adverse action against participants in the suit instituted by the United States, *United States v. Microsoft*, No. 98-1232 (D.D.C.).

the over-breadth problems associated with § 9 are more pronounced than those associated with § 8, because there is virtually no way to determine whether a particular action which is adverse to a participant in this litigation is, in fact, “based directly or indirectly . . . on” that firm’s or individual’s participation in this litigation.

Furthermore, Plaintiffs have not established that participants in this litigation are in need of any protection against retaliation. Microsoft has been engaged in this and related litigation for nearly seven years, yet Plaintiffs did not present the testimony of any witness which indicated that, during this history, his or her firm had been subjected to retaliation by Microsoft based upon his or her participation in this litigation.¹²⁹ Based on the foregoing, the Court cannot conclude that participants in this litigation are in need of protection against retaliation by Microsoft, which exceeds protection from retaliation relating specifically to support by OEMs, ISVs, and IHVs for competing software products. *See supra* Part III.

G. Plaintiffs’ Proposed Remedy § 13

Section 13 of Plaintiffs’ proposed remedy, entitled “Java Distribution,” requires that Microsoft distribute “a competitively performing Windows-compatible version of the Java runtime environment . . . compliant with the latest Sun Microsystems Technology Compatibility Kit.” SPR § 13. Section 13 makes clear that Microsoft shall not be required to “create such a Compliant Version, or to distribute a Compliant Version that is not made available to Microsoft, without charge and on reasonable terms and conditions, at least 90 days prior to Microsoft’s

¹²⁹Plaintiffs offer the testimony of Mr. Fama, who recounted that he perceived Microsoft to be unhappy about Gateway’s participation in this litigation. Fama ¶¶ 144-46. Mr. Fama offered the strained opinion that a refusal by a Microsoft employee to engage in a particular discussion out of fear that it might find its way into the courts was a threat. *Id.* The Court is not convinced that the circumstances described by Mr. Fama reflect a threat of retaliation by Microsoft.

commercial release or major update of any such Windows Operating System Product or Browser.” *Id.*

Plaintiffs relate this mandatory distribution of Java generally to the actions Microsoft took to combat the threat posed by Java as a platform. Originally, the district court identified four actions taken by Microsoft “to exclude Java from developing as a viable cross-platform threat”:

(a) designing a JVM incompatible with the one developed by Sun; (b) entering into contracts, the so-called “First Wave Agreements,” requiring major ISVs to promote Microsoft’s JVM exclusively; (c) deceiving Java developers about the Windows-specific nature of the tools it distributed to them; and (d) coercing Intel to stop aiding Sun in improving the Java technologies.

Microsoft, 253 F.3d at 74. Of these originally identified behaviors, the appellate court sustained, in their entirety, the findings of liability against Microsoft for the deception of Java developers and the threat to Intel. *Id.* at 76-77. The appellate court further sustained the imposition of liability for the “First Wave Agreements” to the extent they required exclusive use of Microsoft’s JVM. *Id.* at 75-76. The appellate court rejected the imposition of liability for Microsoft’s development of its own JVM incompatible with Sun’s JVM and inclusion of that JVM with every copy of IE. *Id.* at 74-75.

Plaintiffs’ presentation of § 13 relies predominantly upon the testimony of Richard Green, Vice President and General Manager of Java and XML Platforms for Sun Microsystems, Inc. Mr. Green’s testimony is somewhat problematic in that it presented a number of complaints which are largely irrelevant to this proceeding. One of Mr. Green’s central complaints is that Microsoft determined not to include support for the Java platform in its most recent operating system, Windows XP. Green ¶¶ 20, 107, 117-118 (heading and text). Microsoft’s recent

determination with regard to the exclusion of Java in its most recent operating system has little bearing upon the Court's crafting of a remedy. In this remedial phase, the Court will not engage in a weighing of new allegations against Microsoft for pro- and anticompetitive effect. Plaintiffs have not argued that Microsoft's decision not to support Java in its most recent version of Windows is a continuation of previous conduct found to be illegal, nor have they argued that Microsoft's decision is of the same type or class as conduct for which liability has been ascribed. As a result, the Court declines to ascribe any weight to Mr. Green's complaints in this regard.¹³⁰

Mr. Green also complained vociferously that Microsoft's JVM is incompatible with Sun's JVM and that this incompatibility constituted a breach of a contract entered into between Microsoft and Sun. Green ¶¶ 17, 22. As the appellate court rejected liability on this basis, *Microsoft*, 253 F.3d at 74-75, the incompatibility of Microsoft's JVM is a non-issue. Furthermore, whether Microsoft breached a contract with Sun is the subject of another proceeding and is irrelevant to this proceeding. *See* Def. Ex. 1032-33; Def. Ex. 1033; Pl. Ex. 1157 (sealed).

¹³⁰The Court similarly rejects the contention that distribution of the JVM through Microsoft is imperative because it is impracticable for OEMs to distribute the technology and similarly impracticable for end users to download the technology from the Internet. Green ¶¶ 104-05. Far more persuasive is Dr. Allchin's testimony explaining that "it is fairly common today to have software programs of the same general size as a JVM downloaded in huge numbers." Allchin ¶ 77; *see also* Elzinga ¶ 121; Tr. at 293 (Green) ("[A] compressed JVM with associated class libraries typically ranges from 5 to 12 megabytes in size."). Once downloaded, a user would not incur any further delay in using the JVM. Allchin ¶ 77. Similarly, Mr. Green's conclusion that it is infeasible to depend on OEMs for distribution is unsupported. Green ¶ 105. Rather than infeasibility, the evidence establishes that Sun does not consider it worthwhile to attempt to obtain distribution through the OEM channel and would prefer, instead, to use this litigation as a means by which to obtain ubiquity. Tr. at 295-97 (Green); *see also* Green ¶¶ 105-06. Lastly, Mr. Green takes the view that OEMs have little incentive to distribute a Sun-compliant JVM. Green ¶ 105. The Court finds this complaint to be meritless, as a lack of incentive to distribute a particular product reflects a problem of a competitor, not a problem with competition. Allchin ¶ 79.

