RIGHTS MANAGEMENT IN DIGITAL MEDIA CONTENT:

A CASE FOR FCC INTERVENTION IN THE STANDARDIZATION PROCESS*

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INTRODUCTION

Government mandates dictating the course of technological progress inspire great controversy. In environments where inventors and investors forge innovative businesses at a breakneck pace, such mandates are rightly viewed with particular disdain. "[I]f a programmer or an engineer with a bright idea has to go to Washington, hat in hand and lawyers in tow, to request permission to sell a better product . . . we are on our way to suffocating innovation in this country."[1]

But perspectives change when those bright ideas and better products tend to enable criminal behavior and threaten the foundation of entire industries. Technological progress must pause under such circumstances. Often, government must intervene to inspire compromises, weigh options, reconsider values, and strike new balances.

Such a situation has arisen in the digital media environment. New and developing technologies allow pirates to illegally access and distribute digital media content on a global scale. These technologies hold the potential to irreversibly erode important legal rights in media content.

Although the media industry's content is theoretically protected from such piracy by copyright law, the enforcement of that law has proven challenging if not impossible. Instead, copyright owners seek to fight infringement-enabling technology with technology of their own. Specifically, copyright owners are pursuing technological self-help in the form of digital rights management (DRM) technologies. Generally speaking, these technologies centralize control, track content, and enforce restrictions of use.

1. Rob Pegoraro, *TiVo vs. the Broadcast Flag Wavers*, WASH. POST, Aug. 1, 2004, at F6.

This self-help initiative poses several interesting challenges. First, given that these new DRM technologies restrict consumer freedom *vis-à-vis* current technologies, the consumer perceives DRM as technological regress. The consumer also remains wary of DRM as most consumers either (1) do not respect the media industry copyright at all, or (2) more sympathetically, believe that DRM technologies will encroach upon their fair use of media content. In short, consumer acceptance of DRM technologies poses an enormous challenge. Consumers will be more likely to accept a DRM standard if they are given the opportunity to voice their concerns, and if the resulting standard accounts for some degree of flexibility and fair use. Government processes allow for such public participation, and government oversight can ensure a standard with an appropriate level of flexibility and fair use.

Second, in order to competently address all digital media piracy threats, a true, comprehensive DRM system requires standardization, and importantly, requires the participation of consumer electronics companies. Such participation remains unlikely. Indeed, the DRM rift between copyright owners and consumer electronics companies has been likened to a "civil war" between Hollywood and Silicon Valley.[2] Government has brokered agreements from similar warring interests in the past, and despite the current hard feelings, government can strong-arm negotiations and compromises from these opposed industries.

Third, assuming that Hollywood and Silicon Valley could agree on a DRM standard on their own (one that is acceptable to the majority of consumers), market pressures would make enforcement of that standard extremely difficult. Pirates would still create an attractive market for technologies that did not comply with the standard. Absent a legal ban on non-complaint devices, consumer electronics companies would continue to supply this non-compliant market. Only government could curtail this activity by vesting the standard with the force of law to ensure the effective administration and enforcement of the standard. The Federal Communications Commission (FCC or Commission) has already begun such intervention in the limited area of digital television. Specifically, throughout the FCC's recent Broadcast Flag and Plug-and-Play proceedings, the FCC has exhibited its competence and experience when handling targeted DRM standardization.

This paper demonstrates that against the particular challenges associated with comprehensive DRM standardization, government intervention stands as the most appropriate course of action. The paper also concedes that presently the FCC lacks the legal authority to engage

2. Drew Clark & Bara Vaida, *Digital Divide*, NAT'L J., Sept. 6, 2002 [hereinafter *Copyright Issues*]; Lawrence Lessig, *Hollywood v. Silicon Valley: Make Code, Not War*, EWEEK (June 17, 2002), *at* http://www.eweek.com/article2/0,1759,1238773,00.asp.

in such intervention. The rising importance of DRM, combined with the FCC's current lack of authority, has inspired numerous legislative proposals and debates regarding the appropriate nature and scope of FCC intervention. This paper provides an evaluation of these proposals and debates, which further highlights the importance of government intervention in the DRM standardization process.

The paper proceeds in four parts. Section I establishes the need for a comprehensive, standardized DRM system by tracing relevant contextual and historical developments in the media industry. Section II presents four detailed case studies representing four different standardization processes. Against the factual and theoretical backdrop of these first two sections, Section III argues that the government intervention, particularly through FCC action, is not only the most appropriate procedural course of action, but also the only procedural course of action capable of producing a successful DRM standard. Finally, Section IV addresses FCC authority generally, and the specific legislative action needed for FCC intervention.

I. BACKGROUND: THE INDUSTRY'S NEED FOR A DRM STANDARD

Many interests in the DRM debate oppose a DRM standard for political or business reasons.[3] Even some proponents of general DRM systems might argue that a comprehensive DRM standard, as a technical matter, is simply unnecessary. This section addresses such arguments by highlighting the importance of DRM generally, as well as the need for a DRM standard. Specifically, this section outlines certain historical developments in the media market, exposing the key legal contexts that bear upon the DRM debate.

A. Profits and Protection of Media Content

As an initial matter, it should be noted that the contemporary retail music market consists of $15 billion in annual sales.[4] Likewise, 2004 United States box office revenues are estimated at $9.4 billion.[5] The production of such successful media content relies upon large capital

3. Neil Weinstock Netanel, *Impose a Noncommercial Use Levy to Allow Free Peer-to-Peer File Sharing*, 17 HARV. J.L. & TECH. 1, 14 (2003) (Consumer electronics manufacturers have resisted copyright industry efforts to adopt uniform DRM technical standards. Although the manufacturers espouse a commitment to protecting intellectual property, they oppose the degradation of device capability, drag on innovation, and risk of government official interference that technology mandates would entail.).

4. Press Release, Federal Trade Comm'n, Record Companies Settle FTC Charges of Restraining Competition in CD Music Market (May 10, 2000) *at* http://www.ftc.gov/opa/2000/05/cdpres.htm.

5. Reuters, *Hollywood '04 Box Office Take Poised to Hit Record* (Dec. 22, 2004), *at* http://movies.yahoo.com/news/va/20041222/110376464000p.html.

investment.[6] For example, the average cost to produce, advertise, and market a major studio film in 1999 approached $80 million.[7] Such high levels of capital investment also entail high levels of risk. Only one in ten films covers its costs from domestic theatrical exhibition, and four out of every ten films fail to ever cover their costs even after realizing revenues from the international and after markets.[8] Similar cost structures and failure rates apply to the production of music as well.[9]

Two notable consequences derive from this combination of large investment and risky failure rates. First, the profit margins for successful media content often must be grossly out of proportion to the costs. As rationalized by the media production industry, disproportionate profits from successes are needed to subsidize the costs of the many failures suffered during each generation of content production.[10] Second, the content production industries are saddled with a responsibility and incentive to protect their investment from competitors and free riders. The media industry turns to copyright law for such protection.

B. Copyright

The nature and scope of the media industry's copyright protections is the most important and difficult issue involved in the development and deployment of DRM technologies. This is because copyright serves as the core right and foundation upon which all media related business models are built, and copyright law shapes both producers' and consumers' understandings of their respective rights in media content.

Numerous complexities, judgment calls, and finely cut distinctions arise when determining if, and to what extent, a work is protected under copyright law. Many of these issues are beyond the scope of this paper, as are some of the issues captured in the contemporary debate concerning whether the current Copyright Act remains relevant in today's digital economy.[11] Critical to the topics in this paper, however, is a general

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6. Doris Estelle Long, *First, "Let's Kill all the Intellectual Property Lawyers!": Musings on the Decline and Fall of the Intellectual Property Empire*, 34 J. MARSHALL L. REV. 851, 869-70 (2001).

7. JACK VALENTI, MOTION PICTURE ASS'N OF AM, COPYRIGHT & CREATIVITY - THE JEWEL IN AMERICA'S TRADE CROWN (Jan. 22, 2001) *at* http://www.mpaa.org/jack/2001/ 01_01_22b.htm [hereinafter COPYRIGHT & CREATIVITY].

8. *Id.*

9. Press Release, Recording Industry Ass'n of Am., Cost of a CD (2003), *at* www.riaa.com/news/marketingdata/cost.asp [hereinafter RIAA, *Cost of a CD*].

10. *Id.*

11. Robert S. Boynton, *The Tyranny of Copyright*, N. Y. TIMES MAG., Jan. 25, 2004; Raymond Shih Ray Ku, *The Creative Destruction of Copyright: Napster and the New Economics of Digital Technology*, 69 U. CHI. L. REV. 263 (2002); Jessica Litman, *Revising Copyright Law for the Information Age*, *in* COPY FIGHTS 125, (Adam Thierer et al. eds., 2002).

understanding of the core rights conferred by copyright law, the primary exceptions to those rights, the practical realities of enforcing those rights, and most importantly, the manner in which technological advances can alter and effect rights, exceptions, and enforcement.

The United States Constitution gives Congress the power "to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."[12] With this authority, and through the enactment of the Copyright Act, Congress granted a number of exclusive rights to authors, including the right to reproduce their work, the right to create adaptations, the right to distribute copies of their work to the public, and the right to perform or publicly display their work.[13] The grant of such powerful exclusive rights is often characterized as a copyright bargain, where authors and inventors are given a limited monopoly in exchange for disclosing, and eventually dedicating, their expressions to the public.

Copyright law also, however, incorporates a number of exceptions and limitations applicable to works that fall within its protection. For instance, under the first sale doctrine, buyers of copies of certain copyrighted works may largely do as they wish with their copies, including keeping them, selling them, and loaning them.[14] Likewise, the doctrine of fair use allows for the use of a copyrighted work "for purposes such as criticism, comment, news reporting, teaching, . . . scholarship, or research."[15]

Dating as far back as the advent of the printing press, technological advances have tested and challenged the nature of copyright law. While the core rights and exceptions conferred by copyright law are unlikely to change, history shows that this law otherwise nimbly evolves to address technological advances.[16]

Recent developments in digital technology, however, present a new challenge that cannot be resolved through adjustments to copyright law alone, but instead require a combination of legal and technical solutions. A brief review of some historical technological developments, and their effect on the market for media, demonstrates why recent developments in digital technology present such a novel challenge.

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12. U.S. CONST. art. I, § 8, cl. 8.
13. 17 U.S.C. § 106 (2000).
14. 17 U.S.C. § 109 (2000).
15. 17 U.S.C.A. § 107 (West. Supp. 1967).
16. *See* Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417, 430 n.11 (1984).

1. Copyright Law in the Analog World

When media production, distribution, and enjoyment were achieved solely through analog technologies, the copyright legal regime effectively protected the media industry's core product, encouraged creative innovation, and served as a stable foundation for media related business models. Copyright's effectiveness stemmed from the fact that neither technology nor market structure possessed the potential to undermine copyright protections.

The media industry in the United States blossomed with the advent of technological innovations that allowed consumers to enjoy media content through intermediary outlets such as movie theaters, radio, and television. The technology available during these early stages defined the structure of the market. Businesses such as radio stations, movie production studios, and movie theaters were built upon, defined by, and limited by the technologies available to them. These respective camps maintained contractual rights between each other concerning the use of copyrighted content. Importantly, while there were some logistical challenges, for the most part the industry was able to self-police these agreements. Any intermediary, such as a movie theater or radio station, acting contrary to its contractual rights could be easily identified and held accountable through traditional legal means.[17] Moreover, consumers did not complicate copyright enforcement, as in this early market structure composed of intermediary outlets—consumers played no direct role in the ownership, licensing, or distribution of copyrighted content.

It was not until the widespread commercial availability of the long-playing (LP) record in the 1950's that consumers began to develop a sense of ownership of media content. With LP's, consumers decided when, where, and how many times they wanted to listen to music. Consumers were given the ability to listen to albums without commercial interruptions. Overall, consumers became vested with a new sense of freedom, control, and ownership.

Through the LP, technology derived a way to give consumers more rights to media content, and the market acceptance of LP's suggests that the content industry chose to embrace and encourage that technology. This choice is no surprise, given the attractive new business models that the LP technology enabled. It is important to note that with the LP, it was technology, rather than copyright law, that defined the outer limits of consumer freedom. For example, while consumers enjoyed new-found freedoms, consumers still had no way of copying their music onto additional, or different, physical media. Consumers had no feasible way of broadcasting or otherwise mass distributing the content they

17. *See, e.g.*, Hampton v. Paramount Picture Corp., 279 F.2d 100 (9th Cir. 1960).

purchased. Given such technical limitations, content producers comfortably allowed consumers to enjoy and control content to the outer limits of technical possibility.

The pattern of technological advancements continued to further liberate consumers' control over content: however, content producers eventually took a historic stand against technology. With the advent of the Video Cassette Recorder (VCR), content producers confronted technology's ability to extend a consumer's control over content well beyond the limits that content producers intended. VCRs enabled consumers to record and store over-the-air broadcast content even though the content producers only intended these broadcasts for a single viewing at a particular time. VCRs also enabled consumers to make copies of content onto long term physical media storage. As such, the VCR, at least in theory, raised the specter of illicit mass production and distribution of copyrighted content.

The content production industry's historic stand against the VCR is often revisited in the contemporary debate concerning the effect of technological advancements on the market for media. For example, Rep. Zoe Lofgren, during a recent symposium on DRM at the University of California at Berkeley, recounted the Motion Picture Association of America's (MPAA's) blunt opposition to the VCR.[18] In his 1982 congressional testimony, MPAA president Jack Valenti exclaimed:

> I say to you that the VCR is to the American film producer and the American public as the Boston strangler is to the woman home alone. . . . We are going to bleed and bleed and hemorrhage, unless this Congress at least protect[s] one industry that is able to retrieve a surplus balance of trade and whose total future depends on its protection from the savagery and ravages of this machine.[19]

The MPAA's legal attacks against the VCR were as forceful as its rhetoric. Reverting to its core rights, content producers challenged the VCR on copyright grounds. This action eventually led to a U.S. Supreme Court decision with profound consequences for the future of the market for media.

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18. Zoe Lofgren, *Edited Transcript of the David Nelson Memorial Keynote Address: A Voice from Congress on DRM*, 18 BERKELEY TECH. L. J. 495 (2003).

19. *Home Recording of Copyrighted Works, Hearing Before the Senate Judiciary Comm.*, 97th Cong., 2d Sess., No. 97, Pt. 1, at 8 (1982) (statement of Jack Valenti, Chairman of the Motion Picture Association of America).

2. The Betamax Case

While many courts have recently considered the scope of copyright protection in the context of new media and technological advancements,[20] the Supreme Court's decision in the Betamax case remains the most instructive benchmark of the judiciary's approach to copyright and new media issues.[21] In this case, the media industry employed indirect liability theories to level its attack on Sony, the manufacturer of the Betamax, rather than pursuing actions for direct infringement against the thousands of actual users of the Betamax. These indirect liability theories failed, however, as after engaging in a thorough evaluation of (1) the media market, (2) the Betamax technology, and (3) the effects of the technology on the market, the Court arrived at its often cited conclusion that where a device that is used for copyright infringement also has a substantial noninfringing use, the provider of the device may not be held vicariously or contributorily liable for copyright infringement.[22]

In its opinion, the Court noted that many media interests encouraged taping of content, that taping of freely broadcast content furthered the socially beneficial goal of expanding public access to that content, and importantly, that taping exacted little, if any, commercial harm on the industry.[23] Specifically, the Court determined that any future commercial harm was speculative and without factual support as television production was more profitable at the time of the trial than it had ever been, despite consumers' use of Betamax.[24] The Court determined that "time shifting," or "recording a program to view it once at a later time," was largely a non-commercial activity.[25]

Contrary to the industry's fears, the VCR proved to be a tremendous benefit and a platform for successful new businesses. In 2002, for instance, over 24 films grossed between $50-$100 million each in film rentals.[26] Moreover, the advent of the VCR did little to erode the content owners' control of their content. The practical limitations of the

20. *See, e.g.*, N. Y. Times Co. v. Tasini, 533 U.S. 483 (2001); UMG Recordings, Inc. v. MP3.com, Inc., 92 F. Supp. 2d 349 (S.D.N.Y. 2000); A&M Records, Inc. v. Napster, Inc., 239 F.3d 1004 (9th Cir. 2001); Kelly v. Arriba Soft Corp., 280 F.3d 934 (9th Cir. 2002); Universal City Studios, Inc. v. Corley, 273 F.3d 429 (2d Cir. 2001).

21. Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417 (1984).

22. *See, e.g.*, Dynacore Holdings Corp. v. U.S. Philips Corp., 363 F.3d 1263, 1275 (Fed. Cir. 2004).

23. *Sony Corp. of Am.*, 464 U.S. at 421.

24. *Id.*

25. *Id.*

26. MOTION PICTURE ASS'N OF AM., MOTION PICTURE ASSOCIATION WORLDWIDE MARKET RESEARCH, U.S. ENTERTAINMENT INDUSTRY: 2003 MPA MARKET STATISTICS (2003), *at* http://www.mpaa.org/useconomicreview/ (registration required).

technology, in the form of degradation from copy to copy, countered the enticement of unauthorized mass production. Even where efforts were made to mass produce illegal first generation copies, pirates were faced with difficult production and distribution challenges. In short, while the technology afforded consumers the ability to copy content, limits still inherent in both the technology itself, and in the structure of the market, prevented consumers from exercising control over content for the purpose of creating a commercially significant illicit market.

That the fears of copyright owners were not realized during the launch of the VCR, however, does not mean that those analogous fears in today's headlines should be discounted. The industry certainly is guilty of crying "wolf" in the past.[27] But now, its cries are justified because digital is different. With the digital revolution, technological limitations and market structure no longer stand as barriers to an illicit market.

C. The Digital Revolution and its Effect on Media

The media industry has progressed to the widespread use and sale of its copyrighted content through digital physical media. This trend began in the late 1970's when an industry consortium led by Philips and Sony challenged analog systems with a new standard, the Compact Disc (CD).[28] The trend continues today in the form of the video content market's continuing transition to the Digital Versatile Disc (DVD). Overall, the industry has encouraged and sanctioned a transition from analog to digital physical media.

While cautious of the transition to digital, as it has been with every technological advance, the industry mistakenly assumed that it would be able to use new digital technologies to protect itself as well as to improve itself. In embracing and encouraging the transition to CDs and DVDs, the industry did not appreciate that hackers armed with personal computers and other technological tools would handily defeat the industry's efforts at copy protection. More importantly, the industry did not appreciate the combination of technological developments on the near horizon that would exacerbate the problem into a credible threat to the industry's ability to exercise any control over its content whatsoever. Such developments include (1) advances in digital compression techniques, (2) widespread deployment of broadband data communication capabilities, (3) the rise of specialized digital file sharing technologies, such as peer to peer (P2P) technologies, and (4) the

27. Stan Liebowitz, *Copyright in the Post-Napster World: Legal or Market Solutions?*, *in* COPY FIGHTS 97, (Adam Thierer et al. eds., 2002).

28. Ida Shum, *Getting "Ripped" Off by Copy-protected CDs*, 29 J. LEGIS. 125 (2002) [hereinafter *Copy-protected CDs*].

convergence of personal computing technology, communication technology, and traditional consumer electronics technology.

1. Consequences for the Market for Media

Such technological advances, particularly convergence and specialized P2P applications are "disruptive technologies" in that they serve to change virtually every aspect of the market by, *inter alia*, altering the market's competitive dynamics and basis for competition.[29] Unquestionably, the competitive dynamics in the market for media are significantly altering.[30] On the demand side, consumers have indicated their desire to obtain media content in the form of digital files delivered directly to their personal computers and to use personal computers as a platform for media management. This demand is likely born from the flexibility that such a scheme affords to the consumer. For example, once a consumer obtains a digital song on a personal computer, that consumer can play the song through speakers on the personal computer, transfer the song to a portable MP3 player, burn the song to a CD, play the song in a traditional CD player, transfer the song to a MiniDisc, play the song through a stereo connected to the computer, and offer the song to friends through a shared directory.

While this new distribution and consumption scheme does not render obsolete traditional mechanisms, such as physical media storage and consumer electronics, it does assign new roles to such traditional mechanisms, centered on the personal computer as a platform. As such, it brings many new players and interests into the picture, and alters the cost structure associated with both the distribution and production of media content. Given these dramatic structural changes, some consumers are beginning to question the content production industry's traditional rationale for large profit margins.

D. Digital Piracy

Lower costs across the board, increased consumer flexibility, and blossoming innovation in software and consumer electronics lend a positive and exciting air to the market for digital media. Many interests in the media market, however, are confronting a disconnect as to what these new benefits mean. At a broad level, consumers expect the content production and distribution cost savings to be passed along. Consumers

29. CLAYTON M. CHRISTENSEN, THE INNOVATOR'S DILEMMA: WHEN NEW TECHNOLOGIES CAUSE GREAT FIRMS TO FAIL 14-24 (1997).

30. Brendan M. Schulman, *The Song Heard 'Round the World: The Copyright Implications of MP3s and the Future of Digital Music*, 12 HARV. J.L. & TECH. 589 (1999).

also wish to be the beneficiaries of the flexibility that new technologies enable.

