

October 24, 2003

Marlene H. Dortch
Secretary
Federal Communications Commission
TW-A325
445 Twelfth St., SW
Washington, DC 20554

Re: *Ex parte* presentation in MB Docket No. 02-230

Dear Ms. Dortch:

We write to convey to the Commission the Center for Democracy and Technology's newly released report, *The Implications of the Broadcast Flag: A Public Interest Primer*. This new report attempts to provide a balanced consumer perspective on both the serious copyright concerns raised by unauthorized distribution of DTV programs and the serious consumer use and innovation issues raised by the flag rule as proposed to the Commission. Our report includes suggestions for improving the flag regulation that has been proposed to the Commission, and also identifies some unresolved consumer concerns those suggestions do not address.

In December 2002, in response to the Commission's Notice of Proposed Rule Making in the matter of Digital Broadcast Copy Protection, MB Docket No. 02-230, CDT filed comments indicating that it was embarking on "an intensive dialog with key stakeholders in the content, information technology, and consumer electronics industries, seeking answers to many of these same questions" that the Commission posed in its NPRM. At that time, we indicated that we were "looking for answers to craft a reasonable consumer perspective on how to protect copyright in the digital age consistent with new business models, new uses of content, and the decentralized, user-controlled nature of computing and the Internet."

The report we are sending to you today is the result of that research and dialog. It is based on CDT's own analysis and extensive interviews with many of the major stakeholders in the DTV content protection debate. Major findings of CDT's report include:

- Protecting copyright in the digital age is important for both consumers and content owners; failing to protect content can have major implications for the availability of high-quality programs on new digital media; and genuine fears have been raised about unauthorized redistribution of unprotected digital TV.
- Proposed broadcast flag regulations, currently before the FCC, create many legitimate concerns for television viewers, Internet users, and industry groups. As drafted they may restrict reasonable uses of content by viewers, hinder innovation, and impose costs that are not worth the limited copy protection provided.

- Revisions to the broadcast flag proposal could help address many of these concerns, primarily by creating more clearly objective and focused functional standards for the devices and uses that will be permitted by flag regulations, and by creating a more open and accountable process for certifying permitted technologies.
- Even with those improvements, the flag proposal poses unresolved issues regarding technical regulation of computers and the Internet by the government, the impact of the flag itself on innovation and future consumer uses, and the definition of “fair use” and other copyright doctrines in the digital age. It also leaves other serious copy protection problems for television content unresolved.
- Whether the FCC adopts the broadcast flag approach or not, the combination of copyright enforcement, new economic models and digital delivery mechanisms, and consumer education hold out great promise to have a broad, long-term impact on copyright infringement online.

Most importantly, regardless of whether or not the Commission ultimately adopts the broadcast flag approach we suggest that further dialog or some follow-on process is called for to give a full hearing to the outstanding issues of copy protection, consumer use, and computing innovation that are implicated by the flag and that remain unresolved.

A complete copy of our report is attached, and also available online at <http://www.cdt.org/broadcastflag.pdf> We hope it is helpful in your ongoing deliberations, and would be happy to answer any further questions about it that you might have.

Respectfully.

/s/

Alan Davidson
Associate Director
Center for Democracy and Technology

Cc:

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Implications of the Broadcast Flag: A Public Interest Primer

A Report of the
Center for Democracy and Technology

October 2003

Rev. 1.0

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The Center for Democracy & Technology is a non-profit, non-partisan public interest organization dedicated to protecting and advancing civil liberties and democratic values on the Internet and other new digital media.

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1. INTRODUCTION AND OVERVIEW

We are in the midst of a far-reaching civic debate about the legal and technical methods by which copyrighted works will be protected in the digital age. This debate has important consequences for the future of key elements of the US economy: producers of digital content, whose substantial economic interests are at stake; information technology and consumer electronics manufacturers, who would like to bring out new products; and individuals who want choices of devices and access to desirable content. The outcome of the debate will implicate important public values including the free flow of information, access to educational and news content, and technological innovation.