Stripped of these complaints and accusations of persistent Microsoft wrongdoing, Mr. Green's testimony is revealed as little more than an attempt to advance Sun-compliant Java technologies through this proceeding. Mr. Green expounded his view of the advantages of the Java platform over the Windows platform, Green ¶¶ 56-70, the ability of the Java platform to enhance competition in the network and sever-based computing environments, *id.* ¶¶ 76-83, and the positive attributes of the Java platform in general, *id.* ¶¶ 71-75, 119-28. Indeed, Mr. Green even proclaimed the benefits of Sun's "licensing and distribution model for developers." *Id.* ¶¶ 84-93. From this background, Mr. Green argued that "[t]here are no other economically feasible distribution channels for the Java platform that would achieve anything close to the levels of distribution currently enjoyed by Microsoft platforms such as Windows." *Id.* ¶ 106. On this basis, Mr. Green asserted that the Court should require Microsoft to distribute the Java platform with Windows. *Id.* ¶ 134. The result of § 13, argued Mr. Green, will:

merely put the Java platform on equal footing with the CLR¹³¹ (and thus create competition) by ensuring that the JRE receives the same level of distribution that Microsoft can provide to the CLR. Without this remedy, developers will undoubtedly begin to write applications to the CLR based on its guaranteed ubiquity. And those applications written to the CLR will only run on Microsoft Windows products.

Green ¶ 139 (emphasis added).¹³²

Mr. Green's testimony misses the point. What Plaintiffs, and quite clearly Sun Microsystems, are proposing is nothing more than "market engineering." Murphy ¶ 239. This

¹³¹CLR stands for "Common-Language Runtime." Green ¶ 118. Like Java, the CLR is a type of "component-software middleware" developed by Microsoft. Appel ¶¶ 44, 74-75. CLR is part of Microsoft's .NET framework. Madnick ¶ 163.

¹³²Mr. Green further relies upon the claim that OEMs fear retaliation by Microsoft for distribution of a competing platform. Green ¶ 105. Given that both of the proposed remedies in this case address such retaliation, the potential for retaliation should not continue to be a concern.

remedy provision appears to work a fundamental violation of two of the five “economic principles” outlined by Plaintiffs’ economic expert, Dr. Shapiro. As Dr. Shapiro testified:

The remedy should facilitate entry into the market for PC operating systems by whatever products and technologies will offer the most promising opportunities to challenge Microsoft’s monopoly in the years ahead. . . .

In the presence of rapid technological change, a remedy that primarily is relevant for threats from six years ago (such as certain cross-platform middleware) is unlikely to be effective at restoring competition in the future.

Shapiro ¶ 42. The “Java Distribution” portion of Plaintiffs’ remedy is a far cry from “facilitating entry.” *Id.*; *see also* SPR § 13. Rather, § 13 of Plaintiffs’ remedy proposal places the Java technology “on equal footing” with Microsoft’s technology, providing it with instantaneous ubiquitous distribution. Green ¶ 139. There is no evidence that Java would today possess “equal footing,” in terms of distribution, with Microsoft, but for Microsoft’s anticompetitive conduct.

More significantly, the artificial promotion of Java runs afoul of the goal of restoring competition because it “primarily is relevant for threats from six years ago.” Shapiro ¶ 42. Plaintiffs’ own economic expert testified that, “to the extent possible, the remedy should be ‘technology neutral,’ leaving it to *market forces* to identify the most promising future threats to Microsoft’s monopoly.” Shapiro ¶ 44 (emphasis in original). Dr. Elzinga echoed this view, observing that, from an economic perspective, a remedy will enhance consumer welfare and competition where it “promote[s] competition, not the interests of particular competitors.” Elzinga ¶ 9. The Court can conceive of no provision less “technology neutral” than § 13 of Plaintiffs’ remedy. Rather, § 13 appears to be a bold manipulation of the market which provides a particular technology, indeed a particular format of this technology—the Sun-compliant format—with an artificial advantage over other non-Microsoft technologies which may now or in

the future compete with Java.¹³³

H. Plaintiffs' Proposed Remedy § 16

Section 16 of Plaintiffs' proposed remedy mandates that "[i]f Microsoft publicly claims that any of its products are compliant with any technical 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." SPR § 16.a. Section 16 further provides that "[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)" until Microsoft "publicly disclaims that it implements that standard" or "the Standard expires or is rescinded." *Id.* If "Microsoft develops a proprietary implementation of a Standard," § 16 would also require Microsoft to "continue to support non-proprietary, industry implementations of such Standard." *Id.* The latter portion of § 16 acknowledges that, in some circumstances, "industry custom and practice recognizes compliance with the Standard to include variations from the formal definition of that Standard." *Id.* § 16.b. Based upon this

¹³³In his testimony, Dr. Elzinga warned that the Court must guard against "rent-seeking" by Microsoft's competitors. Elzinga ¶ 16. "Rent-seeking in economics," according to Dr. Elzinga, applies to "activities by economic agents (individuals or firms) that do not create value, but only influence how existing rewards are distributed." *Id.* Section 13 is an example of such "rent seeking" by Sun Microsystems. Elzinga ¶ 56 and Table 3. Sun proposed inclusion of a remedy nearly identical to § 13 of Plaintiffs' proposed remedy. Def. Ex. 841 at Sn-R025963-64, 025966-69. Sun is presently seeking the same remedy in a private lawsuit filed against Microsoft. Tr. at 170 (Green). Sun stands to benefit significantly by the imposition of § 13 of Plaintiffs' proposed remedy. *Id.* at 201. Indeed, Sun has "repeatedly offered Microsoft the opportunity to distribute a compatible, current JRE as part of its browser and operating system products, [and] Microsoft has refused." Green ¶ 19. Given these facts, there is little doubt that § 13 reflects the wish of a particular Microsoft competitor, the granting of which is likely to "have very little effect" upon the "development of cross-platform middleware." Tr. at 3614 (Shapiro). As such, the Court regards § 13 of Plaintiffs' proposed remedy as an unjustified manipulation of the marketplace. Sun's request for redress in this regard is best resolved, if at all, through its already-pending private lawsuit.

acknowledgment, § 16 permits Microsoft to “discharge its obligations” under the provision by complying with the “De Facto Standard,” so long as Plaintiffs do not object to such compliance.