Comfortable with their current market and profit structure, on the other hand, content producers have thus far proven reluctant to fully embrace digital distribution models and reluctant to recognize consumer demands. Caught in the middle of this disconnect stand telecommunications interests with their desire to fill empty capacity, as well as software, consumer electronics, and computing interests with their desires to preserve an innovative atmosphere for fostering new products and sales.

As seen with the imposing presence of adaptable P2P networks, entrepreneurs, innovators, and consumers are not waiting for content producers to warm up to the idea of digital distribution. Instead, they are forging ahead with innovative technologies and business models centered upon the infringement of content producers' copyrights. Due to the ease with which digital media files can be copied, stored, and most importantly, distributed throughout the network, many consumers have shown a propensity to abuse the technological environment by stealing copyrighted media content. Additionally, the majority of file sharers do not care if the files contain copyrighted content, and they make the choice to steal largely free of any social, economic, or legal consequences.[31] Armed with technology and free from moral qualms and legal repercussions, music consumers have devastated the music industry through Internet piracy. Some reports place the music industry's losses at 30 percent of sales across three years, amounting to $5 billion.[32]

The content production industry argues that digital piracy stands as the primary hurdle to the legitimate widespread digital distribution of media content.[33] On the other hand, the content industry's refusal to sponsor a reasonable digital distribution business model might be the cause of widespread piracy.[34] Under either cause and effect perspective, piracy must be curtailed and a workable digital distribution model must be pursued. New legal regimes and new DRM technologies will be needed to achieve such goals.

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31. *See* MARY MADDEN & AMANDA LENHARTPEW INTERNET & AMERICAN LIFE PROJECT, MUSIC DOWNLOADING, FILE-SHARING AND COPYRIGHT (July 2003) *at* http://www.pewinternet.org/pdfs/PIP_Copyright_Memo.pdf.pdfreports/toc.asp?Report=96.

32. Frank Aherns, *A Reprise of Lawsuits Over Piracy*, WASH. POST, Jan. 22, 2004, at E1. [hereinafter *Reprise of Lawsuits*].

33. *See* Press Release, Motion Picture Ass'n of Am., Valenti Testifies to Studios' Desire to Distribute Movies Online to Consumers (Apr. 23, 2002), *at* http://www.mpaa.org/jack/2002/2002_04_23a.htm.

34. While many larger content production and distribution companies have begun to pursue legitimate digital distribution models, such an industry remains in its infancy. *See, e.g.*, Aliya Sternstein, *Legalize It*, FORBES, Feb. 17, 2003, at 99.

E. Legal Reactions to the Digital Revolution

In an effort to combat piracy, the media industry, through its trade groups such as the Recording Industry Association of America (RIAA) and the MPAA, has aggressively sought to enforce its copyright protections against purveyors of P2P file sharing networks. For example, in the well known *Napster* case, the RIAA succeeded in shutting down the "old" centralized Napster network as federal courts in California found that the RIAA would likely succeed on its claims for contributory and vicarious copyright infringement.[35]

A similar copyright infringement challenge against Grokster failed before the District and Circuit Courts largely because of the decentralized architecture of Grokster's P2P network.[36] Indeed, some commentators suggest that decentralized file sharing technologies evolved specifically to avoid vicarious and contributory copyright infringement as those theories were applied by the Ninth Circuit in the *Napster* case.[37] Regardless of how the Supreme Court eventually rules, the *Grokster* case has taught the vital lesson that file sharing technologies will be quick to arise, quick to adapt, and elusive to traditional legal enforcement. In fact, it may be safe to assume that any legal interpretation or statute could be circumvented by savvy technologists.

Just such an assumption has driven the media industry to the desperate, highly publicized measure of enforcing its copyrights against the actual direct infringers hiding behind the veil of file sharing networks: the individual members of those networks.[38] The publicity of these lawsuits may stem the tide of file sharing piracy to some extent, and some commentators even suggest that the strategy may result in long term success.[39] Investigation and legal action, however, directed towards the more than 57 million users of such P2P networks remains

35. A&M Records, Inc. v. Napster, Inc., 239 F.3d 1004 (9th Cir. 2001).

36. Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Ltd., 259 F.Supp.2d 1029 (C.D. Cal. 2003), *aff'd*, 380 F.3d 1154 (9th Cir. 2004), *cert. granted* Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Ltd., 125 S. Ct. 686 (2004).

37. JESSICA LITMAN, DIGITAL COPYRIGHT (2001) [hereinafter DIGITAL COPYRIGHT].

38. This legal onslaught has implicated interesting statutory construction and constitutional challenges to the Digital Millennium Copyright Act (DMCA). *See* Recording Indus. Ass'n of Am., Inc. v. Verizon Internet Serv., Inc., 351 F.3d 1229 (D.C. Cir. 2003); Verizon Internet Serv., Inc., 257 F. Supp. 2d 244 (D.D.C. 2003); Verizon Internet Services, Inc., 240 F. Supp. 2d 24 (D.D.C. 2003).

39. Stacey L. Dogan, *Code Versus the Common Law*, 2 J. ON TELECOMM. & HIGH TECH. L. 73, 80 (2003).

impractical. Moreover, some indications suggest that file sharing continues to surge and grow, despite the lawsuits.[40]

Importantly, the legal actions may serve to incite consumers and inspire further illegal behavior.[41] "Legal attacks may scare people, but risk alienating customers and making them try harder to rip off the industry, which cannot, even in America, sue everyone."[42] In essence, copyright enforcement through traditional legal means remains impractical given the nature of the technology enabling copyright infringement, and the structure of the markets based on such technology.

F. Technological Reactions to the Digital Revolution

Given the shortcomings of traditional legal enforcement, the industry has been exploring technical solutions to its copyright dilemma. Digital rights management stands as a promising technical self-help mechanism for managing digital media content, and for enabling a flexible distribution scheme which could provide both market incentives against piracy and technical roadblocks to piracy.[43] DRM techniques provide the owners or managers of digital content with the ability to assert specific controls over the uses of digital content.[44] Flexible DRM techniques can yield unique sets of contractual rights regarding digital content, and enable creative bargaining between owners and users of digital content.[45] Among other things, DRM can be used to "track rights, rights holders, licenses, sales, agents, royalties, and associated terms and conditions."[46] In many senses, DRM schemes serve to enforce and protect the rights of all parties involved.[47] Because of its promise to

40. *See The NPD Group Notes Recent Increase in Peer-to-Peer Digital Music File Sharing*, BUSINESS WIRE (Jan. 16, 2004), *at* http://www.npd.com/dynamic/releases/press_040116.htm.

41. Matthew C. Mousley, *Peer-to-Peer Combat: The Entertainment Industry's Arsenal in its War on Digital Piracy*, 48 VILL. L. REV. 667, 695 (2003).

42. *Piracy and the Movie Business: Tipping Hollywood the black spot*, ECONOMIST, Aug. 30, 2003, at 43.

43. *See* GARRTNERG2 & THE BERKMAN CTR. FOR INTERNET & SOCIETY AT HARVARD L. SCHOOL, FIVE SCENARIOS FOR DIGITAL MEDIA IN A POST-NAPSTER WORLD (The Berkman Ctr. For Internet & Societ at Harvard Law School, Research Publ'n No. 2003-07, 2003), *at* http://cyber.law.harvard.edu/home/uploads/286/2003-07.pdf (describing "the effective technology defense scenario.)

44. *Digital Rights Management Emerges to Control Content*, ELECTRONIC COM. NEWS, Jan. 29, 2001.

45. *See generally*, Lionel S. Sobel, *DRM as an Enabler of Business Models: ISPs as Digital Retailers*, 18 BERKELEY TECH. L.J. 667 (2003).

46. BILL ROSENBLATT, BILL TRIPPE, & STEPHEN MOONEY, Digital RIGHTS MANAGEMENT: BUSINESS AND TECHNOLOGY (2002).

47. Joan Feigenbaum et al., *Privacy Engineering for Digital Rights Management Systems*, *in* SECURITY AND PRIVACY IN DIGITAL RIGHTS MANAGEMENT 76 (Tomas Sander ed., 2001).

enable new business models and provide relief from rampant digital theft and piracy, DRM is viewed as critical to the success of online commerce.[48] Given the nature of the digital copyright problems faced by the media industry and consumers, a successful DRM standard will at the very least, (1) prevent unauthorized use of digital content, and (2) afford users their fair use of the content as authorized by copyright law. That said, a DRM scheme that allows the greatest degree of flexibility between the seller and buyer of copyrighted digital content is also desirable.

1. The Need for DRM Compliant Hardware

While the technologies upon which a DRM standard will be built, such as encryption and watermarking, can be deployed on a software platform, an effective and robust DRM standard will require both hardware and software participation. Commentators focusing on both the technical and economic realities involved in DRM consistently recognize the need for hardware's integration into any proposed DRM solution.[49]

More importantly, this recognition extends beyond mere commentary, as policy makers and companies contributing to DRM standardization are actively pursuing a hardware-based solution. As an example, Microsoft's "Palladium" initiative, renamed as the "Next-Generation Secure Computing Base for Windows," envisions the widespread launch of Palladium-based hardware to accomplish overall improvements in security, privacy, and system integrity. A specific goal of "Palladium" involves rendering software-based DRM technologies stronger by coordination with Palladium-based hardware.[50] Unsurprisingly, Microsoft's vision in this respect might be quietly but quickly becoming a reality, as some sources are reporting that Intel is

48. *See, e.g.*, U.S. Patent No. 6,330,670 (issued Dec. 11, 2001).

49. *See, e.g.*, David Kravitz, Kim-Ee Yeoh, and Nicol So, *Secure Open Systems for Protecting Privacy and Digital Services*, *in* SECURITY AND PRIVACY IN DIGITAL RIGHTS MANAGEMENT 106 (Tomas Sander ed., 2001) (Recognition is growing that protection of digital intellectual property must involve the use of consumer-situated hardware.); *Piracy and the Movie Business: Tipping Hollywood the black spot*, ECONOMIST, Aug. 30, 2003, at 44 (For copy protection to work, hardware needs to spot it.). *See also* John R. Perkins, Jr., *Curbing Copyright Infringement in Cyberspace: Using MediaKey to Stop the Bleeding*, 21 J. MARSHALL J. COMPUTER & INFO. L. 325 (2003); Jonathan Weinberg, *Hardware-Based ID, Rights Management, and Trusted Systems*, 52 STAN. L. REV. 1251 (2000). *See also* Digital Broadcast Content Protection, *Report & Order & Further Notice of Proposed Rule Making*, 18 FCC Rcd. 23,550, at ¶ 39 (2003) (The "keystone of a flag protection system is the ubiquitous ability of reception devices to respond and give effect to the redistribution control descriptor.).

50. Press Release, Microsoft Windows Trusted Platform Technologies, Microsoft "Palladium": A Business Overview (2002), *at* http://www.microsoft.com/presspass/features/2002/jul02/0724palladiumwp.asp.

already working with Microsoft to develop a chipset designed to enable Microsoft's Palladium initiative.[51]

Moreover, recent political and regulatory initiatives reinforce the same mind set regarding hardware integration. The most prominent example is the controversial Consumer Broadband and Digital Television Promotion Act introduced by Senator Hollings in 2002, which contemplates a hardware component to the DRM standardization solution.[52] Other examples on the regulatory front, which will be discussed in detail in Section III, include the FCC's recent Plug-and-Play and Broadcast Flag initiatives.

While the need for hardware-based DRM enjoys recognition and support from certain critical companies, politicians, and regulatory bodies, the idea does not stand unchallenged. To its critics, the prospect of hardware-based DRM raises numerous concerns including the erosion of fair use, the imbalanced centralization of control, and the stifling of innovation.[53] Additionally, as a practical matter, many view the overhaul or replacement of every networked hardware system as a daunting and unrealistic possibility.[54]

Indeed, a comprehensive overhaul of all relevant hardware devices faces significant technical, policy, and market challenges. From a technical perspective, such a plan implicates the diverse interests of consumer electronics, computing, and telecommunications companies, in addition to the interests of content owners. These divergent interests will need to engage in complex negotiations and resolve difficult technical problems that will have far reaching business implications for all interests involved. From a policy perspective, as has already been noted, the plan implicates a wide spectrum of interests and generates some well founded fair use and innovation policy criticisms. Finally, from a business perspective, the plan will likely confront difficult resistance, as consumers are likely to prefer systems that maximize flexibility rather than restrict it.

These types of challenges suggest that government intervention is necessary for a successful standardization effort. Specifically, in the DRM case, government maintains the exclusive ability to (1) bring diverse interests to the bargaining table, (2) ensure the participation of non-commercial interests, and (3) dispatch the force of law to guarantee compliance with a resulting standard, despite market pressures for

51. Nick Stam, *Inside Intel's Secretive 'LaGrande' Project*, EXTREMETECH.COM (Sept. 19, 2003), *at* http://www.extremetech.com/article2/0,3973,1274119,00.asp.

52. Consumer Broadband and Digital Television Promotion Act, S. 2048, 107th Cong (2nd Sess. 2002).

53. *Copy-protected CDs*, *supra* note 28.

54. *See id.*

noncompliance. Nevertheless, government intervention in the development of technology remains a particularly unpopular prospect in many quarters. Only in the most dire of circumstances should the government dictate the particular path of technological progress. An evaluation of several successful standardization case studies will highlight the general nature of standardization efforts, how and why market forces prevail under most circumstances, and when government intervention into standardization processes is necessary.

II. THE MECHANICS OF STANDARDS DEVELOPMENT: CASE STUDIES

Under many circumstances, left to its own devices, the market adequately solves its own standardization problems. These market-based solutions include *de facto* standards, such as Microsoft Windows, often times resulting from a standards war between competing commercial interests in the market.[55] Market-based solutions can also take the form of more amicable *de jure* standards established through collaboration among and between interests in the market. The nature and extent of such collaborative efforts span a wide spectrum, but can be generalized into (1) open, non-proprietary collaborative efforts, including those conducted through formal standards bodies such as the Institute of Electrical and Electronics Engineers (IEEE), and (2) closed proprietary development efforts, including competitive alliances such as the MPEG patent pool participants.

On the other hand, the solutions to some standardization problems are pursued through government intervention, rather than left to the various market devices. The nature and extent of government participation in the standardization process can take many forms, including direct mandates through federal law,[56] or more commonly delegation of standardization responsibility to a federal agency. Notably, the FCC has developed, deployed, and enforced standards in the communications industry.[57]

The case studies presented in this section explore and expose the details of the various standardization procedures. Specifically, the case studies of Ethernet, the VCR, and MPEG, are presented as illustrations of three different market-based standardization mechanisms, whereas the

55. Carl Shapiro & Hal R. Varian, *The Art of Standards Wars*, CAL. MGMT. REV., Winter 1999 [hereinafter *The Art of Standards Wars*].

56. The government took this approach, for example, in order to standardize the gauge of the Pacific railroad at four feet eight and one half inches. 12 Stat. 807 (1863).

57. *See generally* Michael J. Schallop, *The IPR Paradox: Leveraging Intellectual Property Rights to Encourage Interoperability in the Network Computing Age*, 28 AIPLA Q.J. 195, 221-22 (2000) [hereinafter *The IPR Paradox*].

case study of digital television is presented as an illustration of government-based standardization. Because all of these divergent efforts arguably resulted in a successful standard, consideration of the case studies, and how they bear upon the propriety of government intervention in the DRM context, involves a focus not necessarily on the result achieved but rather on (1) the intricacies and characteristics of the different processes, as well as (2) the contrasting nature of the underlying standardization problems.

A. Ethernet

Ethernet stands as arguably the most successful standard ever developed and deployed in the computer industry. "If you use a personal computer, you almost certainly use Ethernet."[58] Invented in 1973 by Robert Melancton Metcalfe, Ethernet technology remains dominant, 30 years later, as the primary networking technology for local area networks (LANs). In addition to its amazing temporal resilience, Ethernet is the quintessential example of a platform standard that has served as the foundation for generations of creative product and business model innovations. This includes not only the wild proliferation of successful Ethernet companies in the 1980's, such as Metcalf's 3Com and Ungerman-Bass, but also current day, cutting edge technological innovations and standards such as WiFi built on top of 802.11 and the personal area network protocol 802.15.4.[59] As much as any technology can, Ethernet has created an attractive economic space.[60]

1. A General Note on Open, Non-Proprietary Collaboration

Open, non-proprietary collaboration of the type that led to Ethernet standardization often occurs under the auspices of established Standards Development Organizations (SDOs). Some of the more famous SDOs include the IEEE, and the Internet Engineering Task Force (IETF). In the United States, the American National Standards Institute (ANSI) certifies and endorses certain SDOs within each technical subject matter area and additionally endorses particular standards that have been properly developed by that SDO.[61] ANSI certification requires the SDO to maintain and employ a formal set of

58. *Case History: Out of the ether*, ECONOMIST TECH. Q., Sept. 4, 2003, *available at* http://www.economist.com/science/tq/displayStory.cfm?story_id=2019967.

59. *Id.*

60. URS VON BERG, THE TRIUMPH OF ETHERNET: TECHNOLOGICAL COMMUNITIES AND THE BATTLE OF THE LAN STANDARD 125 (2001) [*hereinafter* THE TRIUMPH OF ETHERNET].

61. AMERICAN NATIONAL STANDARDS INSTITUTE, ANSI AND THE U.S. STANDARDIZATION PROCESS: TOOLS FOR BUSINESS SUCCESS (2000).

policies and procedures for the development of standards consistent with ANSI's guidelines.

While each SDO maintains a unique set of formal policies and procedures for standards development, most of these SDOs are open in the sense that they maintain little, if any, barriers to participation, and that they allow and encourage the participation of a wide spectrum of interests. For example, "IEEE-SA standards are openly developed with consensus in mind. Participation in their development and use is entirely voluntary. However, history has shown that standards developed in an open forum can produce high-quality, broadly accepted results that can focus companies and forge industries."[62]

Most SDOs are also typically non-proprietary in the sense that they maintain policies against the aggressive enforcement of patents covering technologies included in the standard.[63] Some SDOs, such as the World Wide Web Consortium (W3C), have at times gone as far as refusing to incorporate any patented technology into their standards unless that technology is offered on a completely royalty-free basis.[64] The more conventional practice of the SDOs allows the incorporation of patented technology into a standard, but requires the owner of such technology to disclose their proprietary positions throughout the standards development process and forces the owner to offer a license on reasonable and non-discriminatory (RAND) terms.[65]

The collaborative aspect of developing a standard through an SDO usually requires that the participants in the process reach a broad-based consensus. Reaching such a consensus is always a particularly challenging endeavor due to the many, often divergent, interests engaged in the development process. The unified voice resulting from such consensus-based standardization, however, lends an air of legitimacy to the final product.

2. The Development of Ethernet

The fact that Ethernet was developed through an open, non-proprietary collaborative process bears much of the responsibility for its success. Almost from its inception, Ethernet's inventor, Robert Metcalfe, and the owner of Ethernet's patent rights, Xerox, envisioned

62. Roger B. Marks et al., *Standards from IEEE 802 Unleash the Wireless Internet*, IEEE MICROWAVE MAG. 46, 47-48 (June 2001).

63. Mark A. Lemley, *Intellectual Property Rights and Standard Setting Organizations*, 90 CAL. L. REV. 1889, 1901-02 (2002).

64. Janice Mueller, *Patent Misuse Through the Capture of Industry Standards*, 17 BERKELEY TECH. L.J. 623, 629-30 (2002).

65. Indeed, even the W3C with its strong philosophy of open access once proposed a RAND licensing policy for its standards. Interestingly, this proposal was initially withdrawn after meeting with sharp internal and public criticism. *Id.* at 630 n.37.

an open collaborative process in further developing Ethernet and in deploying the technology as a standard.[66] This is not to imply that Ethernet's rise consisted solely of a breakthrough invention followed by a win-win collaborative free for all resulting in a resounding success. To the contrary, the history of Ethernet includes back-room negotiations, aggressive dominance by computer industry giants, surreptitious manipulation of standards bodies and their processes, personal vendettas, lost fortunes, an infamous "dark day in the history of standardization," and even a pseudo standards war.[67] A thorough look at the history of Ethernet's rise to an industry standard reveals a stark contrast between the theory and practice of open, non-proprietary collaboration. Nevertheless, Ethernet remains largely the product of an open, non-proprietary collaborative process that yielded a versatile, resilient, and economically beneficial standard.

