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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

OAKLAND DIVISION

THE APPLE IPOD ITUNES ANTI-TRUST LITIGATION This Document Relates To: ALL ACTIONS.	Lead Case No. C-05-00037-YGR CLASS ACTION PLAINTIFFS' MEMORANDUM OF LAW IN OPPOSITION TO DEFENDANT'S MOTION FOR SUMMARY JUDGMENT AND TO EXCLUDE EXPERT TESTIMONY OF ROGER G. NOLL DATE: February 18, 2014 TIME: 2:00 p.m. CTRM: 5, 2nd Floor JUDGE: Hon. Yvonne Gonzalez Rogers

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APPLE'S (PROPOSED) REDACTIONS

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I. INTRODUCTION

Apple's sixth attempt to dismiss Plaintiffs' claims relies on distortions of the factual record, ignores or misstates Plaintiffs' expert's analysis, and depends on unreliable and inadmissible expert testimony. Examination of the ***actual*** factual record, as well as Plaintiffs' experts' opinions and analysis, demonstrates that Apple has not met its burden of demonstrating that summary judgment is warranted.

II. FACTUAL BACKGROUND

A. Procedural and Factual History

Plaintiffs represent a certified class of individuals and businesses that purchased iPods (Apple's portable digital media player) directly from Apple between September 12, 2006 and March 31, 2009. Plaintiffs allege that Apple maintained and enhanced its monopoly power in the market for portable digital media players by implementing software and firmware updates – called the 7.0 updates – that disabled RealNetworks' Harmony, a product that allowed iPod users to download and play audio files from RealNetworks' on-line music store. Before Harmony, Apple's proprietary digital rights management system ("DRM"), called FairPlay, blocked iPod owners from downloading music from on-line stores other than Apple's iTunes Store ("iTS"). With Harmony, iPod users could build music libraries with music from online sources that were *not* tied to the iPod, thus reducing the costs of switching to another portable digital music player.

Recognizing the threat that Harmony posed to its dominance in the markets for permanent, legal audio file downloads and for portable digital media players, Apple acted swiftly to break the interoperability Harmony created. Apple disabled Harmony several months after its launch in 2004 by implementing the 4.7 updates. Then, after RealNetworks modified Harmony to make it work again with the iPod in 2006, Apple broke Harmony through 7.0. Disabling Harmony increased iPod owners' switching costs, enabling Apple to maintain and enhance its monopoly in the market for portable digital media players. As a result, Apple was able to charge higher prices for iPods than it could have charged if it had not engaged in the anticompetitive conduct.

Plaintiffs' principal economic expert, Roger G. Noll, calculated damages and demonstrated the anticompetitive impact of Apple's conduct using a before-and-after multiple-variable regression

analysis. Comparing prices of iPods before and after the competitive events (when Harmony was operational, when Apple disabled Harmony, and when Apple and its competitors began selling DRM-free audio files), and using a hedonic model of iPod prices that accounts for different iPod models and their different features, Noll quantified the competitive effects of 7.0. [redacted]

[redacted]

1. Apple's Closed System Helped Apple Achieve Market Dominance

[redacted]

Apple implemented this requirement through a proprietary DRM system called FairPlay. Ex. 9, Cue Dep. at 33:4-36:19. All music sold through iTS during the class period was restricted through FairPlay, including music recorded by labels that did not require DRM. Ex. 10, Robbin Dep. at 50:10-16; *see also* Ex. 9, Cue Dep. at 45:2-46:16, 56:6-57:16 (all music had same restrictions); Ex. 1, Noll Damages Report at 9-10.

[redacted]

[1] All references to "Ex." are to the exhibits attached to Declaration of Bonny E. Sweeney in Support of Plaintiffs' Memorandum of Law in Opposition to Defendant's Motion for Summary Judgment and to Exclude Expert Testimony of Roger G. Noll, filed concurrently. Emphases is added and citations are omitted throughout unless otherwise indicated.

Opting instead for a closed system, when Apple opened the iTS in 2003, it modified the iPod so that it was compatible only with the FairPlay-encrypted files sold through iTunes. Ex. 11, Farrugia Dep. at 109:21-110:8; Ex. 12, Farrugia Decl., ¶¶29-31; Ex. 4, Martin Report, ¶17. Apple ensured that all new iPods were incompatible with files sold through other online stores,[2] even though this was not necessary to maintain the security required by the labels. Ex. 13, Apple_AIIA00098417.

Apple's closed system locked iTS customers into using the iPod for direct playback of their digital audio files. Ex. 9, Cue Dep. at 41:24-43:9; Ex. 10, Robbin Dep. at 36:25-37:23; Ex. 14, Heller Dep. at 48:12-18. Ex. 1 , Noll Damages Report at 14-15, 52-55. As a result, iPod owners who purchased digital audio files from other sites (such as Amazon.com or Walmart.com) could not play these files directly on an iPod. This closed system allowed Apple to rapidly leverage its market power in the digital audio file market into the market for portable digital media players. Ex. 1, Noll Damages Report at 52-27; Ex. 9, Cue Dep. at 158:7-159:14, 209:21-210:11. Before the launch of iTS, Apple's market share was less than 30%. Ex. 15, Apple_AIIA01278671. With iTS, Apple was able to achieve dominance in the portable digital media player market almost immediately, with a market share exceeding 70%. Ex. 1, Noll Damages Report at 48; Ex. 16, Apple_AIIA01202394; Ex. 17, Apple_AIIA00099408; Ex. 18, Press Release, *iPod Claims 82% HD-Based Retail Market Share; 42% All Players* (Oct. 11, 2004). From that point forward, to compete in the digital audio download market any would-be competitor had to make its music playable on the iPod. Ex. 19, Declaration of Lee Morse, ¶8.

2. RealNetworks' Harmony Challenges Apple's Market Dominance

The first real challenge to Apple's locked-in market dominance occurred in January 2004, when RealNetworks launched an online music store that competed directly with iTunes. It sold digital audio files licensed from the record labels and protected by DRM. Ex. 20, Apple_AIIA01278810; Ex. 5, Warner Decl.; Ex. 6, Sony Decl.; Ex. 7, Universal Decl.; Ex. 8, EMI Decl. Recognizing that RealNetworks could not compete successfully in the digital audio file

[2] Although FairPlay and other DRM systems can be circumnutated legally (by, for example, burning and ripping), the process "is cumbersome and costly." Ex. 1, Noll Damages Report at 10.

market unless iPod users could play its songs directly on the iPod, RealNetworks' CEO Rob Glaser ("Glaser") first explored with Apple the possibility of entering into a licensing agreement. After Apple rebuffed this overture, RealNetworks developed a new technology that enabled iPod users to play DRM-encrypted songs legally purchased from RealNetworks directly on the iPod, as well as numerous other devices.[3] Ex. 23, Apple_AIIA00090441 (Cue Dep. Ex. 64). As Plaintiffs' technology expert explains, and Apple's expert concedes, there is no evidence that Harmony was ever intended or able to remove FairPlay encryption from any songs purchased from iTS. Ex. 4, Martin Report, ¶27, 31. "Harmony only ***added*** encryption to songs; it did not strip FairPlay encryption from songs sold through the iTunes Store." *Id.* (emphasis in original).