Id.

As with other portions of Plaintiffs’ proposed remedy which concern industry standards, Plaintiffs direct the Court to the liability finding regarding the deception of Java developers. The appellate court condemned as illegal Microsoft’s deception of Java developers “regarding the Windows-specific nature of the tools,” such that “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. Also related to the issue of industry standards is the finding of liability against Microsoft for requiring the exclusive use of Microsoft’s implementation of the Java technologies in conjunction with the First Wave Agreements. *Id.* at 75. To remedy these findings of liability, Plaintiffs advance § 16 of their proposed remedy as “effectively a ‘Truth in Standards’ provision.” Shapiro ¶ 185.

Although proffered by Plaintiffs’ witnesses as a “truth in standards” provision, § 16 of Plaintiffs’ proposed remedy requires far more of Microsoft than simply “truthfulness.” Plaintiffs’ witnesses focused upon the fact that § 16 requires that if Microsoft creates a proprietary implementation of a particular standard, it must continue to support non-proprietary industry implementations of the standard. *See, e.g.,* Borthwick ¶ 113; Appel ¶ 147; Ledbetter ¶ 105; *see also* SPR § 16. This requirement is imposed without regard to whether Microsoft has made any representation regarding its compliance with an industry standard. Furthermore, Microsoft is not permitted, once it extends or alters the implementation of a standard, to require

that third parties adopt such an implementation, without regard to whether such a requirement is exclusive of other implementations of the standard. Appel ¶ 147; *see also* SPR § 16.

Section 16 of Plaintiffs' proposed remedy is yet another attempt by Plaintiffs to prevent Microsoft from extending, modifying, "co-opt[ing]," Ledbetter ¶ 90; Pearson ¶ 98, or "pollut[ing]," Appel ¶ 143, industry standards. Plaintiffs' primary example of such extension or modification arises from Microsoft's treatment of the Kerberos standard, discussed by the Court in Part III.D of the attached Memorandum Opinion. *See* Ledbetter ¶¶ 93-100; Borthwick ¶ 113; Schwartz ¶ 155. There, of course, exists no finding of liability against Microsoft for its proprietary extension of any industry standard, and the Court has rejected the assertion that Microsoft's conduct with regard to Kerberos and other industry standards is the "same or similar" to conduct that gave rise to the liability in this case. *See* Memorandum Opinion, Part III.D. In this regard, the Court has rejected Plaintiffs' suggestion that the imposition of liability for Microsoft's *deception* regarding its Java developer tools, *Microsoft*, 253 F.3d at 76-77, in any way, condemns decisions to depart from industry standards or to utilize a proprietary standard in the absence of deception regarding the departure. In fact, Microsoft's alteration or proprietary extension of industry standards more closely resembles conduct for which Microsoft was absolved of liability; the appellate court absolved Microsoft of liability for its development of a JVM incompatible with Sun's JVM. *Microsoft*, 253 F.3d at 75. Such incompatibility will only give rise to antitrust liability if the anticompetitive effects of the incompatibility outweighs the procompetitive justification for the design. *Id.* As the Court has not weighed any other instances of Microsoft's alteration of industry standards, including Kerberos, for procompetitive and anticompetitive effect, there is no basis for an argument that Microsoft's extension of proprietary

standards requires a remedy.

Significantly, Plaintiffs do not present evidence that any aspect of § 16 will enhance competition in the monopolized market.¹³⁴ Dr. Shapiro’s analysis focused only upon the “truth in standards” aspect of § 16, not the mandatory support for industry standards described above. With regard to the “truth in standards” aspect of § 16, Dr. Shapiro testified that the provision would be only “potentially mildly helpful” in furthering the goal of unfettering the marketplace. Tr. at 3678 (Shapiro). The limited nature of Dr. Shapiro’s analysis leaves the remaining portions of § 16 without economic analysis and comment.

Even if limited to Microsoft’s representations of compliance with “Industry Standards,” evidence presented by Microsoft’s witnesses establishes that § 16 of Plaintiffs’ remedy is not workable. Microsoft’s computer science expert, Dr. Madnick, testified without contradiction from Plaintiffs’ computer science expert that “industry standards” can “vary widely in complexity and specificity, such that various implementations of a particular standard are often incompatible” because “each supports a different subset of the standard’s features or offers its own extensions.” Madnick ¶ 207 (internal quotations omitted). More importantly, “partial compliance and extensions to standards” are themselves the “standard” practice in the computing industry. *Id.*; Tr. at 4988 (Gates). Because of these facts, the determination of “full compliance with a standard is often a difficult and ambiguous process.” Madnick ¶ 208. In other words, the determination of compliance with a particular standard cannot be based upon truly objective, verifiable criteria because even when the standard itself is reasonably clear, the extent to which

¹³⁴The Court notes that § 16 of Plaintiffs’ remedy proposal is not limited in any way to reflect the relevant market in this case. SPR § 16. Rather, the provision applies to all segments of Microsoft’s business. *Id.*

any product actually implements the standard will often be a matter of opinion. Madnick ¶¶ 208-10; Gates ¶ 454. The provision of compliance with “De Facto Standards” will not resolve this problem because compliance with the “De Facto Standard” may not itself be clearly and objectively determined. Gates ¶ 455. As a result, the “truth in standards” portion of § 16 has been shown to be ambiguous and therefore, unworkable.