3. Technical Overview

In 1972 Metcalf was hired by Xerox to develop a network for connecting hundreds of Alto computers, over hundreds of meters, at very high speeds.[68] Metcalfe answered this challenge with Ethernet, and its core technical principle of carrier sense multiple access/collision detection (CSMA/CD). Using this medium access control technique, computers connected to a common wire will (1) listen to the wire, and (2) broadcast their message if the wire is silent.[69] When two messages are transmitted on the wire at the same time, a collision occurs. After recognizing a collision, the computers will cease transmission, wait a random interval, and then attempt transmission again.[70]

As a point of reference, this technology can be contrasted with "token ring" technology, developed by David Farber and eventually sponsored by IBM.[71] In a token ring system, the computers are connected in a logical ring and pass a "token" around the ring to each other. In order to transmit data, a computer must wait until it possesses the token before transmitting the message.[72] It then seizes the token, transmits its message unidirectionally around the ring, and passes the token when it has finished its transmission.

66. THE TRIUMPH OF ETHERNET, *supra* note 60; *see also* Yochai Benkler, *Intellectual Property and the Organization of Information Production*, 22 INT'L REV. L. & ECON. 81 (2002).

67. THE TRIUMPH OF ETHERNET, *supra* note 60, at 118.

68. *Id.* at 70.

69. WILLIAM STALLINGS, DATA AND COMPUTER COMMUNICATIONS 472 (6th ed. 2000) [hereinafter DATA AND COMPUTER COMMUNICATIONS].

70. *Id.*

71. THE TRIUMPH OF ETHERNET, *supra* note 60, at 54.

72. DATA AND COMPUTER COMMUNICATIONS, *supra* note 69, at 482.

Some of the fundamental technical differences between these two LAN technologies include (1) Ethernet's randomness versus token ring's organized structure, (2) Ethernet's silent status versus token ring's active status when no computer has a message to send, (3) Ethernet's ability to adapt to bus, tree, or star topology versus token ring's limitations to a ring topology, and (4) Ethernet's broadcast messages versus token ring's unidirectional messages.[73]

4. The Mechanics of Ethernet Standardization

Ethernet's ascension to its now ubiquitous status began with a secret, closed collaborative alliance between DEC Corporation, Intel, and Xerox known as the DIX alliance. The group was formed in 1979 to develop a set of Ethernet specifications after Metcalfe, then a consultant with DEC, urged DEC to contact his former employer, Xerox, about licensing the Ethernet technology.[74] In an uncharacteristic move, Xerox agreed to license the technology and the DIX alliance agreed to develop specifications for the world to use as an open standard.[75]

Throughout 1979 and 1980 the DIX group secretly met, developed, and eventually published a set of Ethernet specifications nicknamed the "blue book." Long before the DIX group achieved this goal, however, a much broader, open initiative to develop a LAN standard was launched at the IEEE. The appeal of such an IEEE initiative is obvious: the advent of LAN technology and the recognition of the need for standardization of this technology inspired a general interest and anxiety throughout the industry. Because DIX was closed, and even secret during its infancy, the many other interests affected by the development and deployment of a LAN standard needed an alternate forum. While IEEE, through its IEEE 488 project, had been working on more primitive networking specifications as early as 1971, it took the leadership of Tektronix engineer Maris Graube to convince the IEEE to engage in standard development for a more technologically advanced network.[76] At the persistence of Graube, the IEEE approved project 802 in 1979 and scheduled its inaugural meeting for early 1980.

An incredibly diverse set of over 75 interests attended the first meeting of IEEE 802. The members of the DIX group, although they

73. As can be expected in any standardization effort involving complex technology, the technical differences between competing proposals tend to inspire passionate debates during the standard development process. While the core of these debates centers on the relative technical merits, often political and business agendas are hidden behind dueling technical proposals.

74. CARL SHAPIRO & HAL R. VARIAN, INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY 253 (1999) [hereinafter INFORMATION RULES].

75. THE TRIUMPH OF ETHERNET, *supra* note 60, at 102.

76. *Id.* at 108.

had yet to make their alliance public, attended this initial meeting, as did all of the major computer vendors of the time, such as IBM, Data General, and Honeywell, along with new Ethernet start up companies, semiconductor firms, office automation firms, and factory automation firms. Each of these general groups brought its own agenda and goals to the LAN standardization effort.[77]

As the IEEE 802 group progressed through its infancy, the diversity of interests in the group and their competing agendas became a source of tension and at times the project's primary obstacle. For instance, to the surprise of many participants, the DIX alliance's participation in the 802 project proved to be an effort to strong-arm other participants into adopting its own blue book specifications. In mid to late-1980, the DIX alliance finally made itself public and published its blue book Ethernet specifications. The group offered the specifications to IEEE 802 for adoption, with the warning that the DIX alliance intended to support Ethernet products built to its blue book specifications regardless of what IEEE 802 chose to do. This aggressive stance placed many members of the IEEE 802 group on guard, as these members joined IEEE 802 with the intention of participating in the development of the specifications, not merely ratifying the DIX blue book.[78]

Moreover, for reasons related to reliability and electrical interference, many of the factory automation interests preferred specifications based on token technology, such as a token bus, to the CSMA/CD technology. IBM also preferred the token ring, and had already begun development of a token ring prototype. IBM strongly believed that token ring's topology, deterministic elements with greater reliability, and ability to prioritize messages would be superior for the types of enterprise-wide networks employed by IBM's primary customer base.[79]

DIX saw the picture differently. DIX's blue book Ethernet specifications, while less reliable than the token ring technology, were more than adequate for most smaller networks and were much closer to commercialization than IBM's proposals. On the more subtle side, DEC's promotion of Ethernet improved its competitive position with respect to IBM. Specifically, DEC hoped to lock its minicomputer customers into Ethernet communication protocols and coaxial wire. This lock-in effect would be preserved by the high switching costs involved in a transition to IBM's token ring protocols that employed shielded twisted pair wire. As a result, IBM would face barriers to

77. *Id.*
78. *Id.* at 112.
79. *Id.* at 113.

penetrating the minicomputer market and would be more likely to focus solely on its mainframe market. In short, an incurable difference of opinion began to develop in the IEEE 802 group between the supporters of Ethernet and the supporters of token ring.[80]

As this incurable difference crystallized, the respective supporters tackled the challenge of persuading the other interests in the market of their positions. The DIX group consistently painted an attractive economic picture for many of the smaller participants at the IEEE 802 meetings by focusing attention on the potential for quick commercialization in combination with a promising philosophy of multi-vendor support. By using the IEEE forum to recognize the needs and incentives of the smaller interests, the DIX alliance eventually overcame the initial disdain these interests harbored due to the DIX's strong-arm tactics. Eventually, DIX garnered key support from many start up Ethernet suppliers, including 3Com and its charismatic founder, Robert Metcalfe.[81]

In the end, the philosophical fissure between the major competing interests proved irreparable, and in what Metcalfe calls a "dark day in the history of standardization," the 802 group split into three different subgroups, 802.3 for Ethernet, 802.4 for token bus, and 802.5 for token ring.[82] Despite this disappointing split, the early IEEE 802 project meetings served as an important and insightful sounding board for different perspectives on networking technologies and for critical evaluation of the different technical proposals.

Tensions remained high, however, even within the 802.3 group as HP took a legitimate substantive stance against the DIX group arguing fiercely over preamble length, collision methods, high-level data-link control framing, address length, and other technical details. These disagreements stalled development for over a year and resulted in HP's outright defection from the DIX group's proposals.[83] Meanwhile, other companies have been accused of manufacturing disingenuous conflicts in order to use IEEE 802 participation as a pretext for competitive manipulation. For instance, some believe that Wang participated in 802.3 primarily to stall the process while engaging in a parallel effort to

80. THE TRIUMPH OF ETHERNET, *supra* note 60, at 118.

81. From the early stages, Metcalfe and 3Com intended to manufacture and market Ethernet products for workstations and personal computers. Brett Frischmann, *Privatization and Commercialization of the Internet Infrastructure: Rethinking Market Intervention into Government and Government Intervention into the Market: Privatization and Commercialization of the Internet Infrastructure*, 2 COULM. SCI. & TECH. L. REV. 1, 13 n.24 (2001).

82. THE TRIUMPH OF ETHERNET, *supra* note 60, at 118.

83. *Id.* at 121.

develop and market Wangnet, their own proprietary networking solution.[84]

DIX, the clear leader of the 802.3 efforts, responded to these stalls and distractions by cleverly and quickly pushing its specifications through the European Computer Manufacturers Association (ECMA) and garnering the support of numerous European computer manufacturers.[85] This momentum carried through to the IEEE 802.3 group, and in 1985 IEEE ratified the Ethernet standard with only modest changes from DIX's original blue book specification. Pursuant to IEEE policy, as well as the philosophy of the DIX group, the standard remained open with Xerox offering a reasonable, non-discriminatory license to the patented technology for a $1,000 flat fee.[86]

5. Market Reactions

Despite its IEEE ratification, Ethernet continued to face competition in the marketplace from both proprietary LAN technologies by companies such as Datapoint, Nestar, Proteon, and Sytek, as well as competition from the IBM token ring technology. Ethernet, however, entered the market with three primary advantages: (1) IEEE ratification, (2) sponsorship of the industry giant members of DIX, along with their commitment to focus on their core businesses while encouraging other companies to manufacture specialized Ethernet products, and (3) a cadre of small, innovative Ethernet supporters eager to profit from specialized Ethernet products. As noted above, all of these advantages were spawned from the open, collaborative IEEE proceedings.

Ethernet's proprietary competitors, on the other hand, suffered from several key disadvantages. For one, they proved financially and strategically unable to move into the multitude of markets that were opening up in the LAN economic space. Instead, each of these networks settled into one specific market, and as a result became highly exposed to market vulnerabilities. Additionally, because of the proprietary nature of the technologies, these competitors also suffered from lack of product variety. Lacking collaboration with and contribution from other companies, the products of the proprietary companies tended to stagnate compared to Ethernet. Finally, the prices of the proprietary technologies remained high relative to Ethernet. The open culture created by the standardization process for Ethernet allowed companies with Ethernet technologies to avoid all of these pitfalls and prevail handily over their proprietary competition.

84. *Id.* at 15-16.
85. *Id.* at 121.
86. INFORMATION RULES, *supra* note 74, at 253.

Ethernet's struggle with IBM and its token ring technology was a bit more challenging. Some even consider the Ethernet/token ring battle to resemble a traditional standards war. Token ring entered the market in 1986 as a high-end, technologically superior LAN solution. The open Ethernet community responded to this technological competitor by further innovating and improving the Ethernet standard. Some key developments include AT&T's 1987 introduction of a 1-Mbps Ethernet for UTP wire, and Synoptics's reversion to star topology designs in order to improve performance and management.[87] Importantly, consistent with the open, collaborative culture established during its initial standardization, the Ethernet community continued to actively meet in the IEEE 802.3 forum, share ideas, and improve the Ethernet specifications to respond to market demands and competitive challenges. Ultimately, this culture produced critical product enhancements to answer token ring's challenges, such as 10Base-T, which was ratified in 1990 as part of the Ethernet specification.[88] "[T]he Ethernet standard proved mutable . . . [and] the institutional design of the IEEE was sufficiently flexible to standardize new variants of the original Ethernet standard."[89] These group-effort technological improvements allowed Ethernet to claim outright victory over token ring by the early 1990's.[90]

Ultimately, the industry's success in deploying Ethernet as a standard is attributable to the culture created in developing that standard. The cadre of innovative Ethernet supporters would never have existed but for the IEEE 802 meetings. Their presence was made known to the DIX group during the standardization process, and the DIX group tailored a synergistic business and standardization strategy with the well being of these small voices in mind. Additionally, the 802.3 meetings served as a forum for the smaller interests to meet one another, to become educated about the technology, and to begin collaboration. This culture pervaded the mature Ethernet market, with the innovative Ethernet specialists openly collaborating and fiercely competing at the same time. With time, the residual 802.3 group became a continuing forum for improving the product, identifying threats, and responding to challenges. The 802.3 forum was critical not only to Ethernet's original success, but to its continued dominance in the market.

87. THE TRIUMPH OF ETHERNET, *supra* note 60, at 177.

88. Needham J. Boddie, II et al., *A Review of Copyright and the Internet*, 20 CAMPBELL L. Rev. 193, 211 n.80 (1998).

89. THE TRIUMPH OF ETHERNET, *supra* note 60, at 205.

90. *Id.* at 194.

6. Ethernet vs. DRM

When considering Ethernet standardization in the context of the current DRM standardization challenge, several key differences are apparent. For one, although both efforts demand participation from a diverse set of interests, the interests involved in Ethernet standardization all hailed from the computer and data communications industry, whereas the interests needed for DRM span across industries. Moreover, while all of the diverse Ethernet intra-industry groups arguably stood to gain from the eventual standardization of data communications, the diverse DRM inter-industry groups remain convinced that a standardization success for any one industry necessarily threatens to harm other industries.

The nature of the technology represents another key difference between Ethernet and DRM. Ethernet stands as pure technological advancement, whereas some might argue that DRM represents the use of technology to further policy agendas in the intellectual property and innovation contexts. Arguably, DRM does not represent pure technological advancement in terms of, for instance, the speed, volume, and efficiency sought by Ethernet.

Moreover, tough policy questions were not interposed upon the technological challenges involved in Ethernet standardization. The launch of Ethernet only affected a core group of specialized producers and consumers, many of which anticipated and expected the change as technology naturally progressed. DRM, on the other hand, will affect wide consumer bases in the consumer electronics and media industries. DRM will also inevitably effect innovation and technological direction in consumer electronics and data communications, as well as incentives for the creators of media content. DRM's wide reaching effects raise difficult policy questions that, unlike Ethernet, hinder the development and launch of a standard.

Finally, Ethernet represents a self-enforcing standard, whereas a DRM standard carries with it enforcement challenges. As a widely developed compatibility standard, manufacturers have an independent incentive to produce Ethernet compliant products. DRM will not carry such market incentives for self enforcement, and arguably will carry with it incentives for non-compliance by those unhappy with the resulting standard.

B. VCR

In stark contrast to the open, market-based collaborative efforts involved in Ethernet standardization, the VCR standardization case history exposes a vicious and costly outright standards war between

Sony's Betamax standard and Japan Victor Corporation's (JVC) VHS standard. In retrospect "[t]here seems [to be] little doubt that the whole Japanese industry, including JVC as well as Sony, would have been better off without the costs of the standards war."[91] While the standardization process involved some costly casualties, the winning VHS standard itself served as a great long run benefit to consumers, content producers, and electronics manufacturers. Moreover, similar to the Ethernet standard, the VHS standard served as a platform for new and innovative business models. This often discussed case study highlights the potential harms and benefits of a standards war and illuminates the market conditions that might inspire a standards war.

1. A Note on Network Effects

The market for VCRs is a prime example of a market characterized by network effects. Such markets are prone to standardization and often exhibit unconventional behavior. These markets might converge to a single design, inferior technology might prevail over better solutions, and competitors might freely give expensive R&D away to each other and to customers.[92] In an effort to analyze and explain such paradoxical behavior economists have forged a set of tools and ideas under the rubric of "network economics." These principles strive to explain, describe, and predict the economic and strategic implications of networks.[93]

Network economics teaches that the value of a network increases exponentially with the number of users. As noted by Shapiro and Varian, "[t]his fundamental value proposition goes under many names: network effects, network externalities, and demand-side economies of scale."[94] One specific variant of this value proposition is captured in Metcalf's Law, which holds that the value of a network increases as the square of the number of network users.[95] Examples include the network of facsimile machine users and the network of AOL instant messaging users. The value of these networks in the abstract, and the value of these networks to each individual user, increases as the overall number of users increases.

The network value proposition is concomitant with another proposition: the growth of a network tends to inspire further growth of

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91. PETER GRINDLEY, STANDARDS, STRATEGY, AND POLICY: CASES AND STORIES 93 (1995) [hereinafter STANDARDS, STRATEGY, AND POLICY].

92. *See id.* at 18.

93. *See* INFORMATION RULES, *supra* note 74, at 108. With regard to network economics, the book by Shapiro and Varian remains "still the best read on the network economy." *Coming of Age: A Survey of the IT Industry: The Fortune of the Commons*, ECONOMIST, May 10, 2003, at 13.

94. INFORMATION RULES, *supra* note 74, at 174.

95. *Id.* at 184.

that network. As new individuals join a network, that network's value is enhanced to all users, and as a result, additional new users are liable to join the network. This "virtuous cycle of growth" is called positive feedback.[96]

Standards are a critical aspect of networks as they enable and define networks. Specifically, standards define the substantive details of the core technology or idea upon which a network is based. Where several networks are competing against each other, such as in the case of a standards war, positive feedback will cause a market to "tip" in favor of one network, or one standard. As such, standardization occurs naturally in markets characterized by network effects. Additionally, such standardization carries with it a certain gravity, as consumers usually stick with the standard they have chosen. This behavior allows consumers to avoid the "switching cost" of migrating to a different standard. Where switching costs are high, for example as in the case of a consumer's purchase of a new VHS machine after that consumer has already invested in a Betamax machine, consumers become "locked in" to their choice of standard. Such locked in consumers are called an "installed base" in network economic parlance. Where the market tips in favor of one standard, the installed base of consumers who have chosen the losing standard become "stranded."

Network economics explains some of the very general market forces operating to standardize technology. The discipline also highlights some of the dangers and costs involved in allowing the market, through standards wars, to chose its own fate. The principles of network economics are not always applicable to every standardization effort, but they are directly applicable to the VCR standards war.

2. The Nature of the VCR Market and Standardization Strategies

During the VCR's technical maturation process, the leading interests in the industry not only strove to advance the technical characteristics of their product, but also strove to define and understand the market for the product.[97] Initially, consumers understood the product primarily as a means to make and view home movies, but eventually the product's capabilities for time shifting and viewing of pre-recorded content became drivers. As such, this market maturation process ignited the interests of content producers as well as that of consumer electronics companies. When the standards war began to take form in the mid to late 1970's, the battle involved and implicated a

96. *Id.* at 176.
97. *See* STANDARDS, STRATEGY, AND POLICY, *supra* note 91, at 77.

distinct set of interests, including major consumer electronics manufacturers, consumer electronics suppliers, and content producers.[98]

Sony's Betamax product was launched in Japan and the U.S. in 1975. JVC's VHS product did not arrive in the U.S. until two years later in 1977. Although incompatible with each other, both products were similar in many respects, as they were based on the same core technology cross-licensed between Sony, Matsushita, and JVC. Similarity between the products meant that opportunities for technical innovation were confined to limited areas such as programmability, picture quality, and playing time. While JVC and Sony did challenge each other by quickly innovating within these confines, neither company was able to distinguish itself with a truly unique breakthrough or innovation.[99] Despite the fact that innovation in these products quickly became saturated, some commentators have noted that JVC's early adoption of a 4 hour playing time, to accommodate taping of an NFL football game, was an important product differentiation bearing upon the critical early stage acceptance of the JVC product.[100] While quickly answering the competition's innovation was important, the more critical aspect of this standards war centered on business philosophy and strategy.

Sony stuck with its proprietary philosophy. Due to its size and experience, Sony believed that it had the capacity to meet the production requirements for the entire market. As such, Sony was reluctant to negotiate with and license other manufacturers. JVC, on the other hand, as a smaller audio component specialist company, intended to create a network of partnerships to manufacture and distribute its product. From the perspective of influential consumer electronics manufacturers and distributors, JVC was an approachable company as, unlike Sony, it served only a niche in the market and did not represent a large competitive threat. In furtherance of its business philosophy, JVC licensed Matsushita as a manufacturer, and RCA as a distributor for the U.S. market. Although JVC was two years late to the market, RCA's huge distribution network proved invaluable.

98. In contrast with the Ethernet case, which implicated a vast diversity of interests within one general industry, the VCR battle implicated diverse interests across very different industries. Where standards have implications across different industries, the technical standards development process often proceeds in parallel with vibrant inter-industry legal and political battles. The *Betamax* case and the contemporary DRM debates are evidence of this complication.

99. *See* Michael I. Krauss, *Regulation vs. Markets in the Development of Standards*, 3 S. CAL. INTERDISC. L.J. 781, 803 (1994).

100. STANDARDS, STRATEGY, AND POLICY, *supra* note 91, at 85.

3. Market Reactions and Consequences

Although Sony maintained the first mover advantage in the U.S. market, within a year of JVC's introduction of VHS, the sales of VHS surpassed those of Betamax.[101] With its diverse group of manufacturers and the premier U.S. distributor on its side, JVC was able to undercut Sony's prices and convince the majority of the market that the VHS standard would prevail. By 1981, JVC had generated an installed base of 1.2 million users in the U.S., double that of Sony.[102]

Operating in parallel to its pricing, manufacturing, and distribution strategies, JVC also maintained a competitive advantage in the important market for complementary goods. As part of its distribution arrangement, RCA agreed to ensure that all RCA/Warner movies were available in the VHS format.[103]

By 1985 sales of VHS product reached nearly 1.6 million, while sales of Betamax had plummeted to around 100,000. In other words, the market had tipped fully in favor of VHS. Nevertheless, Sony had garnered roughly 3 million sales in the U.S., and these consumers were now all stranded.[104] By 1988, Sony began production of a VHS product, leaving Betamax as an unattractive legacy in Sony's corporate history.