Shortly after RealNetworks launched Harmony, Apple's share of the digital audio file market fell below 70% for the first and only time since the launch of iTS. Ex. 1, Noll Damages Report at 50; Ex. 17, Apple_AIIA_00099408; Ex. 24, Apple_AIIA_00979727.[4]

Customers flocked to RealNetworks not only because it offered better prices than iTS,[5] they also valued the flexibility it provided. Apple's own documents and Plaintiffs' testimony demonstrate that iPod owners wanted the ability to play music purchased from online stores other than iTS. *See, e.g.*, Ex. 28, Apple_AIIA_00090471 (Harmony offers "[c]ompatibility, choice and quality" and that is "why so many customers have welcomed news of Harmony"); Ex. 27, Apple_AIIA00090447-49 (article regarding doubling of RealNetworks' market share); Ex. 23, Apple_AIIA_00090441-43 (Cue Dep. Ex. 64) (article detailing Harmony's ability to play songs on iPods); Ex. 29, Apple_AIIA_00090467-68 (article on song sales and ability to transfer songs onto more than 100 devices, including iPods). *See also* Ex. 30, 2005 Digital Music Interoperability and

[3] Glaser contacted Apple CEO Steve Jobs ("Jobs") on April 9, 2004, several weeks before Apple began its wholesale redesign of FairPlay. Ex. 21, Apple_AIIA01385106 (Glaser email to Jobs). Glaser proposed to Jobs that Apple license FairPlay so that RealNetworks could sell music that was interoperable with the iPod, and RealNetworks would make the iPod its preferred device for its online store. *Id.* Apple has not produced any response to the Glaser email, but Jobs testified that it was "possible" that he had had discussions with Glaser. Ex. 22, Jobs Dep. at 24.

[4] Apple's market share rebounded to more than 70% after Apple broke Harmony's interoperability. *See* Ex. 1, Noll Damages Report at 50; Ex. 9, Cue Dep. at 184:15-18; Ex. 17, Apple_AIIA00099408; Ex. 25, Apple_AIIA00327951 (Cue Dep. Ex. 71); Ex. 26, Apple_AIIA00091049-51.

[5] In August 2004, RealNetworks sold its audio downloads for as low as 49 cents per track – less than half the price of Apple's 99 cents per track price. Ex. 27, Apple_AIIA00090447.

Availability Hearing Before the Subcommittee on Courts, the Internet and Intellectual Property of the Committee on the Judiciary, April 6, 2005, Statement of The Honorable Lamar Smith ("This interoperability issue is of concern, since consumers who bought legal copies of music from Real could not play them on the iPod. I suppose this is a good thing for Apple, but perhaps not for consumers."). Ex. 58, Tucker Dep. at 12:20-13:5, 13:16-19; Ex. 60, Charoensak Dep. at 26:9-11 ("I was locked out of the music that I purchased, that was my main complaint."). *See, e.g.*, Ex. 35 (compendium of selected customer complaints) (Apple_AIIA00000674 (customer care email: customer unable to play 300 songs purchased from Real Guide/Real Player on his iPod); Apple_AIIA00002406 (customer care email: customer unable to transfer music from WMP to iTunes/iPod); Apple_AIIA00062113 (customer care email: customer unable to import music purchased via Napster into iTunes library); Apple_AIIA00057320 (customer care email: customer unable to use iPod to play Yahoo! music service); Apple_AIIA_00006477 ("[h]ow can I get these songs into iTunes and iPod"); Apple_AIIA_00007064 ("I was wondering why I can't copy music downloaded from Wal*Mart.com to my iPOD"); Apple_AIIA_00007549 ("I was upset to find out that my ipod doesn't work with Napster."); Apple_AIIA_0007579, Apple_AIIA_00008481, Apple_AIIA_00008484, Apple_AIIA_00008499, Apple_AIIA_00067464, Apple_AIIA_00067479, Apple_AIIA_00067605, Apple_AIIA_00067632, Apple_AIIA_00067979, Apple_AIIA_00069598, Apple_AIIA_00059009, Apple_AIIA_00059088 (a sample of individual customer complaints about iPod owners wanting the ability to play music acquired from sources other than iTS on their iPods.)).

3. Apple Shuts Down Harmony and Excludes Competition

Apple's response to the RealNetworks threat was swift and punishing. Before RealNetworks had even issued a public announcement about the Harmony technology, CEO Jobs drafted a public statement that called RealNetworks, a company that trades on NASDAQ, a "hack," accused it of questionable ethics, threatened legal action, and warned RealNetworks and its customers that future Apple software updates would break the interoperability created by Harmony:

> "We are stunned that Real has adopted the tactics and ethics of a hacker to break into the iPod, and we are investigating the implications of their actions under the DMCA and other laws. We strongly caution Real and their customers that when we update our iPod software from time to time it is highly likely that Real's lock picking will cease to work on current and future iPods."

Ex. 36, Apple_AIIA00093875. Instead of welcoming the interoperability created by RealNetworks, Apple unfairly disparaged its competitor and made clear to any other would-be rival that Apple would take all necessary steps to prevent any inroads into its dual monopolies.

Apple's top executives and engineers went into overdrive to figure out how to break Harmony, performing a detailed technical analysis as soon as the Harmony program was available to be downloaded. Ex. 37, Apple_AIIA00090427; Ex. 38, Apple_AIIA00090428; Ex. 39, Apple_AIIA00329373; Ex. 14, Heller Dep. at 128:1-5, 130:13-22. The engineers confirmed that, instead of stripping DRM from the music files, Harmony appeared to be "encrypting the files the same way that FairPlay does." Ex. 14, Heller Dep. at 87:1-4, 135:20-136:8; Ex 9, Cue Dep. at 123:3-25.

On October 26, 2004, Apple broke Harmony's interoperability with the iPod through its release of iTunes 4.7. Ex. 40, Apple_AIIA00093265 (Apple employee Grace Kvamme writes to other Apple employees to give them "a heads-up that iTunes 4.7, along with soon-to-be released iPod software" will "close the DRM hole that Real used to copy songs to an iPod").[6]

But RealNetworks did not give up. By April 2005, RealNetworks had developed a response to Apple's disabling of Harmony, and its music once again was playable on iPods. Ex. 41, Apple_AIIA00090483. Apple engineers immediately began work on a new fix, "FairPlay 1.0," that would disrupt the interoperability created by Harmony. Ex. 11, Farrugia Dep. at 46:1-6. Apple's new security expert Augustin Farrugia and his team monitored competitor actions, including those of RealNetworks, and explored modifications to FairPlay that would make interoperability with iPods impossible. Ex. 11, Farrugia Dep. at 164:9-24; Ex. 42, Apple_AIIA00094563. Farrugia and his

[6] In his Order dated May 19, 2011, Judge Ware granted summary judgment in Apple's favor as to the 4.7 claim only, holding that "[b]ecause iTunes 4.7 was a genuine improvement, the Court may not balance the benefits or worth of iTunes 4.7 against its anticompetitive effects." Dkt. No. 627 at 8 (citing *Allied Orthopedic Appliances Inc. v. Tyco Health Care Group, LP*, 592 F.3d 991 (9th Cir. 2010) (Order Granting In Part and Denying In Part Defendant's Motion for Summary Judgment)). Plaintiffs respectfully submit that this interpretation is a misreading of antitrust law and preserve their right to appeal Judge Ware's ruling. *See, e.g.*, Jonathan Jacobson *et al.*, *Predatory Innovation: An Analysis of Allied Orthopedic v. Tyco in the Context of Section 2 Jurisprudence*, 23 Loy. Consumer L. Rev. 1, 27 (2010) (arguing that such a reading of antitrust law would lead to substantial under-enforcement because anticompetitive conduct "would not constitute a valid claim if it generated even minimal efficiency or improvement").

team sought to correct a "flaw already exploited by Real to DRM their music to be compatible for iPod." Ex. 4, Martin Report, ¶¶75-76; Ex. 11, Farrugia Dep. at 195:10-196:13. To stop this compatibility, Apple redesigned FairPlay so that Apple could monitor the sources of music on consumers' iPods and prevent rivals' music from working. Ex. 4, Martin Report, ¶¶76, 81; Ex. 42, Apple_AIIA00094563; Ex. 11, Farrugia Dep. at 164:4-24.