The Court further observes that, not only is the finding of liability (deception of the Java developers) pursuant to which Plaintiffs offer § 16 far more narrowly circumscribed than the terms of Plaintiffs’ remedy, but unlike some other findings of liability, it concerns a single, very specific incident of anticompetitive conduct by Microsoft. This action by Microsoft ceased, pursuant to the order of another court, before Judge Jackson entered his factual findings.

Findings of Fact ¶¶ 390, 394; *see also* Elzinga ¶ 131. While Plaintiffs have presented evidence that Microsoft has altered industry standards, conduct which the appellate court determined does not necessarily violate antitrust law, Plaintiffs have not offered any evidence which indicates that Microsoft has engaged or is likely to engage in deception similar to that involving the Java developer tools, or any other developer tools for that matter. Accordingly, the Court finds that Plaintiffs have not shown that there exists a continued threat of harm from this anticompetitive act.

I. Plaintiffs’ Proposed Remedy § 19.f

As part of the procedures established for enforcement of the remedy imposed in this case, Plaintiffs propose that the Court should “review evidence that Microsoft has brought or has threatened to bring a groundless claim of Intellectual Property infringement for the purpose of” impairing interoperation between a wide variety of non-Microsoft products and Microsoft

products. SPR § 19.f. Plaintiffs do not offer any credible evidence that Microsoft now or in the past has advanced “groundless” claims of intellectual property infringement for the purpose of hindering interoperation, nor do Plaintiffs offer any evidence of a connection between this aspect of their remedy proposal and the liability findings in this case. Additionally, Plaintiffs fail to offer any evidence indicating that such review by the Court of Microsoft’s claims of intellectual property infringement would foster or advance competition. From the face of the provision, it appears that § 19 in Plaintiffs’ proposed remedy would serve to chill Microsoft’s enforcement of its intellectual property rights.

J. Plaintiffs’ Proposed Remedy § 20

Following the enforcement provisions of Plaintiffs’ proposed remedy, Plaintiffs have included in their remedy proposal a provision which requires Microsoft to provide Plaintiffs with written notice of its investments in computer and electronic product manufacturing, computer and computer peripheral equipment and software wholesalers, telecommunications, cable networks and program distribution, finance and insurance, and computer system design, as well as its acquisition of an exclusive license of technology or intellectual property 60 days in advance of such investment. SPR § 20. Plaintiffs’ counsel argue that such monitoring of Microsoft’s investments will “ensure that there remain no practices likely to result in monopolization in the future.” Pl. Prop. Findings of Fact ¶ 1411 (quoting *Microsoft*, 253 F.3d at 103). The only *evidence* Plaintiffs offer to support this argument is the testimony of Mr. Kertzman who advocated the benefits of a provision which required reporting “significant investments in the technology sector.” Kertzman ¶ 53. Mr. Kertzman described § 20 as a compliment to the ban on exclusive contracts contained in § 6 of Plaintiffs’ proposed remedy.

Id. ¶ 58. The disclosures mandated in § 20, noted Mr. Kertzman “would enable the regulatory authorities to impose conditions, as part of allowing the investment, that would limit Microsoft’s ability to secure exclusive contracts or to impose particular technology.”¹³⁵ *Id.* ¶ 56.

Nothing in the language of § 20, however, limits Microsoft’s disclosure obligations to *significant* investments. SPR § 20; *see also* Tr. 2127-39 (Kertzman); Gates ¶ 462. As written, the proposed provision requires Microsoft to report “any direct or indirect acquisition . . . or investment,” regardless of size. SPR § 20. Furthermore, Dr. Shapiro conceded that § 20 of Plaintiffs’ remedy proposal would not have an effect on competition or consumer welfare. Tr. at 3295 (Shapiro). Instead, Dr. Shapiro took the view that § 20 was an “enforcement provision,” but did not go so far as to identify what, exactly, was being enforced. *Id.* Given this evidence, Plaintiffs’ continued insistence that § 20 will promote competition borders on frivolous.¹³⁶

¹³⁵Plaintiffs fail to offer any evidence that any such “regulatory authorities” are interested in receiving information from Microsoft pursuant to the Court’s remedial order in this case, nor that the provision of information would prove useful to such regulatory authorities.

¹³⁶In response to criticism of § 20 by Mr. Gates, Plaintiffs, in their proposed findings of fact suggest that the provision could be modified to limit the reporting requirements to investments “in an amount larger than 1% of the target company” and that the reporting requirement could exempt from reporting “the acquisition of inventory acquired in the normal course of business.” Pl. Prop. Finding of Fact ¶¶ 1432-33. While helpful, these modifications do not cure the most significant defect related to § 20 of Plaintiffs’ remedy; namely, that there exists no justification for including in the remedy a requirement that Microsoft report its investment activity. There remains no logical relationship between Microsoft’s investment activity and the findings of liability in this case, nor have Plaintiffs established that such reporting will benefit competition.