The “broadcast flag” proposal – a combination of technical standards and federal regulations designed to curtail unauthorized redistribution of digital television broadcasts – has emerged in 2003 as a focal point in the digital copyright debate. The broadcast flag system is now the subject of a major rulemaking proceeding at the Federal Communications Commission (FCC). Observers expect pressure for protection of digital video content to mount as the U.S. moves steadily towards the transition to digital television called for by 2006.

The creators of television programming and movies view the broadcast flag as essential to protecting high-quality content distributed through unprotected digital television broadcasts. At the same time, the broadcast flag regulations could have a profound effect on the ability of consumers to watch, record, or use digital television and on the design of devices that play digital content, including computers.

CDT, along with its partners Public Knowledge and Consumers Union, has conducted in-depth interviews with over 30 of the key stakeholders in the ongoing debate over the broadcast flag. Almost without exception, participants agreed on the importance of three key priorities: protecting copyright and rewarding creators; supporting innovation in new products; and protecting reasonable public uses of content and access to information. There remain serious disagreements, however, on how to implement copyright protection mechanisms like the flag proposal while balancing these core values. In particular, the critical issue of how to protect content while allowing its use by computers and on digital networks, in the new ways that consumers will demand in the digital age, remains unresolved.

This report is designed to provide a primer on the broadcast flag, from a consumer and Internet user perspective. Among the key questions we seek to answer are:

- What is the broadcast flag?
- What are the major arguments for and against the flag?
- What steps should be taken by policymakers as they are asked to consider broadcast flag regulations?

The first half of this paper is largely descriptive in nature, providing a detailed look at the flag proposal and the arguments about it. The second half is more analytical, assessing those arguments and providing CDT’s own suggestions for addressing concerns.

Major findings of this report include:

- Protecting copyright in the digital age is important for both consumers and content owners; failing to protect content can have major implications for the availability of high-quality programs on new digital media; and genuine fears have been raised about unauthorized redistribution of unprotected digital TV.
- Proposed broadcast flag regulations, currently before the FCC, create many legitimate concerns for television viewers, Internet users, and industry groups. As drafted they may restrict reasonable uses of content by viewers, hinder innovation, and impose costs that are not worth the limited copy protection provided.
- Revisions to the broadcast flag proposal could help address many of these concerns, primarily by creating more clearly objective and focused functional standards for the devices and uses that will be permitted by flag regulations, and by creating a more open and accountable process for certifying permitted technologies.
- Even with those improvements, the flag proposal poses unresolved issues regarding technical regulation of computers and the Internet by the government, the impact of the flag itself on innovation and future consumer uses, and the definition of “fair use” and other copyright doctrines in the digital age. It also leaves other serious copy protection problems for television content unresolved.
- Whether the FCC adopts the broadcast flag approach or not, the combination of copyright enforcement, new economic models and digital delivery mechanisms, and consumer education hold out great promise to have a broad, long-term impact on copyright infringement online.

We look forward to working with policymakers and interested parties to improve the broadcast flag proposals that have been put before the public. We urgently call for an open-minded, forward-looking dialogue to seek balanced responses to the immediate challenges raised by the broadcast flag and to the broader issues of innovation, content protection, and the user-empowerment potential of the Internet. The polarization of the current debate threatens these important values and our ability to deal with the piracy problem.

2. THE BROADCAST FLAG PROPOSAL

The mechanism referred to as "the broadcast flag" is actually composed of two parts: a simple technical method for marking digital television programs for copy protection ("the flag mark"), and a set of proposed regulations for devices that will handle "flagged" video programs ("the flag regulations"). The flag mark, a small amount of data added to the television signal, is relatively non-controversial. The key to the proposal, and the controversial element, is a set of proposed regulations requiring that DTV receivers and devices that receive content from them – such as TV sets, computers, DVD recorders, Tivo-like digital video recorders, etc. – be built to protect DTV content marked by the flag. In this paper, we speak of the "flag proposal" as the proposed combination of the marking mechanism and the regulations that would require protection of marked content.

This section provides a detailed description of the broadcast flag proposal. Sections 3 and 4 of the report include an overview of the arguments for and against the flag proposal, and set forth CDT's analysis of those arguments and suggestions for policymakers considering the flag proposal.