Apple implemented the new FairPlay security system ([redacted] through iTunes 7.0, which was released in September 2006 on certain iPod models. Ex. 4, Martin Report, ¶¶75-106. As Plaintiffs' expert explains, 7.0 was "intended to prevent third-party applications like RealPlayer . . . from directly transferring songs to an iPod, whether they were encrypted or not." *Id.*, ¶76. [redacted] in 7.0 "did not make it more difficult for attackers to strip FairPlay encryption from songs." *Id.*, ¶78. [redacted] It was aimed, instead, at competing online music sources. Ex. 11, Farrugia Dep. at 164:10-24 (Farrugia admits that this "problem" has nothing to do with the security of the digital audio files sold through iTS); Ex. 11, Farrugia Dep. at 191:13-18; Ex. 4, Martin Report, ¶¶79, 100.

In October 2006 and January 2007, Apple confirmed the exclusionary effect of 7.0: digital audio files purchased from RealNetworks could no longer be directly downloaded onto an iPod. Ex. 11, Farrugia Dep. at 202:22-205:21; Ex. 43, Apple_AIIA00802966, Ex. 44, Apple_AIIA00807080 ("Fortunately, Real's own support website states that iPod with video and iPod nano do not work with Real Player due to changes we've made in the iPod software."). While Apple executives applauded the change, iPods owners were infuriated by Apple disabling their ability to play music, and complained to Apple by the thousands. *See, e.g.*, Ex. 35 (compendium of selected customer complaints).

By late 2006, cracks began to appear in Apple's use of DRM to suppress competition, as the record labels realized that dropping DRM was the only way around Apple's blocks on interoperability. Ex. 45, Apple_AIIA00320482-84 (Cue Dep. Ex. 58). In early 2007, EMI

approached several Apple online music competitors proposing to sell its music DRM- free. Ex. 46, Apple_AIIA0093504. Finally, after other music services were selling music without DRM restrictions, on January 6, 2009, Apple announced at the Macworld conference that agreement had been reached with all major labels to sell music on iTS without DRM at an increased price per track. *See* Ex. 47, BBC News.com, *Apple to end music restrictions* (Jan. 7, 2009). Eight million tracks were made available without FairPlay on that day, and the entire iTS music catalog became DRM free on March 31, 2009. *See* Dkt. No. 322 (Amended Consolidated Complaint), ¶31.[7]

4. Apple's Exclusionary Conduct Enabled It to Maintain and Enhance Its Monopoly, Causing Anticompetitive Injury

Plaintiffs' expert, Professor Roger G. Noll, has conducted an economic analysis of Apple's conduct. He has concluded, among other things, that:

- Apple's blocking of Harmony through 7.0 increased "lock-in" for iPods owners by increasing switching costs and network effects.
- Apple possessed market power during the class period in the market for portable digital media players and the market for permanent downloads of digital audio files.
- Apple's blocking of Harmony through 7.0 enhanced and maintained its monopoly power in the portable digital media player market.
- As a result, Apple was able "to charge higher prices for iPods than otherwise would have been the case."

Ex. 1, Noll Damages Report at 4-5, 14-22, 42-57, 59-61.

Using an econometric model that quantifies the effect of the lock-in on iPod prices, as well as the pro-competitive benefits from Harmony and the end of DRM, Professor Noll demonstrates that "the magnitude of the pro-competitive benefit of DRM-free audio not only was substantial, but was greater than the anticompetitive harm due to iTunes 7.0." *Id.* at 61. [redacted]

[7] As Professor Noll predicted, after music iTS became DRM-free, the lock-in effect eroded, and the price of iPods decreased. Ex. 51, 5/16/13 Noll Dep. at 81:13-82:10; Ex. 1, Noll Damages Report at 56-57.

Apple's re-establishment of lock-in through 7.0 was anticompetitive because it was costly to implement, provided no benefits to consumers, and increased Apple's profits by increasing its market power. Ex. 1, Noll Damages Report at 59-60; Ex. 4, Martin Report, ¶80 (the specified purpose was to transform very small errors into very serious errors). But for its long-term strategy of excluding rivals, Apple's conduct would not have made economic sense. *Aspen Highlands Skiing Corp.*, 472 U.S. 585, 608, 610-611, 105 S. Ct. 2847, 86 L. Ed. 2d 467 (1985) (conduct that "sacrifice[s] short-run benefits," such as immediate income and consumer goodwill, undertaken because it "reduce[s] competition . . . over the long run"). Apple's strategy ultimately succeeded by disabling legitimate competitive efforts at interoperability. Apple was able to maintain its 70% or more market share in the online music market and steadily increased its share of the portable digital media market. Ex. 1, Noll Damages Report at 50.

Far from an "incoherent chain of events," the record evidence demonstrates Apple's quest for dominance in the digital player and digital music markets by any means necessary, including by improperly shutting down would-be rivals.

III. LEGAL ARGUMENT

A. Summary Judgment Standard

A motion for summary judgment may not be granted unless the moving party shows both: (1) that there is no genuine issue as to any material fact; and (2) that it is entitled to judgment in its favor as a matter of law. *See* Fed. R. Civ. P. 56(a). "On summary judgment, the court draws all reasonable factual inferences in favor of the non-movant." *Oracle Corp. v. Druglogic, Inc.*, No. C-11-00910 JCS, 2013 U.S. Dist. LEXIS 164675, at *13 (N.D. Cal. Oct. 16, 2013). "Credibility determinations, the weighing of the evidence, and the drawing of legitimate inferences from the facts are jury functions, not those of a judge . . . ruling on a motion for summary judgment." *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255, 106 S. Ct. 2505, 91 L. Ed. 2d 202 (1986). "Where material factual disputes exist, the court must allow a jury to resolve them." *Rezner v. Bayerische Hypo-Und Vereinsbank AG*, 630 F.3d 866, 871 (9th Cir. 2010) (citing *Chevron Corp. v. Pennzoil Co.*, 974 F.2d 1156, 1161 (9th Cir. 1992)), *cert. denied*, __ U.S. __ , 132 S. Ct. 115, 181 L. Ed. 2d 40 (2011). "'In antitrust cases, these general standards are applied even more stringently and summary judgment

granted more sparingly.'" *In re Static Random Access Memory (SRAM) Antitrust Litig.*, No. 07-md-01819 CW, 2010 U.S. Dist. LEXIS 132172, at *41-*42 (N.D. Cal. Dec. 10, 2010) (citing *Beltz Travel Serv., Inc. v. Int'l Air Transport Ass'n*, 620 F.2d 1360, 1364 (9th Cir. 1980)). Where, as here, the motion rests so heavily on conflicting expert opinion, summary judgment is even more inapt. *See Northrop Grumman Corp. v. Factory Mut. Ins. Co.*, No. 05-08444 DDP, 2013 U.S. Dist. LEXIS 100804, at *27 (C.D. Cal. July 18, 2013); *Parker-Hannifin Corp. v. Wix Filtration Corp.*, No. CV 06-0098 LJO DLB, 2008 U.S. Dist. LEXIS 29388, at *14 (E.D. Cal. Apr. 9, 2008) ("such contradictory expert reports alone raise a material issue rendering summary judgment inappropriate"); *Synthes USA, LLC v. Spinal Kinetics, Inc.*, No. C-09-01201 RMW, 2011 U.S. Dist. LEXIS 93093, at *57 (N.D. Cal. Aug. 19, 2011) ("Where, as here, conflicting expert testimony raises genuine issues of material fact that are appropriate for consideration by a jury, summary judgment is inappropriate.").