Like the Ethernet standardization effort, JVC's open, collaborative strategy focused on creating commercial synergies. Unlike the Ethernet effort, the losers in this battle were more profoundly damaged. Those losers included not only Sony, but also the millions of customers stranded with Sony's obsolete technology. Whereas purchasers of a non-Ethernet proprietary niche LAN system could at least use that system, once the VCR market tipped, purchasers of Betamax were left with an entirely obsolete product.

Once the fallout from the standards war had subsided, however, the VHS standard served as a true marketplace success. The product met with enthusiastic consumer acceptance and served as a platform for the launch of business models based on the feature film "aftermarket."

4. VCR vs. DRM

The VCR and DRM standardization efforts have certain similar characteristics. These efforts involve both the consumer electronics and media production industries. As was seen in the *Betamax* case, both efforts involve contentious disputes between these two separate industries. Additionally, both efforts involve implications for the

101. *Id.*
102. *Id.*
103. *Id.* at 86.
104. *Id.* at 85.

consumer concerning rights to media content. Despite these similarities, standardization in DRM will likely not exhibit characteristics of a standards war.

For one, the spoils of a standards war in the DRM context are uncertain. While VCR manufacturers were battling for monopolistic control over a lucrative consumer electronics market, DRM occupies a somewhat different position in the market. DRM is largely a technological means to an end. As such, the financial rewards for providers of DRM technology itself, rather than the applications that DRM will enable, remain uncertain. These uncertain rewards cannot justify the risks involved in a standards war. Moreover, the strategy involved in a DRM standards war might be unconventional and ill-understood, as many would argue that the DRM standardization effort will not exhibit the type of network effects involved in prior standards wars.

Most importantly, DRM faces adoption and enforcement challenges. Such challenges will detract from market acceptance of the standard, as natural market forces will likely inspire migration toward non-complaint systems. Where acceptance of the standard is an issue, a standards war between different variants of a DRM standard makes no sense. As part of a counter to consumer and market tendencies to reject the entire idea of DRM altogether, proponents of DRM will be likely to grant unfettered access to their DRM technologies, rather than erecting barriers and engaging in proprietary behavior. The real war behind DRM will be between compliance and non-compliance, rather than between different variants of a DRM standard.

C. MPEG

Somewhere between the open, collaborative Ethernet process and the aggressive, competitive VCR process lies a standardization process involving a balance of collaboration and closed, competitive conduct. For example, the Moving Picture Experts Group (MPEG) was established in 1988 as an ISO group formed to develop standards for coding video and audio. MPEG is open in the sense that anyone may participate, as long as the participant is accredited by a national standards body. As such, it has been called an "almost open" organization.[105] When it first met in 1988, MPEG consisted of 25 people, and it has now grown to around 350 people representing 200 companies and organizations.[106]

105. GABRIEL BOUVIGNE, MP3' TECH, OVERVIEW OF MP3 TECHNIQUES (2001), *at* http://www.mp3-tech.org/tech.html [hereinafter OVERVIEW OF MP3 TECHNIQUES].

106. *See* CHIARIGLION, THE MPEG HOME PAGE, *at* www.chiariglione.org/mpeg/ (last visited Apr. 5, 2005).

1. Development of the Standard

MPEG-1 is a standard developed by MPEG for coding and compression of video and audio data.[107] MPEG-1 encompasses the popular MP3 file format for audio data. The work on this standard began in 1988 and the standard was adopted as ISO/IEC IS 11172 in 1992.[108] While the standard was discussed and debated in MPEG's semi-annual meetings, the majority of the development work for the standard was performed by individual corporations on a closed and proprietary basis. Such closed collaboration, occurring in parallel with a larger open effort, is a common phenomenon in standardization efforts.[109] Like the DIX Alliance in the case of Ethernet, the Fraunhofer Institute performed the majority of the development work associated with the MP3 standard. Unlike DIX, however, Fraunhofer never intended to relinquish its proprietary control over the standard. Beginning in 1998, Fraunhofer began actively asserting its patent portfolio covering the MP3 standard. Fraunhofer has joined with Thomson Multimedia to create a portfolio of 18 patents covering the standard, and offers a package license of these patents.[110] Additionally, other companies maintain patents covering other aspects of the standard.

2. Market Acceptance

As an efficient and effective method of compressing digital audio files, the MP3 file format quickly became popular in the market. Part of the reason for MP3's popularity was the fact that it did not incorporate or require much by way of rights management. In other words, initially consumers were free to do what they pleased with the MP3 files. Again, as already noted, such freedom fills a growing consumer demand for flexible and unencumbered media technologies. Moreover, the fact that the MP3 standard could be software-based made distribution and implementation of the standard easy. The standard was widely adopted, despite its proprietary nature.

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107. *See* ISO & IEC, MPEG-1 (CODING OF MOVING PICTURES AND ASSOCIATED AUDIO FOR DIGITAL STORAGE MEDIA AT UP TO ABOUT 1,5 MBIT/S), *at* http://www.itscj.ipsj.or.jp/sc29/29w42911.htm#MPEG-1 (last visited Apr. 5, 2005).

108. *See* Karlheinz Brandenburg, *MP3 and AAC Explained*, AEC 17TH INT'L CONFERENCE ON HIGH QUALITY AUDIO CODING (1999), *at* http://www.aes.org/publications/downloadDocument.cfm?accessID=14703162000122117 [hereinafter *MP3 and AAC Explained*].

109. *See* ROBERT PERRY ET AL., FINAL REPORT OF THE CO-CHAIRS OF THE BROADCAST PROTECTION DISCUSSION SUBGROUP TO THE COPY PROTECTION TECHNICAL WORKING GROUP (2002), *at* http://www.eff.org/IP/Video/HDTV/bpdg-report/pdf/BPDG_Report.pdf [hereinafter BPDG FINAL REPORT].

110. OVERVIEW OF MP3 TECHNIQUES, *supra* note 105.

3. Additional MPEG Developments and a Note on Proprietary Strategy

In developing its second standard, MPEG-2, the group took a more proactive stance regarding the potential proprietary nature of the technology involved in the standard. During and after the MPEG-2 standard development, the group solicited submissions from patent owners believing that the standard practiced their patents.[111] An independent expert evaluated over 8,000 patents in connection with this project to identify the set of patents that are essential to practicing the standard. The owners of the patents that would read upon the standard formed a package license based on this "patent pool."[112]

Before attempting to market the standard, the patent pooling arrangement and the package license were presented to and approved by the Department of Justice (DOJ), in the form of a business review letter, asking for an advisory opinion regarding possible DOJ enforcement due to anti-competitive conduct.[113]

The eventual technical solution to rights management in digital media content will implicate the patent rights of various interests. The government has provided a framework for the appropriate licensing of such rights under the DOJ-FTC IP Licensing Guidelines and the DOJ business review letter process.[114] Moreover, recent legislation has generally relaxed SDO antitrust liability stemming from treatment of intellectual property.[115] Nonetheless, it should be noted that aggressive enforcement of patent rights covering a potential standard might dissuade the market from accepting the standard.[116] Moreover, where government directly participates in the standard development and deployment, government rather than the market, will minimize the potential for intellectual property misuse by imposing safeguards to

111. *See* Regis C. Worley, Jr., *The MPEG LA Patent Pool: A Rule of Reason Analysis and Suggestion to Improve Procompetitiveness*, 24 T. JEFFERSON L. REV. 299, 300 (2002).

112. *See* Dorothy Gill Raymond, *Benefits and Risks of Patent Pooling for Standard Setting Organizations*, 16 ANTITRUST 41 (2002). The specific interests involved include the University of Columbia, Fujitsu Limited, General Instrument Corp. Lucent Technologies, Inc., Matsushita Electric Industrial Co., Mitsubishi Electric Corp., Philips Electronics N.V., Scientific-Atlanta, Inc., and Sony Corp.

113. *See* Letter from Joel I. Klein, Acting Assistant Attorney General, Antitrust Division, Department of Justice, to Gerrard R. Beeney, Esq. (June 26, 1997), *at* http://www.usdoj.gov/atr/public/busreview/1170.pdf [hereinafter *MPEG Pool Letter*]. *See also* 28 C.F.R. § 50.6 (1999).

114. *See* DEP'T OF JUSTICE AND FEDERAL TRADE COMM'N, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY (Apr. 6, 1995), *available at* http://www.usdoj.gov/atr/public/guidelines/ipguide.htm; 28 C.F.R. § 50.6 (1999).

115. *See* Standards Development Organization and Advancement H.R. 1086, 108th Cong. § 102 (2004), *available at* http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_public_laws&docid=f:publ237.108.

116. *See The IPR Paradox*, *supra* note 57, at 221-22.

ensure that proprietary technologies are licensed on reasonable and non-discriminatory bases.

4. MPEG vs. DRM

Like the VCR standardization, the somewhat closed collaborative model of standardization involved in MPEG includes a proprietary philosophy. For the same reasons that a standards war will be unlikely in the DRM context, specifically the consumer acceptance challenges, a closed proprietary collaborative model will also be unlikely. DRM standardization will involve an expensive overhaul of all consumer electronics hardware and the data communications infrastructure. This overhaul must occur against the backdrop of skeptical consumers and unconvinced consumer electronics manufacturers and data communications infrastructure providers. A proprietary strategy, whether in the form of a standards war or a closed collaborative effort, remains unlikely.

D. DTV

Unlike the case studies covered thus far, the U.S. government, primarily acting through the FCC, was and remains heavily involved in the digital television standardization process. For a host of reasons, not the least of which being that the transition from analog to digital broadcasting may not be completed for more than 30 years from the beginning of the standardization effort, many commentators view this case as a colossal failure.[117] On the other hand, other commentators, recognizing the incredible legal, technical, economic, and political complexities involved in this particular standardization initiative, view the U.S. effort as a success and a model.[118]

1. The Promise of Digital Television

Digital television (DTV) broadcasts are far superior to the traditional analog NTSC format. Such a broadcast scheme can support crystal clear HDTV signals, CD quality audio, the broadcasting of multiple signals on the same 6Mhz channel (multi-casting), dynamic interactive data capabilities, and high volume data communications.[119] The use of digital broadcasting also relieves certain interference

117. Erwin G. Krasnow, & M. Wayne Milstead, *FCC Regulation and Other Oxymorons Revisited*, 7 MEDIA L. & POL'Y 7 (1999) [hereinafter *Oxymorons*].

118. *See* STANDARDS, STRATEGY, AND POLICY, *supra* note 91, at 121.

119. THOMAS G. KRATTENMAKER, TELECOMMUNICATIONS LAW AND POLICY 321-39 (2nd ed., 1998).

concerns.[120] Moreover, such a technical scheme can serve as a platform for further innovations surrounding the convergence of television, computing, and communication technologies.[121] Achieving the promises of DTV, however, has proven to be a monumental task. For one, like the Ethernet standardization effort and even more like the current DRM challenge, the DTV effort spans a wide spectrum of interests, such as content producers, consumer electronics manufacturers, broadcasters, and consumers.[122] Unlike the Ethernet situation, however, the DTV effort faces additional obstacles such as the need for consumers to replace their existing televisions, the need to inspire a costly upgrade of the broadcasting infrastructure, and the need to develop and deploy standards in the public's communication spectrum, a technical area fraught with political controversies and legal restraints.

2. The Nature of the Market

In the case of DTV, the market itself simply would never provide organic incentives for content owners, broadcasters, and consumer electronics manufacturers to make the transition on their own. The "logjam" acting against DTV signal standardization stems in part from similar market forces as those acting in the current DRM context. As has already been noted, content production interests were more than comfortable with the profitable status quo. A transition to all digital production and broadcasting raised several uncertainties from the content production interest perspective, including increased costs of production and the always looming threat of digital piracy. Likewise, from the broadcasters' perspective, the projected conversion costs of $10-12m per station provided a significant financial disincentive.[123] And while the consumer electronics interests would obviously benefit from sales of high priced digital television sets, without the backing of content producers and broadcasters, the investment in R&D and the effort required to develop, manufacture, and bring to market such sets could not be justified. Moreover, averse to risky and costly standards wars, the consumer electronics manufacturers were further reluctant to engage in the transition from analog to digital without a standard in place. In short there was no market catalyst for standardization.

120. *See* FEDERAL COMMUNICATIONS COMM'N, FCC CONSUMER FACTS: COMPATIBILITY OF CABLE TV AND DIGITAL TV RECEIVERS - "PLUG-AND-PLAY" (Sept. 11, 2003), *at* http://ftp.fcc.gov/cgb/consumerfacts/plugandplaytv.html.

121. *See* Advanced Television Sys. & Their Impact Upon the Existing Television Broad. Serv., *Fourth Further Notice of Proposed Rule Making & Third Notice of Inquiry*, 10 FCC Rcd. 10,540 (1995).

122. *See* STANDARDS, STRATEGY, AND POLICY, *supra* note 91, at 121.

123. *See id.* at 212.

The FCC's involvement could be viewed not only as providing deadlines, guidance, and mandates, but also as crafting incentives to inspire the respective players to begin the innovation process. While FCC intervention served as the initial catalyst, once the process was underway, the market activity was marked by innovation, over achievement, and new organic market incentives to further inspire the transition from analog to digital.

3. The Mechanics of DTV Standard Development

The U.S. standardization story began in 1977 when the Society of Motion Picture and Television Engineers (SMPTE) created a task group to study high definition television (HDTV).[124] At this time, the Japanese and Europeans had already recognized the promise of HDTV and had already begun to chart a course for the transition to HDTV. The U.S. did not seriously begin pursuit of its own standard, however, until nearly a decade later. The FCC formally entered the process in 1987 when a group of 58 companies, mostly broadcasters, petitioned the FCC for a formal proceeding to explore advanced television.[125] In retrospect, the motives behind the original petition that implicated the FCC appear somewhat ulterior. Specifically, the broadcasters' push into the advanced television realm was the manifestation of a short sighted ploy to stave off an FCC decision that would have allocated public spectrum for the use of land mobile rather than broadcasting.[126] In an effort to preserve all of their allocated spectrum, the broadcasters successfully argued that they needed the spectrum for advanced television, even though their genuine interest in harvesting the possibilities of advanced television remained questionable.

In response to the 1987 petition, the FCC created the Advisory Committee on Advanced Television Service (ACATS or the advisory committee) to study advanced television (ATV) and to provide recommendations to the FCC.[127] The ACATS was established by the

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124. HDTV refers to a high resolution picture. As will be seen, the original HDTV proposals were largely analog, not digital. Digital Television (DTV), on the other hand, refers to using a digital transmission, and encapsulates high definition television, regular definition television, and other services.

125. *See* Daniel Patrick Graham, *Public Interest Regulation in the Digital Age*, 11 COMM. L. CONSPECTUS 97, 98 (2003) (paraphrasing Advanced Television Systems and Their Impact on the Existing Television Broadcast Service, *Notice of Inquiry*, 2 FCC Rcd. 5125, at ¶ 2).

126. JOEL BRINKLEY, DEFINING VISION: HOW BROADCASTERS LURED THE GOVERNMENT INTO INCITING A REVOLUTION IN TELEVISION (1997) [hereinafter DEFINING VISION].

127. *See* Richard E. Wiley, *The Digital Television Future: What Next?*, 16-FALL COMM. L. 3 (1998).

FCC pursuant to the Federal Advisory Committee Act (FACA).[128] FACA provides a detailed set of guidelines and uniform procedures for such advisory committees including features such as congressional review of advisory committee activities, public notice of advisory committee meetings, open public meetings, public access to the committee, and public access to documents, reports, agendas, and transcripts produced by the committee.[129]

The ACATS was headed by former FCC Commissioner Richard Wiley and was composed of "industry leaders representing diverse viewpoints, including those of the television broadcast networks and stations, equipment manufacturers, cable systems, and the communications bar."[130] In conjunction with general study of advanced television, the ACATS, in 1988 and 1989, invited the submission of competing advanced television proposals from industry with the intention of recommending a winning proposal to the FCC for adoption as a standard.[131] In parallel, the industry created and funded a test center, the Advanced Television Test Center, with the technical capabilities to evaluate and judge the various proposals.[132]

While in theory the competition was designed to promote innovation, aspects of the process were characterized by "gamesmanship, scheming, and political maneuvering."[133] The process involved hidden agendas concerning, *inter alia*, the allocation of spectrum, proprietary intellectual property incentives, and protectionist trade policy. Nevertheless, the process continued and by 1991, when testing was to begin, the original 23 proposals for the standard were whittled down to six.[134] One of these proposals, proffered by General Instruments as a showcase of its VideoCipher division's expertise, was a surprising all-digital proposal.[135] Despite a general skepticism as to whether an all digital system could operate in a 6Mhz band, the proposal was well received as a technological success. The proposal also marked a change

128. *See* The Federal Advisory Committee Act (FACA), Pub. L. No. 92-463, 86 Stat. 770 (1972) (codified at 5 U.S.C. App. 2).

129. *See id.* §§ 5, 10.

130. Advanced Television Sys. & Their Impact on the Existing Television Broad. Serv., Review of Technical and Operational Requirements: Part 73-E, Television Broad. Stations Reevaluation of the UHF Television Channel and Distance Separation Requirements of Part 73 of the Comm'n's Rules, *Tentative Decision & Further Notice of Inquiry*, 3 FCC Rcd. 6520, 6522 (Sept. 1, 1988).

131. DEFINING VISION, *supra* note 126, at 43-44.

132. *See id.* at 66.

133. *Id.* at 120.

134. *See* INFORMATION RULES, *supra* note 126, at 220-21.

135. *See* FCC ADVISORY COMMITTEE ON ADVANCED TELEVISION SERVICE, ATV SYSTEM RECOMMENDATION (Feb. 24, 1993), *at* http://www.atsc.org/news_information/papers/1993_atv_report/index_atvrpt.html.

in the philosophy and goals of the ATV effort. Specifically, the focus shifted away from high definition and toward digital signal transmission.

By 1993, ACATS indicated that four competing digital standards, with seven different corporate sponsors, were under consideration.[136] Also in 1993, the corporate sponsors of these remaining digital proposals, including Zenith, AT&T, General Instrument, MIT, Philips, Sarnoff Research Labs, NBC, and Thomson, joined together to form a "Grand Alliance."[137] The advisory committee's role as a referee and a compromise broker was critical to the formation of this alliance, as the process required compromise on countless business, strategic, economic, technological, and intellectual property disputes between the respective interests.

One of the most consequential disputes, for example, concerned whether the alliance would pursue an interlaced technology, or alternatively a progressive scan technology, as part of the display format incorporated within its standard. Broadcasters had many strategic reasons to prefer an interlaced technology, including their patent positions with respect to video equipment used in producing interlaced pictures. On the other hand, computer interests needed a progressive scan technology to foster interoperability between computing and digital television. These respective interests caused an acrimonious and fundamental split among the participants, with Philips, Sarnoff Research Labs, NBC, and Thomson supporting an interlaced technology and General Instruments, Zenith, AT&T, and MIT supporting a progressive scan technology. With prodding from the advisory committee, the participants reached a hard fought compromise to develop a technology capable of accommodating both interlaced and progressive scan formats.[138] Importantly, without the advisory committee process, the industry acting alone would have little incentive to compromise on such fundamental technological issues.

The "Grand Alliance" corporations cross licensed their patents, worked collectively to combine the competing proposals into a single system, divided the work for the components of the system between themselves based on expertise, and extensively researched and tested the resulting system. The work was documented and adopted by the Advanced Television Systems Committee (ATSC), a private sector organization self described as a broad-based organization (also described

136. *Id.*

137. *See* Comments of Grand Alliance, HDTV System Specification, *Advanced Television Sys. & Their Impact on the Existing Television Broad. Serv.*, (F.C.C. filed May 3, 1994) (MM Docket No. 87-286), *available at* http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or _pdf=pdf&id_document= 1292130001.

138. *See* DEFINING VISION, *supra* note 126, at 247-76.

as a "broadcast industry technical group"[139]) which develops voluntary standards within the television industry.[140] In late 1995, ACATS voted to recommend that the FCC adopt the Grand Alliance's proposal as the DTV standard.[141]

4. The FCC's Adoption of the Standard

Following the advisory committee's recommendation, the FCC sought public comment on its potential adoption of what was called the ATSC DTV standard.[142] Just as FACA regulates the activities of advisory committees, the Administrative Procedure Act (APA) regulates the activities of federal administrative agencies such as the FCC.[143] Under the APA, all FCC proceedings and rule-makings must be open for public comment and must be transparent and fair. As a practical matter, in the FCC, such notice and transparency generally takes the form of FCC requests for public comment and notices of proposed rule-making.[144] Consideration of wide ranging comments, from high-powered lobbying and special interest groups down to individual citizens themselves, always stands as a prelude to the promulgation of rules by the FCC. Generally speaking, APA rule-making proceedings are conducted before the FCC in the spirit of fierce advocacy, rather than compromise. During such a process, the FCC must grapple with advocacy-induced arguments, which at times might distort the relevant facts and agendas.