2.1. Introduction to the Broadcast Flag: The Rationale for the Flag

The digital world, for all its immense benefits to the creation and distribution of content, poses unique threats to copyrighted content. In the digital world, one "bit" looks much like another, whether it is an unprotected file or a copyrighted movie, song, or computer program. Digital content can be easily copied without any degradation over innumerable generations of copies. And with the advent of the Internet and other networks, copies – particularly of small files – can be more easily transmitted across neighborhoods and around the world.

Major content industries have watched with trepidation as computing, the Internet, and peer-to-peer file sharing systems have led to increased unauthorized copying of music, videos, software, games, and other valuable copyrighted works. The widespread piracy of copyrighted music by millions of users of file-sharing networks like Kazaa, Morpheus, or the now defunct Napster is viewed as an instructive lesson by those in the video content business. The music industry attributes major losses in revenue to widespread file sharing. While there is some debate about the extent of loss due to file sharing and the appropriate solutions for addressing the issue, it is clear that losses have been suffered and that many people online now routinely violate U.S. copyright laws. And it is beyond question that the video content industry is very worried about the effect of the digital age on its ability to control redistribution of its works.

The threat of digital redistribution is particularly acute for movie studios and other video content producers because their business models are highly dependent on "repurposing" programming. The current movie studio business model is based on studios' ability to get revenue from multiple distribution windows. Licensing and distribution agreements for each stage in the life of video content – domestic and international box office, airline performance, pay-per-view, rental, home sale, satellite, premium and basic cable, and over-the-air broadcast – are critical revenue streams. Leakage from one distribution window – through

substantial unauthorized redistribution of content– could substantially diminish the value of a film or TV series.¹

Movie and TV studios are anxious to avoid the experience of the music industry, and have expressed at least two different goals for copy protection of video:

- *Preventing one “perfect copy”* - Some studios have argued that copy protection approaches need to prevent all unauthorized leakage of digital copies in unprotected forms, because if one "perfect copy" is available online it can easily be copied and redistributed to millions through the Internet. However, many acknowledge that it will be very difficult (if not impossible) to prevent some leakage of copies.²
- *Creating a “speed bump”* - Others in the content industry suggest a more modest objective for video protection systems: to prevent easy widespread copying by regular consumers. They are looking for a mechanism that makes it difficult for normal consumers to engage in significant piracy – a more achievable "speed bump" approach.

These two different goals are important because, as will be described below, one is much more achievable than the other.

The triggering event for the broadcast flag discussion is America's move toward digital television ("DTV"), a transition that is supposed to occur by 2006. There is great pressure to speed this transition – in part because of the billions of dollars of analog TV spectrum it will free for other uses. However, movie studios and other video producers are concerned that people will at some point be able to share unprotected video content with the same ease that they now share unencrypted music files, and that widespread online piracy will be the result. These content providers view unprotected DTV broadcasts as an important source of unauthorized distribution and, in the absence of a copy protection scheme, some have asserted that they will not permit high quality programming to be broadcast digitally.³ Without such programming, the fear is that consumers will not buy DTV sets – which will delay the DTV transition.⁴

¹ See, e.g., Joint Comments of the Motion Picture Association of America, et al., to the Federal Communications Commission, in the matter of Digital Broadcast Copy Protection, (December 2002), p. 8-10. Available at: <http://www.mpa.org/Press/MPAA_Comments_02-230.pdf>.

² For the foreseeable future, it will not be possible to stop copies made from unprotected analog television outputs, made by sophisticated attackers who circumvent protections, made by those who place a camcorder in front of a television, or coming from within the studios themselves. It is well understood among technical experts that these “holes” to copy protection schemes exist and will continue to exist for many years. See, e.g., Testimony of Ed Felten before the Senate Commerce Committee (September 2003); Simon Byers, Lorrie Cranor et al., *Analysis of Security Vulnerabilities in the Movie Production and Distribution Process* (2003). Efforts are being made to address some of these holes; for example, a major subgroup of the Copy Protection Technical Working Group (CPTWG) is discussing technical approaches to analog redistribution.

³ Viacom has withdrawn from its well-publicized assertion, and it appears that much high quality programming is already being broadcast digitally, even in the absence of a mandated copy protection system. But the threat remains.