B. Apple's Made-up Standards for Proving Impact Do Not Create Disputed Issues of Material Fact

Apple makes up standards for proving impact that are completely unmoored from established antitrust principles and then faults Plaintiffs for purportedly having failed to meet them. Each of these arguments must fail.[8]

1. Plaintiffs' Theory of Impact Does Not Depend on the Level of Harmony Sales to iPod Owners

First, Apple argues that Plaintiffs cannot prove impact because "Harmony was insignificant in 2006," and because Plaintiffs have not identified which RealNetworks' sales were to iPod owners (or potential iPod owners) or the exact number of people who became locked in or locked out as a

[8] The cases Apple relies upon are inapposite. *See In re eBay Seller Antitrust Litig.*, 433 F. App'x 504, 506 (9th Cir. 2011) (expert's first model was never actually implemented or tested and expert's second model utilized the company's "take rate" as proxy for the overcharge – a model (one not used in this action) not designed to connect the anticompetitive acts with the charging of supracompetitive fees); *Concord Boat Corp. v. Brunswick Corp.*, 207 F.3d 1039, 1054-58, 1063 (8th Cir. 2000) (expert's model failed to account for market events that both sides agreed were not related to any anticompetitive conduct). Further, *In re Se. Milk Antitrust Litig.*, No. 08-MD-1000, 2012 U.S. Dist. LEXIS 44221 1032797, at *4-*6 (E.D. Tenn. Mar. 27, 2012), was reversed and remanded by *In re Se. Milk Antitrust Litig.*, No. 12-5457, 2014 U.S. App. LEXIS 66 (6th Cir. Jan. 3, 2014) (finding that expert did not need to include all factors in damages model).

result of 7.0.[9] Def's Mem. at 9. Besides being incorrect as a factual matter, this argument is contrary to well-established economic theory. As Professor Noll explains:

> [N]othing in the economic theory of demand indicates . . . that some threshold level of users of Harmony among iPod owners is necessary for Harmony to have had an effect on iPod prices. Instead, the effect of a technology that allows consumers to buy complementary products from different vendors is to make the price of these components more elastic, and the effect of conduct that eliminates this possibility is to make demand for components less elastic.

Ex. 2, Noll Rebuttal at 14; *see also* Ex. 1, Noll Damages Report at 14-22.

It also is not true that Harmony was "insignificant" in 2006. At that time, RealNetworks had approximately 2.4 million subscribers, a significant number under any metric. Ex. 57, November 7, 2006 Oppenheimer Quarterly Update on RealNetworks, Inc. at 67. And while Plaintiffs have no way of identifying Harmony users, or determining exactly how many customers were locked in or locked out because of 7.0, Apple's own documents demonstrate that the interoperability and flexibility offered by RealNetworks' Harmony was highly valued by its customers, many of whom complained after Apple blocked Harmony through 7.0. *See, e.g.*, Ex. 35 (compendium of selected customer complaints).

Moreover, the reaction by Apple's top executives to the launch of Harmony in 2004 and its re-appearance in 2006 demonstrates that Apple itself viewed RealNetworks as a serious threat to its monopoly and monopoly pricing. *See supra*, §II.A. Members of Apple's Pricing Committee, including Jobs, Tim Cook, Phil Schiller and Peter Oppenheimer, among others, carefully followed developments related to Harmony, and were well aware of the security team's work to break Harmony's interoperability. Jobs, for example, drafted the press release condemning Real as a "hacker." Ex. 48, Donnelly Dep. at 45;[10] Ex. 36, Apple_AIIA00093875. These facts demonstrate

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[9] Throughout this brief, Plaintiffs use "7.0" to refer to [redacted] changes implemented through 7.0, and what Apple refers to as [redacted]

[10] [redacted] Ex. 48, Donnelly Dep. at 59.

that Apple viewed Harmony as a competitive threat and was able to raise prices on its iPods once that threat was quashed.

[redacted]

[11] Apple's true pricing strategy is exactly why their reliance on *Am. Booksellers Ass'n v. Barnes & Noble, Inc.*, 135 F. Supp. 2d 1031 (N.D. Cal. 2001) is misguided. In that case, the expert's model failed to take into account the actual retail pricing policies at issue, which included "discounts received by defendants [that] were passed on to consumers." *Id.* at 1040. Here, it is Apple that has conveniently ignored the fact that its pricing practices did not "unwaveringly" adhere to an "aesthetic" pricing strategy, as demonstrated by their actual transaction records. For this same reason, Apple's additional "authority" fails. In *Concord Boat*, 207 F.3d at 1055-57, the expert "ignored inconvenient evidence," which in this instance is exactly what Apple has done concerning their pricing strategy. Similarly, in *S. Pac. Commc'ns Co. v. Am. Tel. & Tel. Co.*, 556 F. Supp. 825, 1077-79 (D.D.C. 1982), the expert's model contained an "obvious inconsistency between real world competitive conditions and . . . assumptions about competition in the imaginary 'but for' world," whereas here, as discussed above, there is much support in the record for the basis of Noll's analysis on Apple's pricing strategy. *See also McGlinchy v. Shell Chem. Co.*, 845 F.2d 802, 807 (9th Cir. 1988) (damages evidence had "scant basis in the record"); *El Aguila Food Prods., Inc. v. Gruma Corp.*, 301 F. Supp. 2d 612, 625 (S.D. Tex. 2003) ("the record is void of evidence" that supported expert's model), *aff'd*, 131 F. App'x 450 (5th Cir. 2005).

[12] [redacted]

[13] Apple makes the implausible argument that in order for Plaintiffs to succeed on their claims, they would have to come forward with evidence that the Pricing Committee "attempted to measure

[redacted]

[redacted] "[A]n antitrust plaintiff need not prove damages with mathematical certainty, but rather, he need only introduce sufficient evidence of damages to allow a jury to estimate the amount of damages." *In re Indus. Silicon Antitrust Litig.*, No. 95-2104, 1998 U.S. Dist. LEXIS 20464, at *13 (W.D. Pa. Oct. 13, 1998); *see In re Lower Lake Erie Iron Ore Antitrust Litig.*, 998 F.2d 1144, 1176 (3d Cir. 1993). Once causation of damages is determined in an antitrust case,

> The jury may make a just and reasonable estimate of the damage based on relevant data, and render its verdict accordingly. In such circumstances "juries are allowed to act upon probable and inferential, as well as direct and positive proof." Any other rule would enable the wrongdoer to profit by his wrongdoing at the expense of his victim. It would be an inducement to make wrongdoing so effective and complete in every case as to preclude any recovery, by rendering the measure of damages uncertain.