APPENDIX B

FINAL JUDGMENT

The Plaintiff States of California, Connecticut, Florida, Iowa, Kansas, Minnesota, Utah, and West Virginia, the Commonwealth of Massachusetts, and the District of Columbia, having filed their complaints in this action on May 18, 1998;

Defendant Microsoft Corporation (“Microsoft”) having appeared and filed its answer;

The District Court having entered Findings of Fact on November 5, 1999 and Conclusions of Law on April 3, 2000;

The United States Court of Appeals for the District of Columbia Circuit having affirmed the Court’s finding of liability against Microsoft for violation of § 2 of the Sherman Act and the state law counterparts to § 2 of the Sherman Act in the states of California, Connecticut, Florida, Iowa, Kansas, Minnesota, Utah, and West Virginia, the Commonwealth of Massachusetts, and the District of Columbia, and having remanded to this Court for an order of remedy; and

Upon the record of trial and all prior and subsequent proceedings herein, it is this 1st day of November, 2002, hereby

ORDERED, ADJUDGED AND DECREED as follows:

I. Jurisdiction

This Court has jurisdiction of the subject matter of this action and of the person of Microsoft.

II. Applicability

This Final Judgment applies to Microsoft and to each of its officers, directors, agents, employees, subsidiaries, successors and assigns; and to all other persons in active concert or participation with any of them who shall have received actual notice of this Final Judgment by personal service or otherwise.

III. Prohibited Conduct

- A. Microsoft shall not retaliate against or threaten retaliation against an OEM by altering Microsoft’s commercial relations with that OEM, or by withholding newly introduced forms of non-monetary Consideration (including but not limited to new versions of existing forms of non-monetary Consideration) from that OEM, because it is known to Microsoft that the OEM is or is contemplating:
 1. developing, distributing, promoting, using, selling, or licensing any software that competes with Microsoft Platform Software or any product or service that distributes or promotes any Non-Microsoft Middleware;

2. shipping a Personal Computer that (a) includes both a Windows Operating System Product and a non-Microsoft Operating System, or (b) will boot with more than one Operating System; or
3. exercising any of the options or alternatives provided for under this Final Judgment.

Nothing in this provision shall prohibit Microsoft from enforcing any provision of any license with any OEM or any intellectual property right that is not inconsistent with this Final Judgment. Microsoft shall not terminate a Covered OEM's license for a Windows Operating System Product without having first given the Covered OEM written notice of the reasons for the proposed termination and not less than thirty days' opportunity to cure. Notwithstanding the foregoing, 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.

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.

- B. Microsoft's provision of Windows Operating System Products to Covered OEMs shall be pursuant to uniform license agreements with uniform terms and conditions. Without limiting the foregoing, Microsoft shall charge each Covered OEM the applicable royalty for Windows Operating System Products as set forth on a schedule, to be established by Microsoft and published on a web site accessible to the Plaintiffs and all Covered OEMs, that provides for uniform royalties for Windows Operating System Products, except that:
1. the schedule may specify different royalties for different language versions;
 2. the schedule may specify reasonable volume discounts based upon the actual volume of licenses of any Windows Operating System Product or any group of such products; and
 3. the schedule may include market development allowances, programs, or other discounts in connection with Windows Operating System Products, provided that:
 - a. such discounts are offered and available uniformly to all Covered OEMs, except that Microsoft may establish one uniform discount schedule for the ten largest Covered OEMs and a second uniform discount schedule for the eleventh through twentieth largest Covered OEMs, where the size of the OEM is measured by volume of licenses;
 - b. such discounts are based on objective, verifiable criteria that shall be applied and enforced on a uniform basis for all Covered OEMs; and
 - c. such discounts or their award shall not be based on or impose any criterion or requirement that is otherwise inconsistent with any portion of this Final Judgment.

- C. Microsoft shall not restrict by agreement any OEM licensee from exercising any of the following options or alternatives:
1. Installing, and displaying icons, shortcuts, or menu entries for, any Non-Microsoft Middleware or any product or service (including but not limited to IAP products or services) that distributes, uses, promotes, or supports any Non-Microsoft Middleware, on 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, except that Microsoft may 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, provided that the restrictions are non-discriminatory with respect to non-Microsoft and Microsoft products.
 2. Distributing or promoting Non-Microsoft Middleware by installing and displaying on the desktop shortcuts of any size or shape so long as such shortcuts do not impair the functionality of the user interface.
 3. Launching automatically, at the conclusion of the initial boot sequence or subsequent boot sequences, or upon connections to or disconnections from the Internet, any Non-Microsoft Middleware, except that Microsoft may restrict the launching of Non-Microsoft Middleware which replaces or drastically alters the Windows Operating System Product user interface.
 4. Offering users the option of launching other Operating Systems from the Basic Input/Output System or a non-Microsoft boot-loader or similar program that launches prior to the start of the Windows Operating System Product.
 5. Presenting during the initial boot sequence its own IAP offer.
 6. Exercising any of the options provided in Section III.H of this Final Judgment.
- D. Starting at the earlier of the release of Service Pack 1 for Windows XP or three months after the entry of this Final Judgment, 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 Section 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 Section 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 Section III.D shall occur in a Timely Manner.
- E. Starting three months after the entry of this 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.

- F.
1. Microsoft shall not retaliate against or threaten retaliation against any ISV or IHV because of that ISV's or IHV's:
 - a. developing, using, distributing, promoting or supporting any software that competes with Microsoft Platform Software or any software that runs on any software that competes with Microsoft Platform Software, or
 - b. exercising any of the options or alternatives provided for under this Final Judgment.
 2. 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, except that Microsoft may enter into agreements that place limitations on an ISV's development, use, distribution or promotion of any such 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.
 3. Nothing in this section shall prohibit Microsoft from enforcing any provision of any agreement with any ISV or IHV, or any intellectual property right, that is not inconsistent with this Final Judgment.
- G. Microsoft shall not enter into any agreement with:
1. any IAP, ICP, ISV, IHV or OEM that grants Consideration on the condition that such entity distributes, promotes, uses, or supports, exclusively or in a fixed percentage, any Microsoft Platform Software, except that Microsoft may enter into agreements in which such an 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, or
 2. any IAP or ICP that grants placement on the desktop or elsewhere in any Windows Operating System Product to that IAP or ICP on the condition that the IAP or ICP refrain from distributing, promoting or using any software that competes with Microsoft Middleware.