⁴ A finding that the digital transition has occurred in a particular area (and that therefore TV stations in that area have to give back their analog channels) is dependent on penetration of DTV devices.

There is already evidence that movies and TV programs are being traded online, albeit in the case of television most commonly as digitized versions of analog broadcasts. A principal difference between music piracy and the threats to video is the enormous bandwidth required to download a digitized movie, even in lower quality forms. A VCR-quality hour of standard (analog) TV would require on the order of one to four hours to download over a typical home broadband connection, even assuming optimal conditions; an hour of high definition digital television would take in the range of 14 hours to download. As those familiar with efforts to improve broadband deployment in the US can attest, affordable access to sufficient bandwidth in the "last mile" to make downloading videos convenient is still years away for most American homes.⁵

Nevertheless, we may reasonably predict that over time improved compression and high-speed networking will make it possible to download video at ever-quicker speeds. Many people have access to faster networks already, particularly at work or school, and those numbers are growing. Though most agree that the threat of widespread copying is several years away, studios are planning ahead. Given that it can take years to implement changes to television standards, consumer electronics products, and computers, it is understandable that content producers are eager to address the video piracy problem as quickly as possible.

In the context of this prospective threat and the urgency of the DTV transition, and although most parties agree that it does not offer perfect protection, major content providers and others have proposed the broadcast flag as a way to provide some measure of protection for DTV content from easy redistribution (the "speed bump" approach).

2.2. Origins of the Broadcast Flag Proposal: The BPDG Report

The parties trying to craft a solution to DTV piracy concerns faced several hurdles. The most logical protection measure – scrambling of DTV content "at the source" (encryption by the transmitter, instead of by the machine receiving the signal) as is found in satellite or cable broadcasts – would mean that existing digital television receivers would not be able to receive DTV content without a special added device, imposing a cost on several hundred thousand early-adopter owners of DTV sets.⁶ Some believed broadcast encryption was also

⁵ Although most parties generally agree that download times for digital video files are currently prohibitively large for most end users, estimates vary substantially regarding both the exact amount of time typically required to download video content and the amount of time required before download times decrease enough for downloads of video content to become tractable. Our own estimates for download times are based on current download speeds for cable and DSL, which generally range (at optimal speeds) from 128 kbps to 1.5 megabits/second (although some providers are already experimenting with 3 Mbps services), and leading compression technologies which allow for video of approximately VHS quality to be transmitted at bit rates of roughly 1.5 Mbps. Regarding the penetration of high bandwidth access, even though cable and DSL technologies have been around for some time, as of May 2003, Nielsen//NetRatings reports that only 13% of Americans connect to the Internet via broadband and narrowband users still outnumber broadband users 2 to 1, although they estimate that over the last year broadband access has grown by 50% (see Nielsen//NetRatings Press Release, "Nearly 40 Million Internet Users Connect via Broadband," June 17, 2003. Available at: <<http://www.netratings.com/>>). Widespread penetration of higher bandwidth broadband technologies is expected to be substantially slower. Improved compression technologies also promise to decrease download times, but again adoption remains some time off.

⁶ The Consumer Electronics Association reported that around 700,000 receivers had been manufactured through June 30, 2003. Because of reception problems, it is estimated that less than half that many are actually in consumers' hands for broadcast reception. Proponents of broadcast encryption note that, while

politically unworkable given sensitivities to a long U.S. tradition of public access to broadcast television.

Broader approaches to addressing video copying were also disfavored. For example, an early proposal to mark all digital copyrighted works and require all devices that handle content to check for the marks and protect the works would have created protections for a broad class of video content, but met substantial opposition from computer and consumer electronics makers because there was no readily apparent engineering solution available to implement such marks (particularly in computers), any such solutions were expected to be very costly and create consumer concerns, and many feared such marks could be easily defeated.