As part of the APA rule-making process for the DTV standard, the FCC solicited comments on the possibility of an FCC adopted ATSC standard.[145] In this notice, the FCC outlined four goals regarding the standard:

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139. *Id.* at 369.

140. *See* ADVANCED TELEVISION SYSTEMS COMMITTEE, DEVELOPMENT OF THE ATSC DIGITAL TELEVISION STANDARD, *at* http://www.atsc.org/history.html (last visited Apr. 5, 2005).

141. *See* Advanced Television Sys. & Their Impact Upon the Existing Television Broad. Serv., *Fourth Report & Order*, 11 FCC Rcd. 17,771 (Dec. 24, 1996) [hereinafter *DTV Order*].

142. Advanced Television Sys. & Their Impact Upon the Existing Television Broad. Serv., *Fifth Report & Order*, 11 FCC Rcd. 6235 (May 20, 1996).

143. *See* 5 U.S.C. §§ 500-596 (2004).

144. For example, upon issuing its notice of proposed rule-making for digital broadcast copy protection, the FCC received and evaluated over 6,000 comments. *Piracy Prevention and the Broadcast Flag: Hearing Before the Subcomm. On Courts, the Internet, and Intellectual Property of the House Comm. on the Judiciary* 108th Cong. (Mar. 6 2003) (Statement of W. Kenneth Ferree, Chief, Media Bureau, Federal Communications Commission) *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-236789A1.pdf [hereinafter *Ferree Piracy Prevention and Broadcast Flag Statement*].

145. *See* Advanced Television Sys. & Their Impact Upon the Existing Television Broad. Serv., *Fifth Further Notice of Proposed Rule Making*, 11 FCC Rcd. 6235, 6262 (May 9, 1996).

> 1) to ensure that all affected parties have sufficient confidence and certainty in order to promote the smooth introduction of a free and universally available digital broadcast television service; 2) to increase the availability of new products and services to consumers through the introduction of digital broadcasting; 3) to ensure that our rules encourage technological innovation and competition; and 4) to minimize regulation and assure that any regulations we do adopt remain in effect no longer than necessary.[146]

The FCC considered myriad comments regarding these goals and the Grand Alliance's proposed standard. The most forceful objection came from the computer industry's revived advocacy for progressive scan. The comment period became yet another opportunity for the fundamentally opposed groups to address their concerns. Negotiations between the respective industry groups resulted in an agreement that the display formats be removed from the standard altogether. Such an action arose from a vision that television manufacturers would produce sets capable of receiving either format, and that the FCC would not need to endorse one format or the other, but rather would leave the issue to the market.[147] The FCC adopted the standard on December 24, 1996.[148] Most notably, the FCC took great comfort in adopting the standard given the process by which the standard was developed:

> The consensus among the broadcast, set manufacturing and computer industries gives us confidence that the DTV Standard we are adopting does not reflect overreaching or over-regulation by government. The Agreement itself recognizes that the ATSC DTV Standard is a "voluntary" one, selected by private parties under the auspices of the ATSC, an American National Standards Institute (ANSI) - accredited organization. That parties representing major segments of such widely divergent industries have forged a consensus over the appropriate standard at once furthers our confidence in the DTV Standard itself and ameliorates concerns that adoption of a standard might retard competition and innovation.[149]

While the FCC applauded the diverse industry groups for arriving at a consensus-based standard, this reality could have never been achieved without the FCC's catalytic oversight and prodding, primarily through its advisory committee. Additionally, the FCC's APA rule-making process gave opposed interests another opportunity to vent differences

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146. *DTV Order*, *supra* note 141, at ¶ 30 (paraphrasing Advanced Television Sys. & Their Impact Upon the Existing Television Broad. Serv., *Fifth Further Notice of Proposed Rule Making*, 11 FCC Rcd. 6235 (May 9, 1996).

147. *See* DEFINING VISION, *supra* note 126, at 372-93.

148. *See DTV Order*, *supra* note 141, at ¶ 1.

149. *Id.* ¶ 43 (internal cite omitted).

and reach a well-informed compromise before exposing the standard to the market. Throughout the process the advisory committee and the FCC narrowly negotiated countless solutions to problems and stalls between the industry participants that would have otherwise derailed the standard development.[150]

5. Market Acceptance

In some senses, the market acceptance of this standard is a forgone conclusion as FCC regulations mandate that all broadcasters upgrade their equipment, and broadcast digital signals, in compliance with an FCC timetable.[151] Specifically, the transition proceeds in steps and requires that by 2006 all broadcasters fully transition from analog to digital broadcasts.[152] Nevertheless, there remains some skepticism about the transition.[153] The reaction of the 35 million U.S. consumers who receive television exclusively from over the air broadcasts remains to be seen. While some might initially resist upgrading to an expensive digital television set, opting instead to subscribe to a cable or satellite system, with time the upgrades will be inevitable.

6. DTV vs. DRM

The DTV signal standardization effort more closely resembles the DRM challenge. The effort required an inter-industry participation and involved seemingly impossible conflicts between industries. The DTV case also included a "logjam" problem, with independent disincentives for any one interest, or any one industry, to take the initiative in moving forward with standardization. DTV also included an expensive hardware overhaul, both for consumers and producers. Additionally, the DTV effort involved complex policy problems, such as appropriate use of spectrum, overlaying complex technical problems. The DRM case

150. *See* DEFINING VISION, *supra* note 126, at 283-84.

151. Doug Halonen, *Digital Television Derailed: Trouble with standards, programming delays rollout*, ELECTRONIC MEDIA (July 17, 2000) [hereinafter *Digital Television Derailed*]; This is not to suggest that market acceptance has proceeded smoothly without skeptics and critics. Most notably, a market movement captured in a petition to the FCC filed by Sinclair suggests that the European coded orthogonal frequency division multiplex transmission standard (COFDM) is far superior to the FCC's chosen 8-VSB standard. *See Digital Television Derailed*, *supra* note 151; *Reader Feedback*, BROADCAST ENGINEERING (Aug. 1, 2002); *see also* Review of the Comm'n's Rules & Policies Affecting the Conversion to Digital Television, *Report & Order & Further Notice of Proposed Rulemaking*, 16 FCC Rcd. 5946 (2001).

152. *See* Carriage of the Transmission of Digital Television Broadcast Stations, 63 Fed. Reg. 42,330, 42,332 (Aug. 7, 1998).

153. *See* Aaron Futch, et al., *Digital Television: Has the Revolution Stalled?* 2001 DUKE L. & TECH. REV. 14.

includes all of these elements, and as developed in detail below, the DRM case is also a prime candidate for FCC intervention.

III. FCC INTERVENTION IN DRM STANDARDIZATION

The case studies discussed above expose the practical and realistic side of the standardization process. They also teach that every standardization problem is unique. The specific combination of market structures, incentives, players, hidden agendas, political landscapes, and consequences of each standardization effort are inimitable. Nevertheless, certain facets and elements of every standardization effort can be better understood by reference to how such facets have played a role in historic standardization efforts. As noted, the DRM standardization problem includes elements such as the necessary participation of a diverse set of inter-industry interests, the need to phase in new consumer hardware on a grand scale, the drive to protect media industry intellectual property, the financial disincentives against standardization, the empowered force of consumer expectations, and to the call for defeating an illegal network founded upon copyright infringement. A close exploration of those specific facets, with some reference to history, reveals how government intervention can foster progress in each of these areas, whereas the market cannot, especially when left to its own devices.

A. Diverse Interests

Identifying and garnering the participation of the comprehensive and appropriate set of interests needed in the DRM standardization effort is itself a formidable task. A standardization effort that lacks the participation of a key interest is bound to fail. Clearly, DRM standardization implicates the cooperation of an odd set of commercial interests, including content producers and owners, consumer electronics firms, computer firms, and communications firms. For obvious reasons, it is highly unlikely if not impossible for market-based procedures such as standards wars, and closed proprietary collaboration to gain the participation of the wide array of interests needed for this effort. On the other hand, as has been demonstrated, the market acting independently through SDOs, as in the case of Ethernet, and the FCC acting through intervention, as in the case of DTV, have both rallied diverse commercial interests around a standardization cause.

While closer to the case of DTV, the problem of gathering the participation of a diverse set of interests in the DRM context—both commercial and non-commercial–is distinguishable from both Ethernet and DTV in several important respects. The distinctions highlight the

importance of government intervention and the need for a government forum when developing and deploying a DRM standard.

1. The Unique Consumer Relationship with DRM

DRM standardization expands the scope of key interests beyond the commercial interests minimally necessary to make the standard a technical and business reality. With DRM, more than any standardization effort before it, market acceptance and policy concerns force attention on the desires and reactions of a broad set of non-commercial groups including consumers, artists, and even pirates. Of course, at some level, the demands of consumers are critical to any successful standardization effort, as market acceptance of a standard ultimately hinges thereon. But with DRM, unlike past standardization efforts, consumer passion surrounds the standardization questions bearing on enjoyment of media. This consumer passion has driven fair use and copyright considerations onto center stage, and has placed the business practices of copyright owners under new scrutiny. As a result, the DRM standardization effort is more consumer-oriented and politically charged than any standardization effort before it.

The legal and political wheels are already irreversibly in motion. Federal courts are presiding over seminal lawsuits centering on technology and copyright. New lobbying groups representing P2P networks are posturing among the traditional consumer, electronics, telecommunications, and copyright lobbying interests.[154] Newspaper headlines are keeping the general public informed as to day-to-day copyright and technology developments. Consumer groups are wary of political maneuvering in this area. Heavy-handed law enforcement initiatives and legislative proposals are becoming commonplace.[155] Overall, there is a political and public policy undertone to the DRM standardization effort unprecedented by even the most politically charged historical standardization efforts.

At the bottom line, society as a whole is uneasy about how technological advances will restrict access to and ownership of media content. As previously noted, consumers have developed certain expectations regarding their enjoyment of media content. Moreover, both legitimate copying techniques and today's widespread illicit networks have already empowered consumers in realizing these expectations. The process of taking that technology away from

154. *See* David McGuire, *Music Sharing Services To Start Lobby*, WASH. POST, June 24, 2003, *available at* http://www.washingtonpost.com/ac2/wp-dyn/A26744-2003Jun24.

155. Inducing Infringement of Copyright Act of 2004, S. 2560, 108th Cong. (2004); Press Release, U.S. Department of State, Justice Department Creates Intellectual Property Task Force (Mar. 31, 2004), *at* http://usinfo.state.gov.

consumers is an unsettling prospect. DRM technologies of the future, however, must serve to limit and restrict consumers *vis-à-vis* the possibilities enjoyed by consumers today.

Given such a reality, the consumer seat at the standardization table is not merely warranted in principle, but is critical to successful DRM standardization. If consumers are precluded from participation in the standard development and deployment process, those consumers are likely to revolt against the resulting standard by migrating to future variants of today's networks founded upon copyright infringement.

Transparent, public-minded FCC proceedings are likely to afford the greatest degree of necessary consumer involvement. Indeed, as seen with the VCR and MPEG case studies, standards wars and proprietary collaborative efforts are far removed from direct consumer participation. Even open SDO procedures are traditionally accustomed to pragmatic technical collaboration among industry participants, and less accustomed to addressing public concerns and overarching policy implications. FCC proceedings, with their transparency, traditional consideration of policy implications surrounding technological choice, and opportunity for direct consumer involvement, will afford the most protection to consumer interests in the DRM standardization process.

With a transparent FCC proceeding, consumers will at least be aware of the relevant developments and receive an opportunity to directly comment upon them. Moreover, their comments will be read and considered.[156] Lobbying groups and consumer interests group will also have occasion to present aggregate concerns to the FCC.[157] Some might argue that despite these procedures, the FCC is often guilty of simply ratifying industry-proposed solutions. Such ratifications do not necessarily mean that the FCC process discounts consumer input. To the contrary, the commercial interests that propose technical solutions to the FCC will likely be wary of the policy implications of their proposals and build compromises into their proposals. In other words, commercial interests will be more inclined to act reasonably in the first instance as a preemptive counter to arguments that their proposals ignore threats to non-commercial interests. The FCC forum creates a sense of accountability to the public that does not exist otherwise. Moreover, as the FCC has consistently demonstrated, when specific aspects of an industry proposal ignore consumer concerns or policy implications, the FCC will decline to adopt those aspects.

156. *Ferree Piracy Prevention and Broadcast Flag Statement*, *supra* note 144.

157. Press Release, Center for Democracy & Technology, Public Interest Groups Call Upon FCC to Consider Consumer Impact in Broadcast Flag Rulemaking (Aug. 7, 2002), *at* http://www.cdt.org/press/020807press.shtml.

2. Commercial Interests

Certain historical case studies demonstrate the market's independent ability to gather diverse interests, as in the case of Ethernet. However, DRM is distinguishable from such efforts. The participants in Ethernet, while diverse, all stood to reap potential commercial rewards from the resulting standard. As such, all participants maintained an independent market incentive to push for standardization.

With DRM the long-term commercial effects remain ill-understood. Some might suggest that only the copyright owners stand to reap any commercial benefits. There seem to be little, if any, independent market incentives for the other commercial interests. Although content owners will provide some financial incentives to DRM developers, consumer demand for flexible products threatens to counter any such incentive. A good argument can be made that there are direct market disincentives for all commercial interests other than the content owners. Again, computer manufacturers and consumer electronics manufacturers are subject to market pressures to provide consumers with the greatest degree of flexibility. Consumer electronics companies are wary of costly changes to their products solely to protect the business models of content owners.[158] This is particularly true where technical convergence suggests the need to install DRM hardware in a vast array of electronic devices. Moreover, the consumer tendency to resist any hardware that restricts freedom cannot be overstated.[159] The competing market forces from copyright owners and consumers bearing upon device manufacturers are artfully captured by Professor Litman:

> Technological protection standards have historically been hammered out in negotiations between representatives of copyright owners and organizations representing consumer electronics manufacturers. Consumer electronics companies are resistant to demands that they disable their machines, or install devices likely to impair viewing, listening, or recording performance. They have, however, been willing to install copy-protection devices so long as the technology is not too costly and every manufacturer agrees or is legally required to install precisely the same device. This removes the threat to compliant manufacturers that other manufacturers will compete by using less effective devices. It also removes the threat to copyright

158. *Copyright Issues*, *supra* note 2, at 2536 ("we are committed to protecting your intellectual property . . . but we are not committed to protecting your business model.").

159. Megan E. Gray, & Will Thomas DeVries, *The Legal Fallout from Digital Rights Management Technology*, 20 No. 4 COMPUTER & INTERNET LAWYER 20, 23 (2003) (quoting EEF's Fred von Lohmann) [hereinafter *Legal Fallout*].

> owners that some consumers will insist on purchasing non-compliant equipment.[160]

This understanding of the need for agreements or laws requiring all manufacturers to work in concert implicitly recognizes an underlying market incentive for the production of non-complaint devices.

Similarly, data communication service providers have little independent economic incentive to subscribe to a DRM standard. As long as these companies remain insulated under the DMCA from liability for the content that crosses their networks, data communication providers stand to gain as data traffic increases regardless of the progress of a DRM solution.

The lack of true independent economic incentives for the computer, consumer electronic, and communication interests leaves a taint that these interests are being strong-armed and manipulated by the content owners. The lack of incentive also translates to a lack of "glue" which would otherwise hold together independent industry-wide initiatives to develop and deploy a DRM standard. Indeed, the market has already demonstrated its failures at such initiatives. For example, the Secure Digital Music Initiative (SDMI)[161] failed to gain acceptance throughout the industry, and as a result, failed to derail the consumer migration to illegal MP3 music files.[162]

Similarly, the market has failed even to present a basic united policy front when pressured by government to begin independent development of a DRM standard. Specifically, in reaction to the Hollings Bill, the industry published a set of joint policy principles offered to demonstrate its capability of acting without government intervention. The policy principles were sketchy on details and deficient in many respects, most notably in that the MPAA refused to subscribe because the principles advocated against government-mandated hardware solutions.[163]

Given the lack of independent economic incentives to hold together standardization negotiations between a wide array of market interests, in combination with repeated signals from the industry that such independent negotiations are unrealistic, government oversight and intervention becomes an attractive, if not the only, solution.

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160. DIGITAL COPYRIGHT, *supra* note 37, at 151-52.

161. Linden deCarmo, *Safety in Numbers: A Look at the Secure Digital Music Initiative*, EMEDIALIVE.COM (Nov. 1999), *at* http://www.findarticles.com/p/articles/mi_m0FXG/is_11_12/ai_63692053.

162. DIGITAL COPYRIGHT, *supra* note 37, at 155-58.

163. BUSINESS SOFTWARE ALLIANCE, COMPUTER SYSTEMS POLICY PROJECT, AND THE RECORDING INDUSTRY ASSOCIATION OF AMERICA, TECHNOLOGY AND RECORD COMPANY POLICY PRINCIPLES, *at* http://www.bsa.org/resources/loader.cfm?url=/commonspot/security/getfile.cfm&pageid=1226&hitboxdone=yes (last visited Apr. 5, 2005).

B. Consumer Acceptance: Defeating the Illicit Network

It is unlikely that policy debates concerning the substantive conflict between fair use and content control will end in the foreseeable future. There is alson no apparent solution to healthy marketplace competition testing the appropriate price and appropriate levels of control over content. Regardless of the positions or strategies employed in these debates, no straight-faced argument can be made that consumers should be permitted to ignore a content owner's copyright or allowed to exploit technology to gain more rights in content then they have paid for or than they are entitled to under law.[164] Defeating current and future illegal underground markets and networks founded upon theft of copyright stands as the ultimate goal of DRM standardization.

A successful DRM standard will allow content owners to realize the exact contractual limitations that they place on their digitally distributed copyrighted content. A highly lucrative DRM standard will allow a maximum degree of flexibility when it comes to market-based negotiations between the content owner and the consumer.[165] This realization will only occur, however, if the industry succeeds in dissuading consumers from joining illegal networks.

In pursuing such dissuasion, it is important for the content industry to continue to recognize that a strong consumer psychology component underlyies the potential success of a DRM standard. Content owners need to explore and understand the consumer psychology behind circumvention. Will a DRM standard cause consumers to feel that the industry has taken something away from them? How might consumer awareness campaigns affect the market? To what degree does the consumer perception of past industry abuse play into future consumer behavior? Why do consumers remain loyal to certain legitimate networks despite the presence of easy and convenient circumvention measures? On the other hand, why do consumers exhibit disloyalty by aggressively pursuing circumvention measures in other networks characterized by strong hardware-based restrictions?[166]

The restoration of law and morality on the digital media content frontiers will involve a multi-faceted industry effort. The content industry must adopt a comprehensive approach to erecting barriers and establishing disincentives. A strong DRM standard is a critical

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164. In some senses, this position begs the question of what, exactly, consumers are entitled to under law and how consumers should be able to manipulate technology to achieve those entitlements. *See, e.g.*, Julie E. Cohen, *A Right to Read Anonymously: A Closer Look at 'Copyright Management' in Cyberspace*, 28 CONN. L. REV. 981 (1996).

165. Richard A. Epstein, *"Digital Rights Management" Best Left to Private Contract*, LEGAL BACKGROUNDER, Nov. 15, 2002 [hereinafter *Private Contract*].

166. DEFINING VISION, *supra* note 126, at 84-91.

component to such an approach. Similarly, a legal strategy that will level consequences upon participants, and more importantly, purveyors of illicit networks is also critical. Consumer awareness campaigns, such as those recently employed by the MPAA, are yet another component. The most important facet, however, will be recognition of an economic compromise between the content industry and its consumers.[167] In essence, once a standard is in place, the price of a consumer's legitimate use of content and the consumer's permitted flexibility of use must both be set at levels which will inspire the consumer to choose the legitimate network over an illicit network.

Importantly, the DRM standardization process will play an important role in this calculus. First, the DRM standard will define the parameters of potential business models and creative negotiations permitted between the consumer and the content owner. More importantly, however, the DRM standardization forum, if it included all participants, could serve as a communication conduit between content owners and consumers. Content owners could gain a broader understanding of the consumer perspective, specifically with respect to particular DRM proposals. This would assist them in launching successful and popular business models. Finally, and most importantly, if consumers are excluded from the process, they may revolt against the product of that process regardless of what that product may be. In other words, the interests involved in the DRM standardization effort do not only owe the consumer interests a seat at the table as they refine the technical boundaries bearing upon copyright and fair use, they must invite consumer participation because without it this crucial perspective, their efforts will likely fail when launched in the market.

Once again, closed door proprietary standardization efforts and standards wars are repugnant from a consumer acceptance perspective. Likewise, SDOs are not as well equipped as the FCC in considerately accepting and managing the interests of non-commercial groups.

C. Enforcement

Obviously, as Professor Litman's quote highlights, an industry's commitment to a standard is a necessary element of that standard's success. An evaluation of the forces that cause an industry to stay the course once chosen reveals that a DRM standard, unsurprisingly, stands in a novel position with respect to such forces.