Nothing in this section shall prohibit Microsoft from entering into (a) any bona fide joint venture or (b) any joint development or joint services arrangement with any ISV, IHV, IAP, ICP, or OEM for a new product, technology or service, or any material value-add to an existing product, technology or service, in which both Microsoft and the ISV, IHV, IAP, ICP, or OEM contribute significant developer or other resources, that prohibits such entity from competing with the object of the joint venture or other arrangement for a reasonable period of time.

This Section does not apply to any agreements in which Microsoft licenses intellectual property from a third party and such intellectual property license is the principal purpose of the agreement.

- H. Starting at the earlier of the release of Service Pack 1 for Windows XP or *three* months after the entry of this Final Judgment, Microsoft shall:
1. Allow end users (via a mechanism readily accessible from the desktop or Start menu such as an Add/Remove icon) and OEMs (via standard preinstallation kits) to enable or remove access to each Microsoft Middleware Product or Non-Microsoft Middleware Product by (a) displaying or removing icons, shortcuts, or menu entries on 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, except that Microsoft may restrict the display of icons, shortcuts, or 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, provided that the restrictions are non-discriminatory with respect to non-Microsoft and Microsoft products; and (b) enabling or disabling automatic invocations pursuant to Section III.C.3 of this Final Judgment that are used to launch Non-Microsoft Middleware Products or Microsoft Middleware Products. The mechanism shall offer the end user a separate and unbiased choice with respect to enabling or removing access (as described in this subsection III.H.1) and altering default invocations (as described in the following subsection III.H.2) with regard to each such Microsoft Middleware Product or Non-Microsoft Middleware Product and may offer the end-user a separate and unbiased choice of enabling or removing access and altering default configurations as to all Microsoft Middleware Products as a group or all Non-Microsoft Middleware Products as a group.
 2. Allow end users (via an unbiased mechanism readily available from the desktop or Start menu), OEMs (via standard OEM preinstallation kits), and Non-Microsoft Middleware Products (via a mechanism which may, at Microsoft's option, require confirmation from the end user in an unbiased manner) to 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.

Notwithstanding the foregoing Section III.H.2, the Windows Operating System Product may invoke a Microsoft Middleware Product in any instance in which:

- (a) that Microsoft Middleware Product would be invoked solely for use in interoperating with a server maintained by Microsoft (outside the context of general Web browsing), or
 - (b) that 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) that is necessary for valid technical reasons to supply the end user with functionality consistent with a Windows Operating System Product, provided that the technical reasons are described in writing in a reasonably prompt manner to any ISV that requests them.
3. Ensure that a Windows Operating System Product does not (a) automatically alter an OEM's configuration of icons, shortcuts or menu entries installed or displayed by the OEM pursuant to Section III.C of this Final Judgment without first seeking confirmation from the user and (b) seek such confirmation from the end user for an automatic (as opposed to user-initiated) alteration of the OEM's configuration until 14 days after the initial boot up of a new Personal Computer. Any such automatic alteration and confirmation shall be unbiased with respect to Microsoft Middleware Products and Non-Microsoft Middleware. Microsoft shall not alter the manner in which a Windows Operating System Product automatically alters an OEM's configuration of icons, shortcuts or menu entries other than in a new version of a Windows Operating System Product.

Microsoft's obligations under this Section III.H as to any new Windows Operating System Product shall be determined based on the Microsoft Middleware Products which exist seven months prior to the last beta test version (i.e., the one immediately preceding the first release candidate) of that Windows Operating System Product.

- I. 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, provided that
 1. all terms, including royalties or other payment of monetary consideration, are reasonable and non-discriminatory;
 2. the scope of any such license (and the intellectual property rights licensed thereunder) need be no broader than is necessary to ensure that an ISV, IHV, IAP, ICP or OEM is able to exercise the options or alternatives expressly provided under this Final Judgment (e.g., an ISV's, IHV's, IAP's, ICP's and OEM's option to promote Non-Microsoft Middleware shall not confer any rights to any Microsoft intellectual property rights infringed by that Non-Microsoft Middleware);
 3. an ISV's, IHV's, IAP's, ICP's, or OEM's rights may be conditioned on its not

assigning, transferring or sublicensing its rights under any license granted under this provision; and

4. the terms of any license granted under this section are in all respects consistent with the express terms of this Final Judgment.

Beyond the express terms of any license granted by Microsoft pursuant to this section, this Final Judgment does not, directly or by implication, estoppel or otherwise, confer any rights, licenses, covenants or immunities with regard to any Microsoft intellectual property to anyone.

J. 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; or (b) any API, interface or other information related to any Microsoft product if lawfully directed not to do so by a governmental agency of competent jurisdiction.
2. Prevent Microsoft from conditioning any license of any API, Documentation or Communications Protocol related to anti-piracy systems, anti-virus technologies, license enforcement mechanisms, authentication/authorization security, or third party intellectual property protection mechanisms of any Microsoft product to any person or entity on the requirement that the licensee: (a) has no history of software counterfeiting or piracy or willful violation of intellectual property rights, (b) has a reasonable business need for the API, Documentation or Communications Protocol for a planned or shipping product, (c) meets reasonable, objective standards established by Microsoft for certifying the authenticity and viability of its business, (d) agrees to submit, at its own expense, any computer program using such APIs, Documentation or Communication Protocols to third-party verification, approved by Microsoft, to test for and ensure verification and compliance with Microsoft specifications for use of the API or interface, which specifications shall be related to proper operation and integrity of the systems and mechanisms identified in this paragraph.