Content providers, together with a technology consortium that had developed promising copy-prevention technologies (the 5C group),⁷ urged that the DTV protection issue be taken up at the Copy Protection Technical Working Group (CPTWG), a group including representatives of the entertainment, consumer electronics, and information technology industries as well as several consumer groups at times. A sub-group, the Broadcast Protection Discussion Group (BPDG), was charged with evaluating technical approaches to protecting digital television broadcasts.⁸

The result of the BPDG's work was the report of the Co-Chairs of the BPDG, published in June 2002.⁹ It is fair to say that the BPDG process and the report itself were controversial, even among many BPDG participants. In mid-June 2002, the BPDG gave its report to Representative Billy Tauzin (R-Louisiana), Chairman of the House Commerce Committee, who had urged the companies to undertake the initiative. There had been indications that Rep. Tauzin would propose legislation concerning the broadcast flag.

The BPDG report evaluated the creation of a flag signaling protected content and a set of "robustness and compliance" rules which proponents argued would ensure that marked content was appropriately protected by the machines receiving it. The flag system contemplated that all devices capable of demodulating DTV television signals would protect DTV content until it could be checked for the flag. Content recognized as "flagged" would have to be protected within such devices and could not, in most instances, be recorded or output in a digital form other than by an authorized recording or output technology.

high in absolute terms, these numbers are low compared with, for example, the installed base DVD players (around 40 million today) whose utility could be affected by DTV copy protections. See below.

⁷ The "5C" consortium is made up of Hitachi Ltd., Intel Corporation, Matsushita Electric Industrial Co. Ltd., Sony Corporation, and Toshiba Corporation. 5C has developed the Digital Transmission Content Protection System, or DTCP, which offers secure electrical transmission of compressed content over particular interconnections. DTLA is the licensing authority joint venture founded by the 5C companies, which administers the licensing of DTCP.

⁸ The CPTWG and BPDG are informal discussion groups whose meetings are open to any interested party (except press). On the order of 50-100 different organizations appear to participate regularly. In the past few years as many as five or six public interest consumer groups have participated, though only one (the Electronic Frontier Foundation) was heavily active in the BPDG deliberations.

⁹ Final Report of the Co-Chairs of the Broadcast Flag Protection Discussion Subgroup (BPDG) to the Copy Protection Technical Working Group (CPTWG) (June 3, 2002).

Those demodulating devices would then be able to send marked content to other secure "downstream devices" that also protected the digital content, subject to robustness and compliance requirements designed to ensure that the copy protection would not be circumvented.

2.3. Details of the Current Flag Proposal

The BPDG report left many major questions unanswered: What usage rules would be established? What was the scope of the protection? What copy protection technologies would be approved, and how would future technologies be added to the list? These questions, and whether the flag system itself was appropriate, became the basis for an FCC's rule-making effort launched in the fall of 2002.¹⁰

The FCC's Notice of Proposed Rule-making on the flag did not in fact propose a specific rule. The only complete proposal for a broadcast flag, and the one that is now the subject of debate, is the regulation initially proposed to the FCC by the Motion Picture Association of America (MPAA) and others and supported by the Digital Transmission Licensing Administrator, LLC (DTLA) (the "MPAA proposal").¹¹ This proposed rule lays out in detail how DTV broadcasts would be flagged, how devices would be required to handle flagged content, and what technologies would be approved for the handling of protected content.

The proposed flag mark has already been added to the standards for DTV by the digital television standards body, although not yet adopted by the FCC.¹² It consists of a small field in the digital broadcast signal that is not part of the video or audio data and does not interfere with the picture or the sound. The mark contains very little information. Essentially it is either on or off, indicating when on that "technological control of consumer redistribution is signaled." The standard cannot by itself create any obligation for machines to respond to the flag. The flag mark itself, therefore, is not a subject of great controversy.

The bulk of the MPAA proposed rule deals with how flagged content will be handled by consumer devices. The proposal would require that any future device capable of modulating or demodulating DTV content be designed to –

¹⁰ See FCC Notice of Proposed Rulemaking, MB Docket No. 02-230, In The Matter of Digital Broadcast Copy Protection, released August 9, 2002.

¹¹ DTLA is the licensing authority joint venture founded by the 5C companies. A proposed regulation was submitted to the FCC in December 2002, and revised in reply comments filed by the MPAA. For purposes of this paper, we refer to the original proposed regulation as amended by the MPAA Reply Comments as the "MPAA proposal." See Joint Reply Comments of the Motion Picture Association of America, et al., to the Federal Communications Commission, in the matter of Digital Broadcast Copy Protection, (February 2003).