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167. Jennifer Norman, *Staying Alive: Can the Recording Industry Survive Peer-to-Peer?*, 26 COLUM. J.L. & ARTS 371 (2003).

For the most part, compliance with standards is self-regulating through market forces.[168] For instance, as demonstrated in the VCR standards wars, once a market tips in favor of a particular standard, a manufacturer's "compliance" with the standard is not an issue. After VHS won the war, no manufacturers were tempted to manufacture Betamax, or other variant. In short, network economic effects ensure compliance as part of the fallout from the standards war.

On the other hand, network economic forces are not always responsible for ensuring compliance with standards. Where broad-based voluntary preemptive standards are developed, such as the IEEE Ethernet standard, an industry agreement ensures that all participants follow through with the standard. The agreements are likely successful where an industry is developing compatibility standards. All parties must cooperate or risk that their particular components or products will not work with a greater whole. Compliance with the standard serves not only as a stamp of legitimacy, but also as an assurance to consumers that the product will work with the network.

Sometimes the market power and vertical integration of a standard's proponent can serve to ensure successful enforcement of that standard. For example, when color television was launched in the U.S. by RCA, the company controlled a large share of both broadcasting and television manufacturing.[169] As such, these interests did not stray from the concerted effort to launch the standard. In the context of DRM, some might argue that today's vertically integrated interests, controlling both content and consumer electronics, might be able to achieve such command-and-control style enforcement. To date, however, such strategies have yet to completely succeed. For instance, Sony launched product lines in connection with its MiniDisc format which employed a DRM scheme based on the reasonable technical and policy principles embodied in the industry's SDMI initiative.[170] Nevertheless, this DRM scheme has failed to achieve widespread market acceptance, as consumers continue to employ alternative digital music platforms without the SDMI restrictions.

In the case of DRM, non-compliant products could potentially capture a huge market by virtue of their noncompliance. Consumers and consumer groups have consistently expressed their aversion toward "less

168. David A. Balto, Assistant Director Office of Policy and Evaluation, Bureau of Competition, Federal Trade Commission, Standard Setting in a Network Economy, Address Before Cutting Edge Antitrust Law Seminars International (Feb. 17, 2000), *at* http://www.ftc.gov/speeches/other/standardsetting.htm .

169. *The Art of Standards Wars*, *supra* note 55.

170. SONY, PORTABLE MINIDISC RECORDER MZ-S1 OPERATING INSTRUCTIONS (2002).

functional" products.[171] Without a legal ban, more functional but non-complaint products will take the form of general use products, such as computers. These non-complaint products will provide many substantial non-infringing uses in addition to serving as a platform for infringement and illegal distribution. As in the *Betamax* case, the non-infringing uses will insulate manufacturers from liability for vicarious or contributory infringement. Unless non-compliant products are prohibited, the industry remains powerless to prevent manufacturers from meeting the market demand for non-complaint products.

The industry has already failed to tackle the problem where the products facilitating infringement are not themselves illegal. As seen in evaluating the nature of P2P networks, faced with a creative and elusive technology, the content industry is incapable of aggregating liability at the source under a contributory or vicarious liability theory. Moreover, the actual acts of infringement are too frequent and dispersed to pursue on an individual level. In essence, even if the market were able to agree on an effective and robust DRM standard, the market could not enforce that standard. As such, the content industry will remain unable to protect its intellectual property.[172]

Only a specific government mandate can solve this enforcement dilemma. As noted by a leading consumer advocacy group in connection with the FCC's Broadcast Flag proceeding, "[a] government mandate would be required because manufacturers know that consumers prefer today's fully-functional digital TV equipment to the less-functional equipment which would be required under the Compliance and Robustness Rules. . . . Many manufacturers will only make more expensive, less useful 'Compliant' equipment if they are forced to."[173]

D. FCC Expertise

As highlighted by the DTV case study, the FCC's relentless pursuit of the digital television transition has presented the Commission with some of its greatest challenges. The saga of DTV signal standardization was only the first of many steps. Recently, the pursuit of the DTV transition has cast the FCC into the briar patch of standardization, copyright, and technical copy controls for digital television content. Despite DTV signal standardization, the overall DTV transition remains locked into a "logjam" problem. Consumers remain unconvinced that an

171. ELECTRONIC FRONTIER FOUNDATION, EFF CONSENSUS AT LAWYERPOINT: FAQ ON BROADCAST FLAG, *at* http://bpdg.blogs.eff.org/archives/000148.html [hereinafter EFF CONSENSUS].

172. Clay Shirky, *Where Napster is Taking the Publishing World*, HARV. BUS. REV., Feb. 1, 2001.

173. EFF CONSENSUS, *supra* note 171.

expensive investment in a digital television will in fact grant them access to digital and high definition content. Such unease is understandable, given that content producers, citing the lack of reliable copy protection controls, continue to resist the production and distribution of digital content.

Were content producers comfortable with the ability to maintain a fair level of control over their content as it is distributed, they would be more inclined to provide digital content through new and unique distribution schemes and business models. The availability of content would inspire consumers to retire their analog systems and invest in digital systems. As such, digital content protection across the distribution network stands as the catalyst for a chain reaction that will yield a complete transition from analog to digital.

Importantly, the FCC is familiar with what is needed to inspire such chain reactions through its handling of several recent proceedings with direct implications upon rights management in digital television content. The FCC's actions in these areas are a testament to the agency's cumulative expertise in this field. The following discussions of the Plug-and-Play and Broadcast Flag proceedings at times delves far into the details of the FCC's processes. These details, however, expose the common themes that remain so critical to successful government intervention in DRM standardization. As seen in these recent proceedings, such themes include compromise between opposed industries, provision for future innovation, transparent processes, opportunity for public participation, protection of consumer interests, and effective management of development responsibilities.

1. DFAST (Plug-and-Play)

The first DRM challenge arrived before the FCC via the somewhat circumspect route of proceedings concerning the commercial availability of navigation devices. These proceedings took place after Congress gave the FCC the explicit directive to ensure that navigation devices, also known as set top boxes, were made available through multiple providers rather than only through the consumer's cable company.[174] One of the rules adopted to implement this mandate, often referred to as the security separation requirement, forced MVPDs to parse conditional access and security functions out of the navigation device and place such functions in their own, dedicated device called a POD.[175] As an example of

174. 47 U.S.C. § 549 (2004).

175. In essence, such a requirement prevents the cable company from tying general navigation capabilities to exclusive conditional access capabilities. *See* Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices, *Report & Order*, 13 FCC Rcd. 14,775 (1998).

regulatory "jawboning" the FCC did not delve into the actual technological challenges that its rule presented, but rather gave cable companies a July 1, 2000, deadline to develop the technology necessary to implement the rule. Importantly, the FCC maintained oversight by requiring the submission of semi-annual progress reports concerning the initiative.[176]

The industry assigned CableLabs, a non-profit organization credited with accomplishments such as the DOCSIS standard, to the task of developing the POD and defining the interface between the POD and the navigation device, or "host" device. As part of this undertaking, CableLabs identified, developed, and incorporated certain technology, some patented, which enabled the enforcement of a copy protection scheme. Referred to as the Dynamic Feedback Arrangement Scrambling Technique, or "DFAST," the technology is located in both the POD and the host by virtue of CableLabs' design of the POD-host interface. DFAST dictates whether the consumer is (1) unable to copy digital video content at all (copy-never), (2) able to copy content only once (copy-once), or (3) able to copy content at will (copy-always). The technology addresses the concern of content owners that digital media could be subject to unauthorized copying and retransmission after it was descrambled by the POD and passed along to other components in the host.

As a result of the FCC's transparent process, interests opposed to copy protection in the host were able to consider and formally object to such a technical scheme. Led by consumer electronics retailer Circuit City, the opponents suggested that the incorporation of copy controls into the host violated the FCC's security separation rule. In support of this position, some interests advanced the interesting and novel position that because DFAST did not necessarily allow for fair use, it was not truly a "copy protection" technology as that term should be understood after the Supreme Court's *Betamax* decision.[177]

In issuing an important declaratory ruling, the FCC addressed the concerns and began to sketch the contours of the Commission's treatment of digital copy protection.[178]

176. *Id.* ¶ 81.

177. Implementation of Section 304 of the Telecomms. Act of 1996, Commercial Availability of Navigation Devices, *Further Notice of Proposed Rule Making & Declaratory Ruling*, 15 FCC Rcd. 18,199, ¶ 22 (2000) [hereinafter *Commercial Availability of Navigation Devices Order*].

178. *Id.*

> Unlike the analog context, digital technology affords users the ability to make an unlimited number of virtually perfect copies of digital content. Also unlike the analog context, copyright holders of digital content possess the ability to prevent misuses of copy protected material through methods not previously available. Through the use of contractual licensing requiring consumer electronics manufacturers to install certain copy protection technology in their equipment in exchange for access to desirable digital content, copyright holders will be able to control, through the insertion of coded instructions in the digital stream, whether such equipment will allow consumers to make one copy, unlimited copies, or prohibit copying altogether of digital content received from an MVPD. It is the first generation of this licensing and technology and its relation to the Commission's navigation devices rules that we address here.[179]
>
> . . .
>
> Copy protection for digital video content in its current formulation and in a very broad sense, involves techniques of encoding content as it crosses interfaces and of establishing two-way communications paths and protocols across these interfaces so that video content is only released after the receiving device is queried by the sending device and confirms that it is an eligible content recipient.[180]

In issuing its decision, the FCC relied primarily upon its express statements in its Navigation Devices Order that technology which "impose[s] a limited measure of data encryption control over the types of devices that may record (or receive) video content" for purposes of copy protection would not run afoul of the security separation mandates.[181] The FCC clarified that the "inclusion of some measure of copy protection within a host device" does not violate its security separation requirements.[182] The FCC also offered the somewhat ambiguous statement that the technology described in the DFAST license would likely be such "some measure" which could be safely included in the host.[183]

While giving the industry enough assurance to move forward, the FCC sidestepped, but did not entirely dodge, the more challenging issue of fair use and consumer expectations in digital content. Despite the fact that DFAST allowed for a copy-never alternative, the FCC determined that "no evidence has been presented that the evolving copy protection

179. *Id.* ¶ 15.
180. *Id.* ¶ 27.
181. *Id.* ¶ 23.
182. *Id.* ¶ 25.
183. *Commercial Availability of Navigation Devices Order*, *supra* note 177 at ¶ 32.

licenses and technology discussed herein would preclude reasonable home recording of such content."[184] In a footnote, the FCC acknowledged the MPAA's position that business and marketplace forces would prevent content owners from abusing the copy-never option.[185]

In summary, the FCC's Order could be viewed as a limited endorsement of DFAST coupled with an invitation for comment from industry and the public regarding the difficult issues surrounding the actual implementation of the scheme.

a. Plug-and-Play Order

In October of 2003, the FCC issued an Order resolving many of the outstanding issues regarding commercial availability of navigation devices and enabling the provision of digital cable ready television sets in the marketplace.[186] This action addressed transmission standards, PODs, tuning and guide information, high definition STBs, exemptions from the standards, and future innovation and changes to the standards. As a paramount issue, the FCC addressed encoding rules submitted by cable and consumer electronics interests:

> [T]he Commission has been working to achieve Section 629's mandate of commercial availability of navigation devices since 1996. One of the stumbling blocks has been inability of industry to agree on a comprehensive set of technical copy protection measures and corresponding encoding rules. Adoption of the encoding rules will finally remove that block and ensure the availability of high value content to consumers in a protected digital environment.[187]

These encoding rules allowed the FCC to revisit the merits and policies surrounding the copy protection technologies to be included in host devices. Specifically, the FCC considered draft encoding rules that would (1) ban selectable output control, (2) prohibit down resolution of broadcast content, and importantly, (3) apply copy protection caps.

b. Selectable Output Controls

In its Order, the FCC banned a particularly draconian form of DRM technology referred to as selectable output controls. While the nature of this technology and its implications are somewhat complex, the

184. *Id.* ¶ 28.
185. *Id.* ¶ 28, n.68.
186. Implementation of Section 304 of the Telecomms. Act of 1996, Commercial Availability of Navigation Devices, *Second Report & Order & Second Further Notice of Proposed Rulemaking*, 18 FCC Rcd. 20,885 (2003) [hereinafter *Plug & Play Order*].
187. *Id.* ¶ 55.

FCC recognized that the technology posed an unfair threat to consumers. Specifically, the technology would cause early adopters of high definition televisions to become stranded, unable to access high definition content. For this reason, in an exhibition of its awareness and sensitivity to non-commercial consumer concerns, the FCC prohibited selectable output controls.[188]

c. Down Resolution

The FCC also addressed encoding which would enable down resolution, a type of DRM that involves the process of deliberately degrading the resolution of video content in certain circumstances. Broadly speaking, down resolution artificially mimics the degradation from copy to copy which existed in analog devices such as the VCR. Again, however, down resolution would prevent certain consumers from realizing the high definition capabilities of their digital televisions. The FCC concluded that cable interests should be prevented from enabling down resolution of any content that is available via free over the air broadcasts. With respect to other content, the FCC has sought further comment while initiating an interim procedure allowing down resolution only after public notice is first given to the FCC.[189]

d. Encoding Rules

Finally, the FCC addressed a DRM scheme involving copy protection caps. The specific provisions regarding copy protection serve to first break content down into three "defined business models," and then assign caps representing the most restrictive level of copy protection allowable for each model. The three business models are (1) unencrypted broadcast content, (2) pay television, non-premium subscription service, and free conditional access delivery transmissions, and (3) video on demand, pay per view, and subscription on demand. Their respective copy protection caps are (1) no copy restrictions, or copy-always, (2) one generation of copies, or copy-once and (3) no copies, but pausing capabilities for up to 90 minutes, or copy-never.

188. *Id.* ¶¶ 60-61.

189. The encoding rules at issue here implicate the "analog hole" problem. Regardless of what types of DRM are encoded into the data and built into hardware, a consumer might still be able to display high quality data on an analog output and then create a new digital copy from that analog display. The new copy would be free of the DRM. In considering the issue, the FCC subtly endorsed the continuing industry efforts to address this variant of the analog hole problem. "The difficulties of resolving this issue are reflected in private sector efforts such as the Analog Reconversion Discussion Group to the Copy Protection Technical Working Group." *Id.* ¶ 64. Recognition of an ongoing and apparently productive industry effort stood as part of the FCC's rationale in postponing a complete decision on down resolution.

Recognizing that the proposal reflected market realities as well as the spirit of the DMCA, and noting that the proposal received little substantive objection during the notice and comment period, the FCC accepted this business model approach to encoding rules wholeheartedly.

Notably the FCC imposed this encoding scheme upon DBS and other non-cable (MVPD) services, ensuring that all content providers be placed on a level playing field as to negotiations with content owners over the copy restrictions placed on content. This action recognizes that if one type of distribution network was given the ability to provide content with more liberal copy restrictions in each business category, that network would stand at a distinct competitive advantage.

The proposal as adopted provides for a significant degree of flexibility. For example, the understanding incorporates a provision for an MVPD to petition the FCC for modification to these encoding rule caps when launching a new service within a defined business model. While the petition is pending, the MVPD will be permitted to actually launch the service on a trial basis. Additionally, new program offerings that might fall under a currently undefined business model can be launched as long as a description of the offering and its encoding scheme are published to the public. The MOU contemplates that the FCC accept complaints and objections to such encoding schemes within a two year period.

The downside of such flexibility is that the proposal creates opportunities for regulatory gamesmanship. The classification process of a new programming service, whether within a new or previously defined business model, might be subject to abuse. Such a classification scheme, however, is needed to accommodate future developments and innovations. Additionally, the process remains transparent and public, with FCC oversight as its cornerstone.

The FCC also commented upon the DFAST license, revisiting the contentious issues such as defining compliant technologies how such technologies would acquire FCC approval, and the accommodation of future technical innovations.

Of particular note, the FCC rejected the provision in the DFAST license that would allow CableLabs to make an initial determination as to the approval of new technologies, with the FCC serving an appellate style role in such a decision. The FCC noted that centralizing such a decision in CableLabs held the potential to hinder "innovation and interoperability."[190] Rather, the FCC solicited further public comment

190. *Id.* ¶ 78.

on the issue, but adopted the CableLabs approval process as an interim procedure.[191]

2. Broadcast Flag

On the heels of its Plug-and-Play decision, the FCC gave the industry further incentive to move forward in the digital transition by issuing its Broadcast Flag decision.[192] As the FCC's Plug-and-Play decision did for digital content over cable, the Broadcast Flag decision endowed the industry with a comfortable framework regarding the protection of digital content broadcast across public spectrum. Similar to the Plug-and-Play decision, the Broadcast Flag proceeding employed a transparent public process to yield a reasoned and fair result.

The Broadcast Flag originated under the auspices of the Copy Protection Technical Working Group (CPTWG). The CPTWG, a voluntary industry group formed in 1996, focused on discussing and developing technologies for content owners to protect encrypted content on physical media.[193]

Recognizing the potential copy protection challenges illuminated by the transition to digital broadcasting, the Consumer Electronics Association, the Information Technology Industry Council, and the MPAA joined together to initiate a forum to address the issue under the CPTWG. In January of 2002, the CPTWG approved the charter of the Broadcast Protection Discussion Group (BPDG) as a subgroup of the CPTWG.

By June of 2002, the BPDG released a final report to the CPTWG containing a detailed plan for the protection of digital broadcast content. In its final report, the BPDG admitted that it had not achieved a complete consensus among its members, and incorporated the points of contention into its report. Additionally, the BPDG emphasized that:

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191. In its Report and Order and Further Notice of Proposed Rule-Making, where the FCC formally solicited such comments, the FCC sought comment not only as to how the approval process should proceed, but also as to what types of content protection technologies would fall within such a process "including, but not limited to digital rights management, wireless and encryption-based technologies." Digital Broad. Copy Protection, *Report & Order & Further Notice of Proposed Rulemaking*, 18 FCC Rcd. 23,550, ¶ 61 (Nov. 4, 2003) [hereinafter *Broadcast Flag Order*]; *Plug & Play Order*, *supra* note 186, at ¶ 83. The FCC sought comment on whether, and what objective criteria should be used to evaluate such technologies, explicitly referencing a proposal from Microsoft/HP regarding the functional requirements used to evaluate DRM technologies.

192. *Broadcast Flag Order*, *supra* note 191.

193. BPDG FINAL REPORT, *supra* note 105. The FCC has recognized the CPTWG and its work in several of its recent proceedings. Annual Assessment of the Status of Competition in the Mkts. for Delivery of Video Programming, *Fifth Annual Report*, 13 FCC Rcd. 24,284 (1998); Carriage of the Transmission of Digital Television Broad. Stations, *Notice of Proposed Rule Making*, 13 FCC Rcd. 15,092 (1998).

> [T]he BPDG is a discussion group. It is not a standards body or public policy decision-making forum. Individuals, companies, and groups of companies were free to meet separately to form and negotiate proposals and present those to the full BPDG. This may have given the unintended appearance that the BPDG was not fully transparent and some parties may have felt 'excluded' from particular discussions. Nevertheless, every proposal contained in the Requirements document and described in this report was subject to considered discussion and scrutiny by all BPDG participants in meetings, on teleconferences, and/or on the email reflector scrutiny.[194]

The substance of the technical copy protections in the BPDG final report were presented to the ATSC, and in March of 2003, the ATSC adopted a version of the solution proposed in the BPDG final report as its ATSC A/65B standard. Given that ATSC's membership includes representatives of the broadcast, broadcast equipment, motion picture, consumer electronics, computer, cable, satellite, and semiconductor businesses, the adoption of ATSC A/65B (the broadcast flag) by this voluntary international standards organization arguably represents a fairly wide industry consensus.

Generally speaking, the Broadcast Flag standard provides for the optional encoding of a "flag" prior to the signal's transmission over the air that will alert the receiving hardware as to exactly how that hardware may treat the content. In essence, the standard provides that content marked with the flag may be copied, but not retransmitted, by the recipient. "In order for a flag-based protection system to work, therefore, all demodulators used in DTV broadcast reception equipment would need to have the ability to recognize and give effect to the ATSC flag and a list of approved content protection and recording technologies would need to be developed."[195] Just as in the Plug-and-Play context, therefore, the Broadcast Flag proceedings address both a content encoding component and a hardware component.