Bigelow v. RKO Radio Pictures, Inc., 327 U.S. 251, 264, 66 S. Ct. 574, 90 L. Ed. 652 (1946).

3. Noll's Regression Demonstrates Impact and Quantifies Damages

[redacted]

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whether [redacted] affected elasticity of demand." Def's Mem. at 11. This is nonsensical. Plaintiffs have come forward with facts demonstrating that [redacted] Plaintiffs have demonstrated impact and damages through use of a standard regression model and have supported that model with facts regarding how Apple actually set prices – with reference to evidence, including testimony from Apple's 30(b)(6) designee regarding pricing.

[redacted] Ex. 2, Noll Rebuttal at 48-51 & Exhibits 4-6; Ex. 1, Noll Damages Report at 68-69.

IV. PROFESSOR NOLL'S OPINIONS ARE ADMISSIBLE UNDER RULE 702 AND *DAUBERT*

A. Professor Noll's Regression Fits the Facts and Theories of the Case

Not surprisingly, Apple has not challenged the qualifications of Professor Noll.[14] Instead, Apple argues that Professor Noll's regression model does not "fit" the facts or theories of the case. Def's Mem. at 12-14. But each of Apple's "fit" arguments is contradicted by compelling evidence, which Apple conveniently ignores. Apple ignores, for example, evidence showing that members of its Pricing Committee were at the forefront of Apple's response to the threat posed by Harmony. *See supra*, §III.B.1. Thus, its claim that the committee had no "awareness" of the likely effect of 7.0 on

[14] Professor Noll graduated with a B.S. in honors in mathematics from California Institute of Technology and a Ph.D. in economics from Harvard University. He is currently a Professor *Emeritus* of Economics at Stanford University, a Senior Fellow in the Stanford Institute for Economic Policy Research (SIEPR), and Co-Director of the SIEPR Program in Regulatory Policy. He is also the author, co-author or editor of 14 books and the author or co-author of over 300 articles. As a renowned expert in antitrust economics, Professor Noll has served as a consultant to the Antitrust Division of the U.S. Department of Justice, the U.S. Federal Trade Commission, the Federal Communications Commission, and the Senate Subcommittee on Antitrust and Monopoly. Further, Professor Noll has served as an economic expert in numerous other cases where he has testified, submitted expert reports and/or been deposed. His expertise has been relied upon and accepted repeatedly over the years in many courts around the country – including the Northern District of California. *See, e.g.*, *In re NCAA Student-Athlete Name & Likeness Licensing Litig.*, No. C 09-1967 CW, 2013 U.S. Dist. LEXIS 160739, at *40-*41 (N.D. Cal. Nov. 8, 2013) (Professor Noll "offered relevant testimony regarding whether the question of antitrust liability can be resolved through class-wide proof and analysis and each witness based his opinions on a sufficiently reliable methodology. He was also Plaintiffs' class certification expert in this case. *See also In re Static Random Access Memory Antitrust Litig.*, No. 07-md-01819 CW, 2010 U.S. Dist. LEXIS 141670, at *51-*52 (N.D. Cal. Dec. 7, 2010) (breadth of Professor Noll's expert analysis and damages sufficient to prove class-wide injury and class certification); *United States v. Western Elec. Co.*, 767 F. Supp. 308, 320 (D.D.C. 1991) ("The Court is convinced by the Noll analysis; indeed, it regards conclusions based on the facts which underlie that analysis as well-nigh irrefutable.") *aff'd*, 993 F.2d 1572 (D.C. Cir. 1993); *In re Dynamic Random Access Memory Antitrust Litig.*, No. M 02-1486, 2006 U.S. Dist. LEXIS 39841, at *45-*46 (N.D. Cal. June 5, 2006) (granting class certification after noting that Professor Noll's "report, supported by actual publication, market, and sales data produced thus far, provides an adequate basis from which to conclude that the proof plaintiffs will adduce to establish defendants' conspiracy to fix prices, and the resulting effect of the conspiracy on all prices paid for DRAM, would be common to all class members"). He was also Plaintiffs' Class certification expert in this case. Professor Noll's expert testimony has never been excluded on the basis of a *Daubert* motion. *See Perez v. State Farm Mut. Auto. Ins. Co.*, No. C 06-01962 JW, 2011 U.S. Dist. LEXIS 155921, at *13-*14 (N.D. Cal. Dec. 7, 2011) (denying defendant's motion to exclude Professor Noll and stating that "[u]pon review, the Court finds that Noll is qualified to offer expert testimony on methodologies for calculating class-wide damages"), *cert. denied*, 2012 U.S. Dist. LEXIS 66674 (N.D. Cal. May 2, 2012).

its ability to price iPods higher is not plausible. [redacted]

Apple also argues that Professor Noll's regression is "inconsistent with his own economic theory" because the overcharge attributed to iPods remains constant in the regression. Apple ignores, however, Professor Noll's rejection of this very point. As Professor Noll explains, Apple's argument "focuses on only one way in which the creation of a mandatory closed system of products reduces competition and raises prices." Ex. 2, Noll Rebuttal at 27.

> [Apple] ignores the fact that iTunes 7.0 immediately locked out a customer who has been using a portable digital media player that used the RealNetworks DRM format and who had purchased downloads from RMS. The immediate effect of iTunes 7.0 was to reduce the expected benefit to Apple in increased iPod sales from engaging in price competition with these other portable digital media players, thereby causing the demand for iPods to be less price elastic.

Id. "The effect of lock-out is immediate, and the principal anticompetitive effect of blocking Harmony on iPod prices arises from the general reduction in competition among iPods and other portable digital media players arising from the lock-out effect." *Id.* Noll further explains that Apple's argument is incorrect because while new iPod owners in 2006 became more locked in to iPods over time, the effect of that lock-in would not have affected the demand for later iPods, because those purchasers would not be likely to replace their device for a long period. "Thus, for most of the damages period, the lock-in effect on new iPod purchasers would not be an important factor affecting iPod prices." *Id.*

B. Professor Noll's Regression Accounts for All Relevant Variables and Produces Statistically Significant Results

Apple launches a multi-part attack on Professor Noll's regression model, but each argument fails. Not only are Apple's and its experts' criticisms misguided; these arguments go to the weight, not the admissibility, of Professor Noll's testimony. *See, e.g.*, *In re Titanium Dioxide Antitrust Litig.*, No. RDB-10-00318, 2013 U.S. Dist. LEXIS 62394, at *55-*58 (D. Md. May 1, 2013) ("[T]he

Supreme Court in [*Bazemore v. Friday*] found that inadequacies in a multiple regression analysis normally 'affect the analysis' probativeness, not its admissibility.') [478 U.S. 385, 400, 106 S. Ct. 3000, 92 L. Ed. 2 315, (1986).] In addition, the Court of Appeals for the Ninth Circuit in *Hemmings v. Tidyman's Inc.*, 285 F.3d 1174, 1188 (9th Cir. 2002) reasoned that '[i]n most cases, objections to the inadequacies of a study are more appropriately considered an objection going to the weight of the evidence rather than its admissibility.'"). Professor Noll has used standard and widely accepted economic methods to demonstrate that Apple's anticompetitive conduct enabled it to charge higher iPod prices than it would have charged but for the wrongful conduct.[15] Apple's motion to exclude his testimony must be rejected.