IV. Compliance and Enforcement Procedures

A. Enforcement Authority

1. The Plaintiffs shall have exclusive responsibility for enforcing this Final Judgment. Without in any way limiting the sovereign enforcement authority of each of the plaintiff States, the plaintiff States shall form a committee to coordinate their enforcement of this Final Judgment. A plaintiff State shall take no action to enforce this Final Judgment without first consulting the plaintiff States' enforcement committee.
2. To determine and enforce compliance with this Final Judgment, duly authorized representatives of the plaintiff States, on reasonable notice to Microsoft and

subject to any lawful privilege, shall be permitted the following:

- a. Access during normal office hours to inspect any and all source code, books, ledgers, accounts, correspondence, memoranda and other documents and records in the possession, custody, or control of Microsoft, which may have counsel present, regarding any matters contained in this Final Judgment.
- b. Subject to the reasonable convenience of Microsoft and without restraint or interference from it, to interview, informally or on the record, officers, employees, or agents of Microsoft, who may have counsel present, regarding any matters contained in this Final Judgment.
- c. Upon written request of a duly designated representative of a plaintiff State, on reasonable notice given to Microsoft, Microsoft shall submit such written reports under oath as requested regarding any matters contained in this Final Judgment.

Individual plaintiff States will consult with the plaintiff States' enforcement committee to minimize the duplication and burden of the exercise of the foregoing powers, where practicable.

3. The Plaintiffs shall not disclose any information or documents obtained from Microsoft under this Final Judgment except for the purpose of securing compliance with this Final Judgment, in a legal proceeding to which one or more of the Plaintiffs is a party, or as otherwise required by law; provided that the relevant Plaintiff(s) must provide ten days' advance notice to Microsoft before disclosing in any legal proceeding (other than a grand jury proceeding) to which Microsoft is not a party any information or documents provided by Microsoft pursuant to this Final Judgment which Microsoft has identified in writing as material as to which a claim of protection may be asserted under Rule 26(c)(7) of the Federal Rules of Civil Procedure.
 4. The Plaintiffs shall have the authority to seek such orders as are necessary from the Court to enforce this Final Judgment, provided, however, that the Plaintiffs shall afford Microsoft a reasonable opportunity to cure alleged violations of Sections III.C, III.D, III.E and III.H, provided further that any action by Microsoft to cure any such violation shall not be a defense to enforcement with respect to any knowing, willful or systematic violations.
- B.
1. Compliance Committee. Within 30 days of entry of this Final Judgment, Microsoft shall establish a compliance committee (the "Compliance Committee") of its Board of Directors, consisting of at least three members of the Board of Directors who are not present or former employees of Microsoft.
 2. Compliance Officer. The Compliance Committee shall hire a Compliance Officer, who shall report directly to the Compliance Committee and to the Chief Executive Officer of Microsoft. The Compliance Officer shall be responsible for development and supervision of Microsoft's internal programs to ensure compliance with the antitrust laws and this Final Judgment. Microsoft shall give

the Compliance Officer all necessary authority and resources to discharge the responsibilities listed herein.

3. Duties of Compliance Officer. The Compliance Officer shall:
 - a. within 60 days after entry of this Final Judgment, arrange for delivery to all officers and directors of Microsoft a copy of this Final Judgment together with additional informational materials describing the conduct prohibited and required by this Final Judgment;
 - b. arrange for delivery in a timely manner of a copy of this Final Judgment and such additional informational materials to any person who succeeds to a position described in Section IV.B.3.a above;
 - c. ensure that those persons described in subsection c.i above are annually briefed on the meaning and requirements of this Final Judgment and the United States antitrust laws and advising them that Microsoft's legal advisors are available to confer with them regarding any question concerning compliance with this Final Judgment or under the United States antitrust laws;
 - d. obtain from each person described in Section IV.B.3.a within 60 days of entry of this Final Judgment and annually thereafter, and for each person thereafter succeeding to such a position within 10 days of such succession and annually thereafter, a written certification that he or she: (i) has read, understands, and agrees to abide by the terms of, and has to their knowledge not violated, this Final Judgment; and (ii) has been advised and understands that his or her failure to comply with this Final Judgment may result in a finding of contempt of court;
 - e. maintain a record of persons to whom this Final Judgment has been distributed and from whom, pursuant to Section V.B.3.d above has been obtained;
 - f. on an annual basis, certify to the Plaintiffs that Microsoft is fully compliant with this Final Judgment;
 - g. maintain a record of all complaints received and action taken by Microsoft with respect to each such complaint; and
 - g. report promptly to the Plaintiffs any credible evidence of violation of this Final Judgment.
4. The Compliance Officer may be removed only by the Chief Executive Officer with the concurrence of the Compliance Committee.

V. Termination

- A. Unless this Court grants an extension, this Final Judgment will expire on the fifth anniversary of the date on which it takes effect.
- B. In any enforcement proceeding in which the Court has found that Microsoft has engaged in a pattern of willful and systematic violations, the Plaintiffs may apply to the Court for a one-time extension of this Final Judgment of up to two years, together with such other relief as the Court may deem appropriate.

VI. Definitions

- A. “API” means application programming interface, including any interface that Microsoft is obligated to disclose pursuant to III.D.
- B. “Communications Protocol” means the set of rules for information exchange to accomplish predefined tasks between a Windows Operating System Product and a server operating system product connected via a network, including, but not limited to, a local area network, a wide area network or the Internet. These rules govern the format, semantics, timing, sequencing, and error control of messages exchanged over a network.
- C. “Consideration” means 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.
- D. “Covered OEMs” means the 20 OEMs with the highest worldwide volume of licenses of Windows Operating System Products reported to Microsoft in Microsoft’s fiscal year preceding the effective date of the Final Judgment. The OEMs that fall within this definition of Covered OEMs shall be recomputed by Microsoft as soon as practicable after the close of each of Microsoft’s fiscal years.
- E. “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”).
- F. “IAP” means an Internet access provider that provides consumers with a connection to the Internet, with or without its own proprietary content.
- G. “ICP” means an Internet content provider that provides content to users of the Internet by maintaining Web sites.
- H. “IHV” means an independent hardware vendor that develops hardware to be included in or used with a Personal Computer running a Windows Operating System Product.
- I. “ISV” means an entity other than Microsoft that is engaged in the development or marketing of software products.
- 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.