At the surface, the FCC's broadcast flag proceedings only required it to address a relatively easy question: should the agency adopt the ATSC A65/B standard which was developed via a broad-based industry discussion group and approved by an even more expansive international voluntary standards organization? But like any copy protection solution that envisions hardware participation, the broadcast flag scheme needed the endorsement, oversight, and enforcement that can only be achieved with government intervention. As such, the natural answer to the easy question ensnared the FCC in a much more difficult inquiry: if the

194. BPDG FINAL REPORT, *supra* note 105, at 2.10.1.
195. *Broadcast Flag Order*, *supra* note 191, at ¶ 13.

agency adopted ATSC A65/B, how should the appropriate hardware be put in place? Unsurprisingly, the lack of consensus among the members of the BPDG centered upon the details of this hardware question.[196]

After considering several alternative proposals, such as encryption at the source and watermarking, the FCC adopted the Broadcast Flag standard. As part of its discussion, the FCC acknowledged the broad industry consensus behind the broadcast flag, but did not base its adoption on such consensus alone. Rather, the FCC evaluated the criticisms regarding the broadcast flag, including the lack of consensus on certain key points, the limited variety of interests truly involved in its development, the ease of circumvention, and specific analog hole circumvention concerns.[197] The FCC also briefly considered the fair use arguments raised by interests such as the American Library Association. Because the broadcast flag standard does not prevent the recipient from copying content, but only prevents the recipient from indiscriminate redistribution of content, fair use concerns were somewhat muted.

The FCC also compared the broadcast flag with other proposed alternatives (encryption or watermarking). While recognizing that these alternatives could be a more robust technical solution, the FCC stated that such technologies were not yet ripe. Moreover, the FCC noted that deployment of these technologies would render certain legacy DTV equipment obsolete, stranding consumers, whereas the broadcast flag would not. After conducting its independent evaluation of the criticisms and alternatives, the FCC answered the easy question in the affirmative, adopting the ATSC A/65B standard.

Turning to the tougher question, how to handle the details of hardware implementation of the broadcast flag, the FCC adopted a set of rules covering all products containing DTV demodulators, but sought further comment as to the process for determining whether any specific hardware product in fact met the FCC's requirements. The rules require that demodulator products direct flagged and unscreened content to specific types of outputs such as analog outputs, and digital outputs and digital recording technologies with approved content protection technologies.[198]

The FCC rejected the "Table A Proposal" which was proffered as a procedure to place the FCC's stamp of approval on specific hardware capable of implementing the broadcast flag rules. The Table A Proposal,

196. This hardware question continues to be the most challenging aspect of the FCC's broadcast flag proceedings. *See, e.g.*, Jonathan Krim, *TiVo's Plans Lead to Fight on Copyrights; Technology Would Allow Transfer of Programs*, WASH. POST, July 22, 2004, at E1.

197. EFF CONSENSUS, *supra* note 171.

198. *Broadcast Flag Order*, *supra* note 191, at ¶ 42.

characterized as a market-based solution, would define such approved technologies by listing the technologies on an FCC approved table. The proposed table would include technologies which were either (1) used or approved by 3 major studios or TV broadcast groups, (2) approved by 2 major studios and 10 major device manufacturers, (3) at least as effective as a prior approved technology, or (4) expressly referenced in the licensing terms of another approved technology. While comments of critics of this system were helpful, the FCC had no trouble recognizing the table as an effort by major studios and broadcast groups to hijack FCC authority. The proposal was rejected outright and a FNPRM was issued to address how technologies should be approved. As an exclamation point, the interim procedure for adopting new technologies, unlike the DFAST license discussed above, consisted of independent FCC review rather than interim acceptance of the Table A proposal.[199]

3. Summary of FCC Expertise

The Plug-and-Play and Broadcast Flag proceedings illustrate the merits of the FCC's process and judgment when intervening to assure the appropriate treatment of hardware-based rights management technologies. Specifically, the FCC has fine-tuned its ability to evaluate overarching policy implications, to recognize when the assignment of a technical challenge to industry is warranted, to serve as a check and balance upon industry actions, to carefully and thoroughly evaluate complex industry proposals, to ensure transparency in the development and deployment of new technology, and to endorse standards which account for future technical innovations. Moreover, the professionals at the FCC, after having reviewed and considered thousands of comments from the entire spectrum of interests in connection with these two proceedings, have developed an invaluable institutional knowledge of DRM.

4. A Note on Copyright, Fair Use, and the FCC

Throughout these recent proceedings, the FCC emphasized that it is not engaging in substantive evaluation of content or considering the scope of copyright protections.[200] In reality, the FCC is in fact doing just

199. *Id.* ¶ 53.

200. *Plug & Play Order*, *supra* note 186, at ¶ 54; In response to the *Plug & Play* decision, FCC Commissioner Michael Copps stated:

> I vote for today's Order with the understanding that it will not affect any of the rights or remedies available under our nation's copyright laws and cognizant that it is Congress that ultimately sets national policy in this critical and sensitive area. As we implement this decision, I for one, and I trust my colleagues, will remain sensitive to this and not venture into content matters beyond our authority.

that. While the FCC does not directly evaluate content, the business model approaches set forth in the Plug-and-Play proceedings communicate a clear framework. Copy-never, copy-once, and copy-always, while sensible and based on a thoughtful evaluation of the realities and patterns in today's marketplace, certainly define the practical scope of copyright protection. As the most apparent example, there will be no space shifting and limited time shifting of content that falls into a copy-never "business model." Going further, there will be no copying for education, commentary, or criticism.

While the FCC does not directly engage in the evaluation of content to determine what types of content belong in what types of "business models," the FCC knows that the market is going to make such evaluations and choices. The FCC also recognizes that its endorsement of technology with heavy restrictions at one end of the spectrum, against the background of the DMCA, which criminalizes circumvention of such technology for any reason whatsoever, unquestionably bears upon the scope of copyright protection. As such, critics will chastise the FCC for, *inter alia*, venturing into copyright territory and endorsing a system of standards that threaten fair use.

But remember that fair use, at its core, is nothing more than a subjective judgment call. Some have recognized that the concept of fair use changes with technology.[201] As such, there is simply no way to placate all interests when it comes to fair use; more pragmatically, there is no way to incorporate the perfect execution of fair use into any technology. In other words, perfectly building fair use into technology would require a "federal judge on a chip."[202]

While the FCC's aversion to taking credit for the copyright implications of its rule-makings is understandable, the FCC's model is, in reality, good for now. Hopefully, fair use will not be abdicated, as market demands will force content into the more copy-friendly business models. Most importantly, there is recourse if such market demands are impaired through some currently unforeseen means, or if the content industry takes a draconian approach to digital distribution. Under the FCC's model, the government can act if all content somehow migrates into the copy-never business environment. The FCC can reconsider its business model classifications. Courts and perhaps even Congress can intervene to strike an appropriate balance. Such future solutions remain

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Id. at 20,967 (statement of Comm'r Copps).

201. GARTNERG2 & THE BERKMAN CENTER FOR INTERNET & SOCIETY AT HARVARD LAW SCHOOL, COPYRIGHT AND DIGITAL MEDIA IN A POST-NAPSTER WORLD (The Berkman Ctr. For Internet & Societ at Harvard Law School, Research Publ'n No. 2003-05, 2003), *at* http://cyber.law.harvard.edu/home/uploads/254/2003-05.pdf.

202. *Legal Fallout*, *supra* note 159.

possible only because the technologies forming the FCC's newly-mandated infrastructure allow for the entire spectrum of copy protections, from copy-always all the way to copy-never. The importance of the fact that the FCC mandated an infrastructure capable of executing across this entire spectrum cannot be overstated. These technologies will be launched throughout the entire next generation of consumer electronics. To a large extent, they will be entrenched. Had the FCC permitted more restrictive floors and ceilings, the ability to correct fair use problems in the future could have been jeopardized. Instead, the FCC's judgment confers an exciting and promising experiment upon the market, without placing fair use in harm's way.

E. The FCC as a Safeguard Against a DRM Trojan Horse

In addition to asserting a heightened sensitivity to fair use concerns and acting as a safeguard against technology which could permanently alter the fair use calculus in an unfair or lopsided manner, the FCC stands in an ideal position to guard against similar abuses that might otherwise be perpetrated under the guise of DRM. Many in the electronics and computing industries are beginning to recognize DRM as the driver for, or at least a necessary element of, the next generation of consumer electronics and computers. As such, the danger that industry interests will seek to tie additional applications or technologies together with DRM becomes apparent.

For example, technologies which would offend consumers' privacy represent some of the most troubling of these potential extraneous items. DRM, by its very nature, raises privacy red flags in that it must be designed with advanced technical tracking and policing capabilities in order to work.[203] The line between monitoring and policing a consumer's activity to protect and encourage a creative, privately negotiated contract, and monitoring and policing a consumer's activity in order to exploit the consumer in some manner is not altogether clear.

As another example, some fear that DRM technologies will be used to hide the technology and details of a device's functionality, turning the device into a "black box."[204] This black box phenomenon prevents important analysis, understanding, and evaluation of technology. Moreover, as noted by Professor Felten, the black box phenomenon will have the tendency to spread throughout an entire device, even where a

203. Julie E. Cohen, *A Right to Read Anonymously: A Closer Look at 'Copyright Management' in Cyberspace*, 28 CONN. L. REV. 981 (1996).

204. *Edited & Excerpted Transcript of the Symposium on the Law & Technology of Digital Rights Management*, 18 BERKELEY TECH. L.J. 697, 724 (2003) (comments of Edward Felten).

DRM system was originally designed to apply only to a specific feature of the device.

> For example, if you're talking about a computer system, you might say, "Well, only the part that deals with the media has to be a black box." The boundaries of that black box tend to grow because there's concern that the content will be grabbed off of the video card or the audio card, that it would be grabbed off of the disk, that it will be grabbed as it goes across the system's IO bus, and so on.[205]

Indeed, the Plug-and-Play case study provides a practical example of such a phenomenon, as the reach of DRM technology extended from the POD module to the host device by virtue of the design of the POD-host interface.

The FCC's involvement in the standard development process, and its involvement in the subsequent enforcement of the standard, will serve as a much needed safeguard against potential extraneous abuses or unintended consequences associated with a DRM launch. FCC intervention will address this problem on several fronts. First, by providing an inclusive forum with the participation of opposed interests, all skeptical of each other's agendas, the FCC will be able to create a watchdog environment between the respective interests. Second, the FCC's direct participation in the development of a standard will implicate its responsibility to serve the public interest, and will involve the FCC's direct evaluation and consideration of potential overreaching associated with DRM. Finally, the FCC's ongoing enforcement and oversight of the resulting DRM standard will place the FCC in a position to retroactively recognize and address extraneous technology and unintended consequences.

While FCC participation in the process will greatly minimize the potential Trojan horse dangers associated with DRM, it should be noted that the problems of extraneous technology and unintended consequences are extremely complex. Perhaps no amount of oversight or safeguarding can completely eliminate these threats. While some forms of these dangers will be easily identified and eradicated other forms will be much more subtle and sophisticated.

Concerns such as privacy, the black box phenomenon, and other presently unforeseen situations will present difficult scenarios. As noted above, privacy concerns and black box implications are not entirely extraneous to DRM technology, but rather are inherent to DRM. Moreover, the potential problems introduced by these issues do not lend themselves to clear cut, objective solutions. FCC intervention occupies a

205. *Id.*

necessary but precarious relationship to these difficult issues. Without FCC intervention, DRM's inherent dangers might be unleashed upon the market without careful consideration, without consequences for the perpetrators, and without consumer recourse.

Preventing such dangers through FCC intervention, however, will require the FCC to strike a careful balance between its accountability to the public and its power to regulate, or perhaps over-regulate, technology. In the case of the DRM standard, the FCC will remain primarily accountable to the public for any damage that the standard inflicts upon, for instance, consumer privacy. Such accountability might inspire a tendency for the FCC to resort to a complicated, burdensome regulatory regime in an effort to address the countless permutations that might arise with the DRM regime. Due to the posture of the DRM standardization problem, which implicates the designs and technologies incorporated in consumer electronics, the FCC might also tend to consider extending its regulations beyond DRM and into other aspects of consumer electronics.

The FCC can and will resist any potential tendencies to over-regulate. Again, because its processes involve the participation of a balanced group of interests, the FCC will be constantly reminded of the dangers of over-regulation. History dictates that industry interests will undoubtedly present artful positions before the FCC, advocating against extending regulations beyond the DRM context.[206] In short, participants in the FCC process will provide checks and balances not only upon each other, but also upon the FCC, itself.

While there certainly are no easy answers to questions concerning technological dangers inherent to DRM, and while there might be no way to anticipate or address some of the unforeseen or unintended consequences of a DRM regime, the involvement and participation of a publicly accountable agency throughout the industry's struggle with such issues provides added safeguards and benefits that could not be realized without FCC intervention.

F. Traditional Anti-Intervention Rationales

The cost-benefit analysis of government intervention into the standardization process involves careful, nuanced judgment calls unique to each standardization effort.[207] Despite the strong argument that FCC intervention is the most appropriate, if not the only, manner in which to handle certain specific facets unique to DRM standardization, and

206. *Id.* at 711 (comments of Alex Alben).

207. *See* Kathleen M. H. Wallman, *The Role of Government in Telecommunications Standard-Setting*, 8 COMMLAW CONSPECTUS 235, 250 (2000) [hereinafter *Role of Government*].

despite the FCC's demonstrated experience and judgment in the area, the prospect of FCC intervention faces classic arguments against government mandates. The majority of these arguments derive from the attractive general proposition that private ordering is preferable and more efficient than government intervention.[208] The arguments do not, however, apply to DRM standardization.

1. Complex Technology Should not be Regulated in its Nascent Stages

Critics of FCC intervention might suggest that government should not intervene in markets characterized by nascent technology and rapid, complex technological change. A particularly artful variant of this argument was presented by TCI in connection with the FCC's DTV proceedings.[209] The argument is twofold, speaking to aspects of both substance and timing. On the substantive side, the argument emphasizes that complex technical standards questions are best addressed and conquered by the private sector.[210] The private sector is in the best position to provide appropriate technical solutions seeing as even specialized agencies of government do not compare, in terms of knowledge and ability, to the private sector.

This argument, while insightful, does not account for the FCC's recently demonstrated ability in the form of its Plug-and-Play and Broadcast Flag proceedings. Nor does it account for the FCC's preference to assign complex technical tasks to industry groups while maintaining oversight of the progress of those industry groups. Moreover, the FCC's internal technical expertise, while likely capable of solving complex technical problems should such a course be chosen, is certainly capable of working with industry, either directly or in an oversight capacity, to solve complex technical problems.

The timing argument is a bit more troubling. Anti-intervention proponents might argue that a specific government mandated technology in a market characterized by nascent technology and fast-paced innovation will likely result in locking the industry in to an inferior standard. Indeed, the late arrival of COFDM in the DTV market is frequently cited as just such a scenario. While the risk of mandating an inferior technology is certainly present in DRM, there is a greater risk in expecting the market to develop and deploy standards where there is an

208. *Private Contract*, *supra* note 165.

209. Comments of Tele-Communications, Inc., Advanced Television Sys. & Their Impact Upon the Existing Broad. Serv., (F.C.C. filed July 11, 1996) (MM Docket No. 87-268), *available at* http://ftp.fcc.gov/Bureaus/Mass_Media/Orders/1998/fcc98315.pdf.

210. Philip J. Weiser, *Internet Governance, Standard Setting, and Self-Regulation*, 28 N. KY. L. REV. 822 (2001).

absence of market incentives for standardization and an absence of means to enforce a standard. Additionally, the FCC has learned from the DTV transition. There was simply no way to predict the course of technological innovation in DTV, just as there is no way to predict such a course in DRM. Nevertheless, the FCC, in both the DTV and its recent DRM proceedings, has made a clear effort to accommodate future innovations.

The FCC's resulting DTV mandate, for example, envisioned an innovative transition from interlace to progressive scan screen display. Likewise, in the Plug-and-Play and Broadcast Flag contexts, the mandates expressly include mechanisms to incorporate new technological developments within the standard. The FCC seems to envision mandated standards as platforms, upon which and within the parameters of which innovation is welcome and encouraged. In analogous market-based efforts, such a platform approach is beneficial because "[o]nce a platform is accepted and proliferated, competitors are encouraged to compete on that platform by innovating on top of the platform, such as by adding new functionality, increased performance implementations, and new applications or extensions for the platform."[211]

2. Intervention is Inappropriate in the Absence of Network Effects

Anti-intervention proponents will also argue that a primary traditional rationale for government intervention, namely protecting consumers from becoming stranded in a market characterized by network effects, is not present in the DRM context. To a large extent, this is true. Network effects, tipping, and potential stranding are not present in the DRM context to the same extent that they were present in the VCR context for instance. But government intervention into standard setting activities should not only be limited to markets exhibiting network effects. While preventing consumer stranding is a good justification for government intervention, it is not the only justification.

In the context of the digital transition, for instance, FCC intervention into standardization has centered upon removing certain "logjams," regardless of the presence of strong network effects or the potential for consumer stranding. The transition from expensive, entrenched, and stagnant infrastructures, such as the analog broadcast infrastructure, simply does not occur unless the commercial interests involved have a reasonable level of comfort in new standards. Where standardization serves the public but the market is unable to agree on its own standard, the FCC has rightly recognized its responsibility to

211. *The IPR Paradox*, *supra* note 57, at 268.

intervene.[212] Even harsh critics of FCC involvement in standardization concede that some oversight is necessary given certain market conditions.[213] Moreover, even where the market is able to agree upon a standard, FCC intervention might still be needed to serve as a check upon the standard, to enable and oversee the implementation of the standard, and to ensure enforcement and compliance. These justifications stand independent of network effects.

3. Government is Slow and Inefficient vis-à-vis the Private Sector

A valid criticism often levied at government standardization efforts concerns the length of time that the process consumes. Government, typically, is criticized as less efficient than the market, both with respect to government's speed, and with respect to the level of innovation reflected in the resulting standard.[214] Government is often an easy target in this regard, being frequently characterized as inefficient, bureaucratic, inconsistent, rigid, and arthritic.[215] DTV stands as an example of an inefficient and delayed process. In the DTV case study, FCC involvement inspired a certain degree of costly lobbying, pandering, and gamesmanship that distracted from the task at hand. Market forces do not lend themselves to these tactics, and as such, are generally quicker than government processes.[216] Moreover, standardization in the absence of government intervention is often more innovative due to the competition surrounding aspects of the standard.[217]

While these criticisms carry weight, it must be noted that government intervenes into the most complex of standardization efforts. Often, government intervenes only where difficult policy implications are transposed onto the already difficult technical standardization challenges. The government must take its time to carefully consider such issues, and to allow the public and the affected interests to be heard on such policy issues. As such, government standard setting, while slower, can be "fairer."[218]

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212. Advanced Television Sys. & Their Impact Upon Existing Television Broad. Serv., *Fifth Further Notice of Proposed Rulemaking*, 11 FCC Rcd. 6235, ¶ 31 (1996).

213. *Oxymorons*, *supra* note 117.

214. *The IPR Paradox*, *supra* note 57, at 217-18.

215. Mark A. Lemley, *Standardizing Government Standard-Setting Policy for Electronic Commerce*, 14 BERKELEY TECH. L.J. 745 (1999); *Private Contract*, *supra* note 165.

216. *The IPR Paradox*, *supra* note 57; Mark A. Lemley, & David McGowan, *Legal Implications of Network Economic Effects*, 86 CAL. L. REV. 479, 516-18 (1998) [hereinafter *Legal Implications*].

217. Philip J. Weiser, *The Internet, Innovation, and Intellectual Property Policy*, 103 COLUM. L. REV. 534, 585 (2003) (discussing the competitive platforms model).

218. *Role of Government*, *supra* note 207.

The market, while generally able to develop an innovative standard quickly, rarely tackles the responsibility of thoroughly considering policy and public implications of its standards in parallel with its standards development. Additionally, the market does not always move at lightning speed, particularly when operating through broad consensus-based standards efforts.[219] Finally, while competition in the market does yield innovative technical solutions on its own, the FCC is capable of harnessing such market forces, constructing competitive environments, and challenging the industry to compete in developing innovative solutions.

IV. THE MECHANICS OF FCC INTERVENTION

Despite the strong policy and economic justifications for FCC intervention, the practical mechanics of such action raise additional challenges, the most prominent being FCC authority. Many of the FCC's past regulatory actions, some of which encapsulate problems similar to the DRM standardization problem, have weathered judicial challenges to FCC oversight. As such, FCC authority operates within a clear framework, and the challenge of regulating DRM occurs against this framework. An exploration of FCC intervention in DRM standardization further emphasizes why the FCC should intervene in DRM standardization, and also provides the context and legal framework within which such intervention must occur.

A. FCC Authority

While the FCC stands as a competent, appropriate, and much needed federal agency in the DRM standardization process, unfortunately, the FCC does not currently posses the authority to intervene in the development, deployment, and enforcement of a comprehensive DRM standard. This lack of authority seems surprising given the FCC's exercises of authority in the recent DTV DRM standardizations. Despite these recent actions (which incidentally might not stand on the surest ground from an authority perspective) a review of the FCC, the various grounds for its authority generally, and its exercise of authority in specific circumstances, such as the Plug-and-Play and Broadcast Flag proceedings, exposes the FCC's lack of regulatory authority to engage in a comprehensive DRM standardization effort. As such, the FCC must await a specific mandate from Congress before it may begin to resolving the industry's DRM dilemma. Two recent bills addressing FCC authority are discussed below, foreshadowing the types

219. *Id.*; *Legal Implications*, *supra* note 216.

of legislation that could enable, or alternatively prohibit, the FCC's intervention into the area of DRM standardization.