1. Professor Noll Does Not Use the Wrong But-For World

Apple argues that the regression does not properly account for the "lawful effect" of iTunes 4.7 and thus uses the wrong but-for world. But as Professor Noll explains in his rebuttal report and his supplemental rebuttal report, Apple's and its experts' opinion is simply wrong as a matter of economics. Apple's experts argue that the "Harmony Blocked" variable, which represents Apple's introduction of 4.7 in 2004, should be set to one (*i.e.*, remain "on") until the end of the data period.[16] But as Professor Noll explains, the 7.0 technology ***replaced*** the 4.7 technology. Thus: "For these models of iPods [with 7.0], Apple replaced technology that was ruled by the Court to be legal with new technology that plaintiffs allege was not legal. The proper way to measure the impact of enabling [redacted] and using iTunes 7.0 is not to assume that these models contained the old

[15] "Regression analysis is a well-recognized tool in determining antitrust damages." *Live Concert*, 247 F.R.D. 98, 145 (C.D. Cal. 2007); *see, e.g.*, *Petruzzi's IGA Supermarkets, Inc. v. Darling-Delaware Co., Inc.*, 998 F.2d 1224, 1237-39 (3d Cir. 1993) (admitting multiple regression analysis for use in calculating antitrust damages); *Weisfeld v. Sun Chemical Corp.*, 210 F.R.D. 136, 143, 145-46 (D.N.J. 2002) (observing that courts have "recognized the validity" of the regression analysis method for demonstrating class-wide impact), *aff'd*, 84 F. App'x 257 (3d Cir. 2004).

[16] On page 16 of their Motion, Apple's lawyers misunderstand their own expert's opinions. In the quoted section, Apple's experts were making the argument that Professor Noll's model is sensitive to small changes. To show this purported sensitivity, Apple's expert's applied old assumptions used by Professor Noll on iTunes 7.0/iTunes 4.7 in his merits report (before he knew about Farrugia's change) to his present model. This is not the "correction" that Apple's experts actually suggest. Instead, according to Apple's experts' reports, even correcting for supposed errors, the damages are significant. [redacted]

blocking technology from iTunes 4.7, which is the implicit assumption in the proposal by Professors Murphy and Topel." Ex. 2, Noll Rebuttal at 26. *See also* Ex. 50 , 12/18/13 Noll Dep. at 53:19-54:17, 56:4-57:6, 93:13-25 (explaining the effect of both leaving 4.7 on for models that did not have 7.0 and the reasoning for not turning on 7.0 for models it was not implemented in).[17] In his Supplemental Rebuttal Report, Professor Noll reiterates his rejection of Apple's criticism. Ex. 3, Supp. Noll Rebuttal at 13-15. He also points out that, even were he to accept Apple's criticism, respecifying the regression to keep iTunes 4.7 "on" for iPods with 7.0 would not reduce estimated damages to zero. Instead, the damages to resellers would fall by less than 5 percent, and damages to direct purchasers would fall by 55 percent. *Id.* at 14.

2. Professor Noll's Regression Accounts for the Relevant Aspects of iTunes 7.0

Apple also urges this Court to exclude Professor Noll's testimony because the regression purportedly fails to account for the "impact of the unchallenged aspects" of iTunes 7.0. This argument, however, is flatly contradicted by the regression model itself, as Professor Noll explains:

> This criticism ignores the fact that the regression equation that explains price includes indicator variables for class, other product attributes, and time (to represent improved technology), which measure the effect of the characteristics of an iPod.

Ex. 2, Noll Rebuttal at 4-5. *See also* Ex. 51, 5/16/13 Noll Dep. at 34:23-25 (Professor Noll knew of no unique aspect of iTunes 7.0 that was not already captured by other variables in the regression model). Apple's counsel's disagreement with Professor Noll's opinion is not grounds for excluding his testimony.

Moreover, the cases on which Apple relies do not support its position. Apple's principal case was recently reversed by the Sixth Circuit, as explained in *Se. Milk Antitrust.* In rejecting defendants' claims that plaintiff's expert damages model failed to prove antitrust injury because he did not account for every factor, the Sixth Circuit found that the expert "did not completely ignore commercial realities. He may have neglected to include important facts . . . . But actual inputs were

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[17] Apple manufacturers a supposed admission by citing a snippet of deposition out of context. In fact, the testimony (which appears to indicate agreement with a hypothetical posed by Apple's counsel), shows that Professor Noll explained that because iTunes 7.0 was never undone, the hypothesis that the effects of iTunes 4.7 could continue after [redacted] was issued could not be tested. Ex. 51, 5/16/13 Noll Dep. at 68:18-20.

considered . . . . Including some facts while omitting others goes to the 'accuracy of the conclusions, not to the reliability of the testimony.'" 2014 U.S. App. LEXIS 66, at *40-*41. As a result, the court determined that the expert's regression model sufficiently supported evidence of the alleged antitrust injury. *Id.* at *53.

Similarly, here, Plaintiffs' expert has opined that his model sufficiently accounts for all relevant characteristics. That Apple disagrees does not render Professor Noll's opinions inadmissible.[18] "'While the omission of variables from a regression analysis may render the analysis less probative than it otherwise might be, it can hardly be said' that the analysis must be deemed inadmissible . . . '[n]ormally, failure to include variables will affect the analysis' probativeness, not its admissibility.'" *Titanium Dioxide*, 2013 U.S. Dist. LEXIS 62394, at *51-*52.

3. Apple's Experts' Assertion that More Variables Should Be Included Ignores Multicollinearity Issues

Apple also argues that Professor Noll's opinion should be excluded because the regression does not account for every technical characteristic that differentiates models of iPods.[19] Def's Mem. at 18-20. As Professor Noll demonstrates, however, the variables that Apple asserts should have been included have an "extremely small effect" on the explanatory power of Noll's regressions and

[18] Apple repeatedly mis-quotes Professor Noll to support its arguments. Here, Apple claims that Professor Noll "does not deny the need to control for the other, unchallenged aspects of iTunes 7.0 – and he admits that failing to control for them would result in erroneously attributing to [redacted] a price effect caused by something else. Def's Mem. at 17. Professor Noll's actual testimony, however, makes clear that he knew of no unique aspect of iTunes 7.0 that was not already included in the regression model. Ex. 51, 5/16/13 Noll Dep. at 34:23-35:1.

[19] As Defendant's own authority states, "the Court cannot simply assume that variables omitted from the analysis are, in fact, 'major factors' which should have been included. There must be some indication that the excluded variables would have impacted the results." *In re Live Concert Antitrust Litig.*, 863 F. Supp. 2d 966, 973-83 (C.D. Cal. 2012). Including the omitted variables in this instance certainly would have altered the results – but not in the manner as Apple suggests. Including the additional characteristics would have caused extreme multicollinearity and skewed the efficiency of the estimates of the coefficients. There is sound reasoning here for Professor Noll to exclude the variables that he omitted, unlike the experts in the legal authority Apple relies upon. *See id.* (expert himself admitted to excluding variables that would affect prices); *In re REMEC Inc. Sec. Litig.*, 702 F. Supp. 2d 1202, 1273-74 (S.D. Cal. 2010) (expert "makes no attempt to account for other possible causes"); *In re Graphics Processing Units Antitrust Litig.*, 253 F.R.D. 478, 496-97 (N.D. Cal. 2008) (expert admitted that he omitted variables that would have a significant impact on demonstrating impact); *In re Methionine Antitrust Litig.*, MDL No. 00-1311, 2003 U.S. Dist. LEXIS 14828, at *9-*10 (N.D. Cal. Aug. 22, 2003) (in a simple regression analysis, the expert managed to account for only 8% of the significant factors); *Blomkest Fertilizer, Inc. v. Potash Corp. of Saskatchewan, Inc.*, 203 F.3d 1028, 1038 (8th Cir. 2000) (expert admitted model failed to account for dramatic events). Here, Professor Noll included all significant factors; adding any of the extraneous characteristics would create multicollinearity.

adding these characteristics makes the model unreliable. Ex. 2, Noll Rebuttal at 30. "If the additional technical characteristics that Professors Murphy and Topel discuss are added to the equation, the effect is to cause extreme multicollinearity (*i.e.*, a high correlation between separate independent variables in the equation)." Ex. 2, Noll Rebuttal at 5, 30-32; *see also* Ex. 50, 12/18/13 Noll Dep. at 35:4-8 ("Are there omitted variables? I'm not aware of any that would add statistical significance to the regression equation without being so highly multicollinear that they would destroy the coefficient estimates.").