K. “Microsoft Middleware Product” means

1. the functionality provided by Internet Explorer, Microsoft’s Java Virtual Machine, Windows Media Player, Windows Messenger, Outlook Express and their successors in a Windows Operating System Product, and
2. for any functionality that is first licensed, distributed or sold by Microsoft after the entry of this Final Judgment and that is part of any Windows Operating System Product
 - a. Internet browsers, email client software, networked audio/video client software, instant messaging software or
 - b. functionality provided by Microsoft software that —
 - i. is, or in the year preceding the commercial release of any new Windows Operating System Product was, distributed separately by Microsoft (or by an entity acquired by Microsoft) from a Windows Operating System Product;
 - ii. is similar to the functionality provided by a Non-Microsoft Middleware Product; and
 - iii. is Trademarked.

Functionality that Microsoft describes or markets as being part of a Microsoft Middleware Product (such as a service pack, upgrade, or bug fix for Internet Explorer), or that is a version of a Microsoft Middleware Product (such as Internet Explorer 5.5), shall be considered to be part of that Microsoft Middleware Product.

L. “Microsoft Platform Software” means (i) a Windows Operating System Product and/or (ii) a Microsoft Middleware Product.

M. “Non-Microsoft Middleware” means a non-Microsoft software product running on a Windows Operating System Product that exposes a range of functionality to ISVs through published APIs, and that could, if ported to or made interoperable with, a non-Microsoft Operating System, thereby make it easier for applications that rely in whole or in part on the functionality supplied by that software product to be ported to or run on that non-Microsoft Operating System.

N. “Non-Microsoft Middleware Product” means a non-Microsoft software product running on a Windows Operating System Product (i) that exposes a range of functionality to ISVs through published APIs, and that could, if ported to or made interoperable with, a

non-Microsoft Operating System, thereby make it easier for applications that rely in whole or in part on the functionality supplied by that software product to be ported to or run on that non-Microsoft Operating System, and (ii) of which at least one million copies were distributed in the United States within the previous year.

- O. “OEM” means an original equipment manufacturer of Personal Computers that is a licensee of a Windows Operating System Product.
- P. “Operating System” means the software code that, inter alia, (i) controls the allocation and usage of hardware resources (such as the microprocessor and various peripheral devices) of a Personal Computer, (ii) provides a platform for developing applications by exposing functionality to ISVs through APIs, and (iii) supplies a user interface that enables users to access functionality of the operating system and in which they can run applications.
- Q. “Personal Computer” means any computer configured so that its primary purpose is for use by one person at a time, that uses a video display and keyboard (whether or not that video display and keyboard is included) and that contains an Intel x86 compatible (or successor) microprocessor. Servers, television set top boxes, handheld computers, game consoles, telephones, pagers, and personal digital assistants are examples of products that are not Personal Computers within the meaning of this definition.
- R. “Timely Manner” means at 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.
- S. “Top-Level Window” means a window displayed by a Windows Operating System Product that (a) has its own window controls, such as move, resize, close, minimize, and maximize, (b) can contain sub-windows, and (c) contains user interface elements under the control of at least one independent process.
- T. “Trademarked” means distributed in commerce and identified as distributed by a name other than Microsoft® or Windows® that Microsoft has claimed as a trademark or service mark by (i) marking the name with trademark notices, such as ® or ™, in connection with a product distributed in the United States; (ii) filing an application for trademark protection for the name in the United States Patent and Trademark Office; or (iii) asserting the name as a trademark in the United States in a demand letter or lawsuit. Any product distributed under descriptive or generic terms or a name comprised of the Microsoft® or Windows® trademarks together with descriptive or generic terms shall not be Trademarked as that term is used in this Final Judgment. Microsoft hereby disclaims any trademark rights in such descriptive or generic terms apart from the Microsoft® or Windows® trademarks, and hereby abandons any such rights that it may acquire in the future.
- U. “Windows Operating System Product” means the software code (as opposed to source code) distributed commercially by Microsoft for use with Personal Computers as

Windows 2000 Professional, Windows XP Home, Windows XP Professional, and successors to the foregoing, including the Personal Computer versions of the products currently code named “Longhorn” and “Blackcomb” and their successors, including upgrades, bug fixes, service packs, etc. The software code that comprises a Windows Operating System Product shall be determined by Microsoft in its sole discretion.

VII. Further Elements

Jurisdiction is retained by this Court over this action such that the Court may act *sua sponte* to issue further orders or directions, including but not limited to orders or directions relating to the construction or carrying out of this Final Judgment, the enforcement of compliance therewith, the modification thereof, and the punishment of any violation thereof.

Jurisdiction is retained by this Court over this action and the parties thereto for the purpose of enabling the parties to this action to apply to this Court at any time for further orders and directions as may be necessary or appropriate to carry out or construe this Final Judgment, to modify or terminate any of its provisions, to enforce compliance, and to punish violations of its provisions.

Unless otherwise indicated, the provisions of this Final Judgment shall take effect 30 days after the date on which it is entered.

In accordance with the imposition and affirmance of liability, the Plaintiff States shall submit a motion for the award of costs and fees, with supporting documents as necessary, not later than 45 days after the entry of this Final Judgment.

VIII. Third Party Rights

Nothing in this Final Judgment is intended to confer upon any other persons any rights or remedies of any nature whatsoever hereunder or by reason of this Final Judgment.

SO ORDERED.

COLLEEN KOLLAR-KOTELLY
United States District Judge