1. The FCC and its Authority Generally

Congress created the FCC in 1934 through the passage of the Communications Act of 1934.[220] Being a creature of statute, both the FCC's existence and its jurisdiction are defined and limited by Congressional grant. As part of its grant of authority, the FCC maintains rule-making authority.[221] Generally speaking, the FCC will frequently promulgate rules in the Code of Federal Regulations implementing the specific responsibilities delegated to the FCC by Congress. The FCC's rule-making is governed by the Administrative Procedure Act, which requires, *inter alia*, specific notice and comment procedures when conducting rule-making.[222] Any rule-making conducted by the FCC is subject to judicial review.[223] Such review has produced numerous judicial opinions addressing FCC action and highlighting the two bases for FCC authority: specific and ancillary jurisdiction.

2. Specific FCC Authority

Where Congress gives the FCC an express mandate to accomplish a particular goal, the FCC is unquestionably empowered to promulgate rules for implementing that express Congressional goal. With particular relevance to the DRM challenge, numerous examples of the FCC's exercise of such specific authority touch on the controversial and intrusive regulation of consumer hardware.[224]

The FCC's actions with respect to its DTV Tuner Order illuminate the nature of the FCC's specific authority in the context of consumer

220. THOMAS G. KRATTENMAKER, TELECOMMUNICATIONS LAW AND POLICY 20 (2nd ed., 1998).

221. For example, with respect to the Telecommunications Act of 1996, the FCC's rule-making authority is set forth in 47 U.S.C. § 201(b) which provides that the Commission "may prescribe such rules and regulations as may be necessary in the public interest to carry out the provisions of this chapter." 47 U.S.C. § 201(b) (2004).

222. 5 U.S.C. § 552(a).

223. 47 U.S.C. § 402(a)-(b).

224. For instance, the FCC's security separation requirements associated with Section 629 of the Telecommunications Act of 1996 implicate the FCC's specific authority as applied to regulating consumer hardware. Gen. Instrument Corp. v. FCC, 213 F.3d 724 (D.C. Cir. 2000); Implementation of Section § 304 of the Telecomms. Act of 1996, Commercial Availability of Navigation Devices, *Notice of Proposed Rulemaking*, 12 FCC Rcd. 5639 (1997); Similarly, the FCC's recent plug-and-play proceedings implicate the FCC's specific authority. See, *Plug & Play Order*, *supra* note 186; Implementation of § 304 of the Telecomms. Act of 1996, *Further Notice of Proposed Rule making & Declaratory Ruling*, 15 FCC Rcd. 18,199, at 18,211 (2000).

hardware regulation. Invoking its authority under the All Channel Receiver Act (ACRA),[225] the FCC ordered that certain types of televisions must be equipped with hardware capable of receiving DTV signals.[226] Commentators have suggested that the FCC was acting beyond its authority,[227] and the Consumer Electronics Association (CEA) formally challenged this Order, arguing that the FCC lacks authority for such action under ACRA, or, alternatively, that the Order is an arbitrary and capricious abuse of any authority granted.[228]

The ACRA granted the FCC authority to ensure that new manufactured televisions were capable of receiving channels broadcast across the UHF spectrum. The FCC had just approved the use of 70 new UHF channels for television broadcasting in response to the industry's saturation of the 12 available VHF channels.[229] Broadcasters remained reluctant to venture into this new spectrum as most televisions remained incapable of receiving anything other that the 12 original VHF channels. Consumers remained reluctant to invest in new televisions capable of receiving UHF channels due to the lack of content being broadcast on those channels. Likewise, television manufacturers remained reluctant to manufacture more expensive televisions capable of receiving the new UHF channels due to lack of consumer demand. ACRA was enacted to address this "logjam" by giving the FCC authority to ensure that televisions are capable of receiving all frequencies allocated to the FCC for television broadcasting.[230]

The FCC again faced a "logjam" in the more contemporary context of overseeing Congress's mandated transition to digital television:[231]

> The FCC found that a logjam was blocking the development of DTV: broadcasters are unwilling to provide more DTV programming because most viewers do not own DTV equipment, and the lack of attractive DTV programming makes consumers reluctant to invest more in DTV equipment, which in turn, reinforces the broadcasters' decision not to invest more in DTV programming.[232]

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225. 47 U.S.C. § 303.

226. Review of the Comm'n's Rules and Policies Affecting the Conversion To Digital Television, *Second Report & Order & Second Memorandum Opinion & Order*, 17 FCC Rcd. 15,978 (2002) [hereinafter, *Digital Tuner Order*].

227. Eugene Rome, *Regulatory Overreaching: Why the FCC is Exceeding its Authority in Implementing a Phase-in Plan for DTV Tuners*, 23 LOY. L.& ENT. L. REV. 533, 553 (2003) [hereinafter *Regulatory Overreaching*].

228. Consumer Elecs. Ass'n v. FCC, 347 F.3d 291 (D.C. Cir. 2003).

229. *Regulatory Overreaching*, *supra* note 227.

230. 47 U.S.C. § 303.

231. *Id.* § 309(j)(14)(a).

232. *Consumer Electronics Ass'n*, 347 F.3d at 300.

Dusting off the authority granted to it under ACRA, the FCC promulgated rules requiring new televisions to include digital tuners.[233]

The Court evaluated CEA's challenge to FCC authority under ACRA using the standards set forth in the *Chevron* case.[234] Specifically, the Court addressed CEA's position that Congress was not cognizant of this particular issue when drafting the ACRA. After reviewing the statutory text of ACRA, the legislative history behind ACRA, the nature of the specific problem, and the regulation at issue, the Court concluded that:

> [T]he legislative history invoked by CEA does not demonstrate that Congress meant to limit ACRA's application to the analog context. That history does show that Congress was most immediately concerned with empowering the FCC to address the problem of UHF reception. . . . But, as the Commission found in the *Digital Tuner Order*, nothing in the legislative history compels (or even suggests) the conclusion that Congress intended to limit the statute to that specific application. . . . The use of broad language in ACRA - speaking only of "receiving *all* frequencies allocated by the Commission to television broadcasting," . . . to solve the relatively specific problem of UHF reception, militates strongly in favor of giving ACRA broad application.[235]

In addition to finding that step one of the *Chevron* test did not preclude the FCC from promulgating its Digital Tuner Order, the Court also found that the FCC's interpretation of ACRA was reasonable under step two of the *Chevron* test and that the FCC's actions were not arbitrary, capricious, nor an abuse of discretion under the APA.[236]

3. FCC Ancillary Authority

In contrast with its direct statutory authority to engage in rule-making, the FCC also sometimes invokes its somewhat more ambiguous ancillary authority. The FCC's original foray into the regulation of cable

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233. *Digital Tuner Order*, *supra* note 226.

234. Chevron U.S.A., Inc. v. Natural Res. Def. Council Inc., 467 U.S. 837, 844 (1984). Under the *Chevron* standards, a court reviewing an agency's action must evaluate (1) whether Congress, through the relevant statute, has specifically spoken on the precise question at issue, and (2) where the statute is silent or ambiguous, whether the agency's construction is a permissible construction of the statute. In the event that Congress has not explicitly spoken on the precise question at issue, Congress has left a "gap" for the agency responsible for administering the statute to fill. In these circumstances, an agency's interpretation of the statute, and the regulations promulgated in order to fill the gap, are given deference by the courts during judicial review. A court will only disturb the agency's determinations where the agency's regulations are "arbitrary, capricious, or manifestly contrary to the statute." *Id.*

235. *Consumer Elecs. Ass'n*, 347 F.3d at 299 (citations omitted).

236. *Id.* at 292.

systems stands as the most notable example of the FCC exercising its ancillary authority. This situation resulted in a Supreme Court opinion outlining the boundaries of the FCC's ancillary authority.

The case stemmed from a 1965 FCC Order forbidding cable providers from importing distant signals into any of the 100 largest television markets.[237] Not surprisingly, cable interests challenged this particular exercise of FCC authority.

The Supreme Court, in evaluating this challenge, first noted that the FCC's regulatory authority in the broadcasting and communications realm derived from the Communications Act of 1934, which was applicable to "all interstate and foreign communication by wire or radio. . ."[238] and required the FCC to "make available . . . to all the people of the United States, a rapid, efficient, Nation-wide, and world-wide wire and radio communication service . . . ."[239] The Court acknowledged the FCC's authority as "broad" and encompassing "regulatory power over all forms of electrical communication, whether by telephone, telegraph, cable, or radio."[240]

With respect to the ultimate question of whether the FCC appropriately exercised its authority, the Court reasoned that:

> We have elsewhere held that we may not, 'in the absence of compelling evidence that such was Congress' intention . . . prohibit administrative action imperative for the achievement of an agency's ultimate purposes' . . . There is no such evidence here, and we therefore hold that the Commission's authority over 'all interstate . . . communication by wire or radio' permits the regulation of CATV systems. . . . [T]he authority which we recognize today under § 152(a) is restricted to that reasonably ancillary to the effective performance of the Commission's various responsibilities for the regulation of television broadcasting.[241]

For obvious reasons, the FCC's ancillary authority stands on less firm ground than its express authority. Nevertheless, the FCC periodically invokes the principle of ancillary authority to support a rule-making or other action. Most recently, the FCC cited its ancillary authority, as well as its express authority, when conducting proceedings and issuing its Plug-and-Play Order. More controversially, the FCC also invoked its bare ancillary authority in its Broadcast Flag proceedings.

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237. United States v. Southwestern Cable Co., 392 U.S. 157, 166 (1968).
238. 47 U.S.C. § 152(a).
239. *Id.* § 151; *Southwestern Cable Co.*, 392 U.S. at 167.
240. *Southwestern Cable Co.*, 392 U.S. at 168.
241. *Id.* at 177-78.

As discussed above, the FCC's Broadcast Flag Order mandates that all products with a demodulator capable of receiving digital television signals must also be capable of recognizing and giving effect to an encoded flag, included in digital television signals, which informs the consumer electronics device whether such digital content may be redistributed or not.[242] The FCC made clear that its Order did not apply only to television sets, but applied to any consumer electronics, PC, or IT device.[243]

Certain consumer electronics interests opposed the FCC's exercise of jurisdiction during the proceedings. Specifically, these interests advocated against the FCC's exercise of ancillary authority because (1) consumer electronics companies are unregulated entities, (2) the broadcast flag requirement is not necessary to carry out any specific provision of the Communications Act, and (3) reception equipment, unlike transmission equipment, falls outside the general jurisdictional grant found in Title I.[244] These interests noted that an explicit grant from Congress stood as a prelude to every past FCC regulation imposing requirements upon consumer electronics manufacturers.[245]

In finding that it possessed the ancillary authority necessary to implement the broadcast flag regulations, the FCC argued:

> Ancillary jurisdiction may be employed, in the Commission's discretion, where the Commission's general jurisdictional grant in Title I of the Communications Act covers the subject of the regulation and the assertion of jurisdiction is 'reasonably ancillary to the effective performance of [its] various responsibilities.' Both predicates for jurisdiction are satisfied here.[246]

The FCC determined that regulation of television reception equipment falls within the general jurisdictional grant set forth in Title I, outlining the broad language in Sections 151 and 152(a), as well as the broad definitions of "radio communication" and "wire communication" found in Sections 3(33) and 3(52). The FCC then reasoned that the broadcast flag regulatory regime was reasonably ancillary to (1) its provision of a broadcasting system throughout the communities of the United States on

242. *Broadcast Flag Order*, *supra* note 191.

243. *Id.* ¶ 35.

244. *Id.* ¶ 28.

245. *Id.* (citing All Channel Receiver Act of 1962, 47 U.S.C. §§ 303(s), 330(a)) (television frequencies); Television Decoder Circuitry Act 1990, 47 U.S.C. §§ 303(u), 330(b)) (closed-caption transmissions); Parental Choice in Television Programming provisions of the 1996 Telecommunications Act, 47 U.S.C. §§ 303(x), 330(c)) (V-Chip); 47 U.S.C. § 544a (cable compatibility); 47 U.S.C. § 549 (navigation devices).

246. *Broadcast Flag Order*, *supra* note 191, at ¶ 29 (citing *Southwestern Cable Co.*, 392 U.S. at 178).

a fair, equitable, and reasonable basis,[247] and (2) its responsibilities in "shepherding the country's broadcasting system into the digital age."[248] After reviewing these statutory provisions along with their legislative history, the FCC concluded:

> The legislative history and the Commission's ongoing and prominent initiatives in the area, make it clear that advancing the DTV transition has become one of the Commission's primary responsibilities under the Communications Act at this time. Here, the record shows that creation of a redistribution control protection system, including compliance and robustness rules for so-called "Demodulator Products," is essential for the Commission to fulfill its responsibilities under the Communications Act and achieve long-established regulatory goals in the field of television broadcasting.[249]

While the FCC ultimately determined that the exercise of its authority under the ancillary authority doctrine was appropriate, the FCC was also forced to

> recognize that the Commission's assertion of jurisdiction over manufacturers of equipment in the past has typically been tied to specific statutory provisions and that this is the first time the Commission has exercised ancillary jurisdiction over consumer equipment manufacturers in this manner . . . . even though this may be the first time the Commission exercises its ancillary jurisdiction over equipment manufacturers in this manner, the nation now stands at a juncture where such exercise of authority is necessary.[250]

The broadcast flag encountered some unsurprising criticisms in the press since its enactment, some of which are based on the FCC's jurisdictional leap.[251] Federal legislators have also expressed concern about the FCC's actions, as evidenced by Congressman Lamar Smith's comments regarding the FCC's Broadcast Flag Order: "My Subcommittee has great interest in the FCC's announcement because the agency may issue rules that impact the Copyright Act and involve my Subcommittee's jurisdiction. The Subcommittee will reserve judgment until we

247. *Id.* ¶ 30 (citing 47 U.S.C. § 151, 307(b)).
248. *Id.* ¶ 30 (citing 47 U.S.C. §§ 303(g), 309(j)(14), 336, 337, 396(k)(1)(D), 544a(c)(2), 614(b)(4)(B)).
249. *Broadcast Flag Order*, *supra* note 191, at ¶¶ 30-31.
250. *Id.* ¶¶ 32-33.
251. Paul Boutin, *Why the Broadcast Flag Won't Fly*, WIRED MAG., Feb., 2004.

undertake a complete review of the published rule and determine if the Copyright Act is affected."[252]

While the FCC's broadcast flag actions are necessary at this stage, the broadcast flag represents a risky and strained exercise of ancillary jurisdiction. The weakness in the FCC's assertion of authority in this case is somewhat novel as it does not lie in potential conflict with a statutory provision. Rather, jurisdiction lies in the lack of proximity between the FCC's actions and the specific statutory directives that those actions are designed to further. The specific statutory directives identified by the FCC are themselves somewhat vague and ambiguous, and the nexus between those directives and the FCC's broadcast flag actions is not readily apparent. Indeed, the primary opponent of FCC authority during the rule-making process, the American Library Association, launched a formal challenge to the FCC's jurisdiction currently pending before the U.S. Court of Appeals for the District of Columbia Circuit. Should the FCC's Broadcast Flag Order survive this challenge, it will be fair to consider the Broadcast Flag as representing the far outer limits of the FCC's ancillary authority.

4. FCC Jurisdiction Over a Comprehensive DRM Regulatory Regime

As noted above, a comprehensive DRM regulatory regime would contemplate an FCC mandate covering consumer electronic hardware. More importantly, the scope of this mandate would extend well beyond the FCC's hardware-based mandates set forth in its Plug-and-Play and Broadcast Flag Orders. A comprehensive DRM mandate would apply to any type of device that could store, transmit, produce, manipulate, or play digital media files. Given the jurisdictional challenges associated with the FCC's more modest efforts to apply mandates to consumer electronic hardware in the rights management context, the FCC can assume that any effort to deploy a comprehensive DRM scheme through a regulatory mandate will be met with vigorous challenges to the FCC's authority.

Consideration of the FCC's two standing doctrines upon which it may assert its authority reveals that the FCC is lacking in the jurisdictional authority needed to apply a DRM mandate across the broad spectrum of consumer electronic devices. There currently exists no express Congressional grant applicable to DRM and the regulation of consumer hardware. Additionally, the FCC's ancillary jurisdiction under

252. Press Release, Cong. Lamar Smith, Smith: FCC Broadcast Rule May Impact Copyright Act (Nov. 5, 2003), *at* http://lamarsmith.house.gov/news.asp?FormMode=Detail&ID=327.

Title I, while arguably applicable under the broad language of Sections 151 and 152(a), nevertheless fails, as there is no nexus with any other section of the statute.[253] In short, the FCC's exercise of authority in this area will require a new, express Congressional grant.

The Hollings Bill encapsulates just such a grant.[254] This Bill expressly directs the FCC–in conjunction with the Copyright Office—to initiate a rule-making proceeding in order to develop a comprehensive DRM standard in the event that the industry fails to do so itself.

The Hollings Bill garners both supporters and harsh critics. Some of the criticisms center directly on the issue of FCC authority. For example, the Home Recording Rights Coalition described the bill as "a breathtaking delegation of authority to a regulatory agency that is ill-equipped to perform such a monumental task."[255] Fearing the FCC's exercise of authority, some interests have proposed legislation expressly limiting the FCC's reach. The Consumer, Schools, and Libraries Digital Rights Management Awareness Act of 2003 contains such an express limitation upon FCC authority.[256] In a statement introducing this Bill, Senator Brownback explained:

> Over the past few years the large media companies have persistently sought out new laws and regulations that would mandate DRM in the marketplace, denying consumers and the educational community the use of media products as has been customarily and legally permitted. As a result, the Consumers, Schools, and Libraries Digital Rights Management Awareness Act of 2003 will preclude the FCC from mandating that consumer electronics, computer hardware, telecommunications networks, and any other technology that facilitates the use of digital media products, such as movies, music, or software, be built to respond to particular digital rights management technologies.[257]

This strong opposition to FCC action must be considered in context. For instance, even Senator Brownback commended the FCC's Plug-

253. An advocate of FCC authority over DRM might argue that a comprehensive DRM standard would be reasonably necessary for the FCC to execute the express statutory mandates regarding the FCC's oversight and encouragement of widespread broadband deployment found in Section 706 of the Telecommunications Act. *See* 47 U.S.C. § 157. The links between the launch of a comprehensive DRM standard and an express FCC statutory directive regarding broadband, however, are even more tenuous than the links applicable to the FCC's authority to issue its broadcast flag order.

254. Consumer Broadband and Digital Television Promotion Act, S. 2048, 107th Cong. (2002).

255. Jon Newton, *Broadcast Flag – to be, or not to be?*, MP3NEWSWIRE.NET (Dec. 8, 2002), *at* http://www.mp3newswire.net/stories/2002/ broadcastflag.htm.

256. Consumer, Schools, and Libraries Digital Rights Management Awareness Act of 2003, S. 1621, 108th Cong. (2003).

257. 149 Cong. Rec. S11,572 (daily ed. Sept. 16, 2003) (statement of Sen. Brownback).

and-Play Order as "aimed at protecting cable TV programming from piracy, but in a manner that seeks to *preserve* the customary and legal uses of media by consumers and the educational community to the greatest degree possible."[258] As such, it seems that a carefully crafted, narrow grant of authority at least has the potential to satisfy both ends of the spectrum.

These debates and discussions at the Congressional level addressing the nature and scope of the FCC's involvement in a DRM standard are not surprising. The point remains that the FCC must await Congressional direction, and that a carefully crafted delegation of authority holds the potential to satisfy all policy watchdogs. If and when Congress provides guidance, the FCC, as evidenced by its Plug-and-Play and Broadcast Flag proceedings, stands willing and able to successfully execute the Congressional mandates.

CONCLUSION

FCC intervention is critical to the successful standardization of rights management in digital media content. The FCC's assistance and oversight in this turbulent area should be warmly welcomed. Moreover, the FCC's recently demonstrated commitment and expertise in DRM greatly enhances its ability to guide the industry toward a successful and appropriate DRM standard. While market solutions are often preferable to government intervention, DRM standardization simply does not fit within the market's established standardization models. The participation of an incredibly diverse array of interests is needed to strike an appropriate balance in this controversial area. Only the FCC is capable of including and focusing all of these diverse interests. Moreover, the labors of these diverse interests will be wasted if the resulting standard is not properly enforced in the marketplace. Only through government intervention will the resulting DRM standard be empowered and enforced with the authority of law.

The FCC has proven itself adept at developing balanced rules and regulations aimed at fostering technological progress while preserving the public interest. The FCC has demonstrated its experience and skill in policing the industry to enforce and administer its rules. Finally, the FCC has exhibited familiarity with the economic details, the technological intricacies, and the key players in the market. With the appropriate Congressional grant of authority, the FCC can lead the digital media world away from a culture of piracy and into a new era of innovation.

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258. *Id.* at 11,573.