¹² The flag mark is technically known as the "Redistribution Control Descriptor." See ATSC Standard A/65B: Program and System Information Protocol for Terrestrial Broadcast and Cable, Rev. B (18 March 2003), at http://www.atsc.org/standards/a_65b.pdf, p.78.

1. check for the presence of the flag;
2. encrypt any flagged content using "authorized technologies;"
3. allow digital recordings of flagged content using only authorized technologies; and
4. allow digital transmission of flagged content only via secured digital outputs using authorized technology to other "compliant" devices (authorized devices that are appropriately secure and themselves ensure that protected content can only be handled as required by the authorized technology that delivered the content).

Collectively, these requirements are referred to in the MPAA proposal as Compliance Requirements.¹³ An overview follows.

Checking for presence of the flag. The MPAA proposal suggests that machines that receive digital television broadcasts be required to react in one of three ways:

1. If the content has been checked for the flag, and the flag is present, it should be treated as "marked content." "Marked content" is subject to the rules set by the flag process (discussed below), and may not be digitally transmitted over wires to insufficiently secure (noncompliant) devices.
2. If the content has been checked for the flag, and the flag is not present, the content should be treated as "unmarked." No rules need be followed, and the unmarked content can be copied and distributed freely.
3. If the content has not been checked for presence of the flag, it should be treated as "unscreened content." Such content must not be transmitted digitally over wires to devices that are insufficiently secure.

Use of approved technologies. The MPAA rule proposes that all new equipment capable of demodulating or modulating a DTV signal must build-in approved protection technologies that prevent certain unauthorized copying or redistribution.¹⁴ These devices would include future digital televisions and set-top boxes, but would also include computers or other future hardware or software capable of demodulating a DTV broadcast. Approved technologies will use encryption to ensure that the standards for use and distribution are obeyed.

Only approved protection technologies would be permitted to handle marked programs. The list of approved technologies would be part of a proposed "Table A."

Equipment using Table A technologies must agree to the license requirements associated with these technologies. Such licenses would include rules about compliance ("how may consumers use a device to handle marked content?") and robustness ("how is the device designed? how resistant is the device to tampering?"), and could also include patent licensing or other commercial terms.

Regulation of "downstream devices." In order to protect flagged content once it has been recognized, any device that handles the content also needs to respect and adhere to the protections. The MPAA rule designates any equipment which receives flagged content through digital interfaces as "downstream devices" covered by the rule – and requires that

¹³ See MPAA et al. Joint Comments, Attachment A, at 6.

¹⁴ The MPAA has indicated that protection technologies will be designed to narrowly limit unauthorized redistribution on digital networks; as noted at length below, the language of the proposed rule is not definitive as to what behaviors the protection technologies will actually allow or prohibit.

all such devices be "compliant" by incorporating Table A technologies and adhering to license requirements. Covered devices would include digital video recorders and DVD burners, as well as any other device that could receive protected content – like a computer, a handheld device, or a 3G mobile phone.¹⁵

Robustness Requirements: In order to ensure that it is difficult to circumvent the protections mandated by the Compliance Requirements by hacking into devices, a set of "Robustness Requirements" for regulated devices has been proposed. These require that products meet a specified level of secure design and construction, for example, by employing encryption techniques and being tamper resistant.

The MPAA proposed regulation also states that regulated products may not include switches or buttons or functions that allow the Compliance Requirements to be defeated, and may not allow defeat of these requirements by widely available tools or inexpensive software.¹⁶

In order to assess how the flag will protect DTV content – and in order to understand its impact on consumers and device makers – two questions need further exploration: What copy protection technologies will be approved to handle flagged content? And what uses of that content will be permitted?

2.4 What Technologies Will be Permitted? A "Table A" Overview

The linchpin of the flag regulation is the mandated use of copy protection technologies that handle protected DTV programs. "Table A" – the list of approved technologies – is therefore critical to both consumer electronics and IT companies (who want to sell products that will need to include Table A technology) and consumers and computer users (who will need to use these technologies if they want to view and use DTV broadcasts.)