Multicollinearity causes a reduction in the precision of the estimated coefficients in the regression, making them less reliable. Ex. 2, Noll Rebuttal at 31; Ex. 3, Supp. Noll Rebuttal at 7. Because Professor Noll's regressions include a large number of product characteristics that affect iPod prices, regressions with any additional attributes should be tested for multicollinearity. Ex. 3, Supp. Noll Rebuttal at 8. Despite being well aware of this issue, Apple's experts did not conduct any of the standard tests for multicollinearity (or at least if they did so, they did not report the results in any of their reports). *Id.* at 8-9. Nor did they provide any support for their opinion that the regressions they ran do not suffer from multicollinearity. *Id.* at 10. Professor Topel admitted that he did not sequentially study the effect of adding various product attributes to see if a multicollinearity problem occurred. Professor Murphy also admitted to running no tests to determine whether there was a multicollinearity problem. *See* Ex. 53, 1/8/14 Murphy Dep. at 294:25-298:14. Instead, Apple's experts put characteristics into the model without considering each one's potential to create multicollinearity problems. Ex. 52, 1/8/14 Topel Dep. at 221:1-9. Nor do Apple's experts offer any justification as to why the variables they added can be expected to affect prices other than their bald assertion that these variables should affect prices. Ex. 2, Noll Rebuttal at 29-32.

Professor Noll, in contrast, did test Apple's experts' regressions (with the additional attributes) for multicollinearity. Using standard tests, Professor Noll determined that, almost without exception, the iPod attributes that Professors Murphy and Topel insist must be added to the regression "cause severe multicollinearity." *Id.* at 9-10. In fact, as Professor Noll details in his Supplemental Rebuttal Report, the results of these three standard tests – adjusted R-squared,

condition number and VIF – reveal that all but one of the iPod attributes added by Apple's experts to the regressions generate multicollinearity problems. *Id.* at 10-11.

Critically, nothing in Professors Murphy or Topel's analysis indicates that the addition of any of the attributes they added improve the quality of the regression model. *See* Ex. 53, 1/8/14 Murphy Dep. at 300-01 (admitting that a regression's reliability can be affected by adding highly collinear variables). Instead, as Professor Noll explains, "[a]dding these attributes to the model worsens the precision of the estimates and renders the estimates sensitive to small changes in the data and in the specification of the regression equation." Ex. 3, Supp. Noll Rebuttal at 13.

Finally, even if Apple's experts' suggestions were adopted, adding the variables they suggest would not reduce damages to zero. Instead, reseller damages would remain unchanged and direct sales damages would be reduced by approximately 22%. *Id.*

4. Apple's Litigation-Driven Clustering Theory Has No Basis in Economics

As Plaintiffs demonstrate in their *Daubert* Motion to Exclude Certain Opinion Testimony of Kevin M. Murphy and Robert H. Topel ("Plaintiffs' *Daubert* Motion"), filed December 20, 2013, Apple's "clustering" attack on Professor Noll's regression is completely without merit. Murphy's and Topel's clustering adjustment is inappropriate because none of the clustering issues they raise is present in Noll's regressions. First, and foremost, clustering does not apply because Noll used the entire population of data, not a sample. Plaintiffs' *Daubert* Motion at 9. As explained by Noll and by Professor Jeffrey Wooldridge, a renowned econometrician with expertise in clustering issues, "'there can be no cluster sampling problem because there is no sampling.'" *Id.* Apple's experts' clustering adjustment suffers from additional flaws, including that it relies on the erroneous assumption that Apple's prices are uniform, assumes non-independence simply because the seller in each transaction (Apple) is the same, and ignores well-established principles about observation/cluster ratios that render their clustering adjustment inappropriate. *Id.* at 9-12.

Not only is Apple's clustering criticism incorrect, its experts' adjustment is actually harmful. The "sole effect" of Apple's correction of the non-existent clustering problem "is vastly to reduce the number of transactions observations that are used to estimate the regression equation, thereby

reducing the explanatory power of the regression analysis [and] destroying the reliability and precision of the regression results." Ex. 2, Noll Rebuttal at 11. As Professor Wooldridge puts it, "[c]omputing "cluster-robust" standard errors where, as here, clustering is not appropriate, is not harmless. Clustering can produce standard errors that are vastly inflated compared with the true precision of the estimates." Ex. 54, Wooldridge Decl. at 13.

In his Supplemental Rebuttal Report, Professor Noll confirms that Apple's experts' clustering adjustment is inappropriate, and agrees with Professor Wooldridge that Professors Murphy and Topel are guilty of "ex post" clustering, which occurs when groups in either a sample or a population are identified as belonging to a certain group and then subsequently labeled a "cluster." Ex. 3, Supp. Noll Rebuttal at 3; *see generally id.* at 3-7. Professor Noll also analyzes Apple's experts' purported basis for clustering (their correlation of residual errors) and concludes that clustering is "unmotivated" and "unreliable" because there is no reason to believe that a calendar quarter is an appropriate basis for clustering the data. *Id.* at 4-6. To demonstrate the unreliability of Professors Murphy's and Topel's clustering adjustment, Professor Noll used their procedures to divide the data by two other time periods, family/month and family/week. The results are "qualitatively identical" to clustering by family/quarter. *Id.* at 6 & Exhibits 1a, 1b, 2a, 2b. These results demonstrate that "there is no basis in the correlation analysis for picking quarterly data as the hypothetical clusters, as opposed to weekly or monthly data, or even daily or yearly data. The correlations of residual errors are not due to the standard problem of cluster samples – the presence of unobserved variables that affect outcomes differentially among the groups – but are the expected result of dividing the residual errors into a larger number of arbitrarily selected groups." *Id.* at 6. In short, Apple's experts' litigation-driven and unreliable clustering argument is completely lacking in economic basis, and their testimony on this issue should be excluded.

C. Professor Noll Relied on Standard Economic Methods to Define the Relevant Markets

Apple's argument that Professor Noll did not use "reliable economic principles and methods" to support his relevant market opinions is flatly contradicted by Professor Noll's report.[20] Def's

[20] Apple waived this argument. It could have easily moved for summary judgment on the issue of relevant market earlier, but chose not to. *See* Dkt. No. 627 ("'There are three essential elements

Mem. at 22. In support of its argument, Apple provides no evidence to counter Professor Noll's detailed examination of the market, nor does it provide a possible alternate market definition that Plaintiffs should have used.[21]

As Professor Noll explains, the core question that needs to be answered in the determination of a relevant market is whether the products at issue are sufficiently close substitutes. From the demand side, this means that customers would move their business from one firm to another in response to a price increase or a corresponding non-price change such as reduction in product quality or service. On the supply side, this means that sellers would switch production in response to a small price increase. Ex. 1, Noll Damages Report at 23, 25 ("the key characteristic of portable digital media players is the ability to play a large number of digital audio files on a compact mobile device"); Ex. 55, U.S. Department of Justice and the Federal Trade Commission Horizontal Merger Guidelines, at 7 (Aug. 19, 2010). At base, "[i]f consumers view the products as substitutes, the products are part of the same market." *Rebel Oil Co. v. Atl. Richfield Co.*, 51 F.3d 1421, 1435 (9th Cir. 1995); *see generally United States v. E. I. Du Pont de Nemours & Co.*, 351 U.S. 377, 399 76 S. Ct. 994, 100 L. Ed. 1264 (1956); Ex. 55, Merger Guidelines at 4-6, 10-11.

There are several methods for identifying the relevant market, including analyzing the cross-elasticity of demand, using the "hypothetical monopolist" test or, commonly, using information regarding the industry gleaned from internal documents and publicly available information about the structure of the market. *Nobody in Particular Presents, Inc. v. Clear Channel Commc'ns, Inc.*, 311 F. Supp. 2d 1048, 1120 (D. Colo. 2004) (noting that "cross-elasticity of demand is not always necessary to determine a relevant market," and finding the expert's market definition acceptable where "he did rely on other economic data including industry materials, pricing data, and public

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to a successful claim of Section 2 monopolization: (a) the possession of monopoly power in the relevant market; (b) the willful acquisition or maintenance of that power; and (c) causal antitrust injury.'" In this case, Defendant does not contest the sufficiency of Plaintiffs' Amended Consolidated Complaint as to the first and third elements.).

[21] Notably, Apple's own expert fails to apply the methods of antitrust economics in his market analysis, and offers no economic evidence to support the conclusion that other forms of recordings are as close competitive substitutes for iTS as are other download sites. *See also* Ex. 2, Noll Rebuttal at 4.

recognition of the market, all of which have been held relevant to determining the scope of a market").

In this case, as in most antitrust cases, it is not possible to assess perfectly the cross-elasticity of demand because of the unavailability of data on percentage changes on price and quantity from competing firms. Ex. 1, Noll Damages Report at 23-24. Here, econometric estimation of cross-elasticities of demand is even more unlikely because it involves products that have extensive product differentiation and that are rapidly evolving. Ex. 2, Noll Rebuttal at 23-24. If reliable estimation of cross-elasticity of demand is not feasible, economists look for indirect evidence that products are close substitutes: similarity of components and functional uses, statements outside the context of litigation by executives and industry analysts about their beliefs about which products are close competitors, and surveys of buyers about which products they considered before buying a product that is a candidate to be included in a relevant market.

Because reliable estimation of cross-elasticity of demand is often not feasible, both economists and courts recognize that indirect evidence that products are close substitutes, derived from qualitative evidence such as internal documents, pricing data, testimony from employees and consumers, and other anecdotal evidence, is sufficient to demonstrate the relevant market. *See, e.g.*, *Brown Shoe Co. v. United States*, 370 U.S. 294, 325, 82 S. Ct. 1502, 8 L. Ed. 2d 510 (1962) (a distinct relevant market such can be shown by indicia as industry recognition, unique products or pricing, and specialized vendors (among others)); *United States v. SunGard Data Sys.*, 172 F. Supp. 2d 172, 178 (D.D.C. 2001) (relevant market identified through testimony of executives and evidence showing substantial overlap in customers of competing firms); *United States v. H&R Block, Inc.*, 833 F. Supp. 2d 36, 52 (D.D.C. 2011) ("when determining the relevant product market, courts often pay close attention to the defendants' ordinary course of business documents"); *FTC v. Staples*, 970 F. Supp. 1066, 1076-78 (D.D.C. 1997) (in the Staples/Office Depot merger, the FTC supported its market definition with record documentary and pricing evidence, evidence that prices varied across varying geographic locations where there were fewer office store competitors and evidence that office superstores had different characteristics than other stores selling office supplies).

Professor Noll analyzed a vast quantity of this type of information in reaching his opinions on market definition. *See* Ex. 1, Noll Damages Report at 2-3 ("In undertaking this assignment I have read the legal submissions by the parties and the decisions by the court in this case, the defendant's answers to interrogatories, the expert reports submitted on behalf of the defendant in earlier phases of the litigation, numerous discovery documents and depositions, and many publications about the sound recording, consumer electronics and wireless communications industries. . . . I also have relied on my 45 years of experience in analyzing the economics of the communications industry.").

Although Apple chooses to ignore completely Professor Noll's comprehensive market analysis,[22] his reports detail the type of information on which he relied. For example:

- He considered internal Apple documents. *See, e.g.*, Ex. 1, Noll Damages Report, Exhibits 2-7 [redacted]
- He considered Apple employees' testimony. *See* Ex. 1, Noll Damages Report at 47 n.82 [redacted]
- He considered Apple's interrogatory responses. *See* Ex. 1, Noll Damages Report at 26 n.33 [redacted]
- He considered government information, financial analysts, industry expert analysis, news articles, consumer reviews and historical data about the market. *See* Ex. 1, Noll Damages Report at 26 (citing seller data and industry articles regarding the competitors to iPods); *id.* at 28 (citing financial analysts' discussion of competing products to iPod); *id.* at 29-30 (citing FCC data); *id.* at 31-32 (using his industry expertise and industry publications to demonstrate that CD players were obsolete during the class period and are not properly included in the market); *id.* at 7-12 (analyzing the history of audio downloads and portable digital music players, using articles by industry experts, hearings before Congress and customer surveys); *id.* at 39 & Exhibit 1 (using data on music sales to demonstrate that CDs are not in competition with digital music downloads); *id.* at 40-41 (analysis of a survey which compared 80 industry studies about the effects of file-sharing on CD sales).

[22] Apple's suggestion that Professor Noll is required to estimate the cross-elasticity of demand has no basis in law. If that were the law, it would be difficult to define a market in any complex antitrust case. Further, Apple's claims that Professor Noll should have analyzed the market by employing the "hypothetical monopolist" test called for by the merger guidelines ignores the fact that that is just one method of establishing the substitutability of iPod and other portable digital music players, and again suffers from the same data problems mentioned above.

- He considered Apple's SEC filings. *See, e.g.*, Ex. 1, Noll Damages Report, Exhibit 8 (using iPod sales numbers from Apple's financial statements compared with NPD industry expert information to compare sales of different portable digital media players).

- He relied on Plaintiffs' technical expert, Dr. David Martin, in analyzing the technical specifications of the iPod, iTunes and FairPlay source code. Ex. 1, Noll Damages Report at 13-14, 46, 52-53, 59-60.

This is exactly the type of information that experts and courts routinely rely on to determine relevant product markets. Apple has not even come close to demonstrating that Professor Noll's opinions on the relevant market for portable digital media players can be excluded, and thus its motion for summary judgment and to exclude testimony must fail.

V. CONCLUSION

For the foregoing reasons Apple's motion for summary judgment and motion to exclude the testimony of Professor Noll should be denied.

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Respectfully submitted,

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