What technologies will be on Table A? The MPAA rule proposes two processes for including technologies on Table A: the "industry acceptance" process, and the "equally effective as" process. If a manufacturer believes its technology meets one of these sets of criteria, it can file an application stating the grounds for its belief.

- *Industry acceptance.* The MPAA approach proposes that a technology could be added to Table A if it is:
 - used or approved by three major studios;
 - used or approved by three major television broadcast groups (of which at least two must be major studios); or
 - licensed by ten major device manufacturers and used or approved by two major studios.

¹⁵ It should be noted that the MPAA proposal does not place limits on analog copying or analog outputs, just on digital copying and digital outputs. This will permit the many existing televisions (including HDTV-capable sets) and VCRs, with their analog interfaces, to continue to work with flagged content and devices that handle it. (As noted below, it also permits conversion of such content back into unprotected digital form.)

¹⁶ MPAA et al. Joint Comments, Attachment B.

- *Equally effective.* The proposal also suggests that a technology could be added to Table A when it is found to be "at least as effective at protecting [content] against unauthorized redistribution (including unauthorized Internet redistribution) as is any one of the technologies then listed on Table A," taking its licensing terms and other factors into account.

The FCC is supposed to rule on all applications under both of these criteria for addition to Table A, and to revoke Table A authorization if a technology has been "substantially compromised."¹⁷

What will Table A look like at the beginning? The BPDG Co-Chairs' final report suggested that a set of four complementary technologies – popularly referred to as the “5C suite” – be considered "approved technologies" suitable for placement on Table A at the outset. The four current technologies are:

- DTCP, which offers secure transmission of compressed content over electrical connections, like those to a computer or an on-board DVD player in a mini-van;
- CPRM, which offers secure storage of compressed content, say for authorized copying of a program onto a CD;
- HDCP, which offers secure transmission of uncompressed protected content over an electrical interconnection (DVI), used for displays; and
- D-VHS, which offers secure storage of uncompressed protected content.

These four technologies all do different things, and each occupies a different market niche. Together they provide a reasonably comprehensive set of technologies for protecting digital video content in the home environment, though they are limited in terms of use on new networks or the Internet.

Significantly, the DTLA license for DTCP does not allow digital outputs of content to save to non-5C devices, or even to devices that use one of the other three technologies.¹⁸ This means that once a consumer builds a home network based on DTCP, the network will form a closed circle – no devices can be added to that network unless they also are part of the 5C world.

The MPAA proposal before the FCC indicates that these four technologies – DTCP, CPRM, D-VHS, and HDCP – "have already gained sufficient industry acceptance to qualify as

¹⁷ MPAA Reply Comments, Attachment B. It is not known how technologies will be removed from Table A if they are compromised. "Untamperable" devices cannot be upgraded; indeed, their "untamperable" qualities ensure that this is the case. Will consumers have to throw away "compromised" machines and replace them in order to continue having access to digital broadcast content? Revocation of a potentially sweeping industry standard like 5C would have enormous effects on consumers.

¹⁸ The DTCP license does permit "constrained" (down-resolutioned) digital output over a DVI interface to computer products manufactured before 2005, but many do not view this exception as broad enough to serve public interest purposes. Data traveling over a DVI interface is uncompressed, and therefore extremely large and unwieldy, and restrictions on image quality are likely to diminish consumers' enjoyment and use of lawfully-acquired content. The license also permits the use of technologies other than CPRM or D-VHS for the making of up to two first-generation copies, provided that the copy cannot be played on any device other than the device making the copy. This, too, is a narrow exception that may not serve consumers' interest in interoperability.

authorized technologies."¹⁹ It is widely expected that studios will accept the 5C suite of technologies and the FCC will approve the 5C suite for inclusion on Table A.²⁰ It is not known whether any other competing technologies – such as Microsoft's Windows Media Player system – will initially be on Table A.

2.5. What Uses will be Permitted? The 5C Encoding Rules Example.

What uses of flagged content will be allowed? Will users be allowed to freely copy marked programs, view them on multiple devices, or email them? The proposed broadcast flag rules do not at this time clearly specify what kinds of uses will be permitted for flagged content. Since nobody is sure what technologies will be approved – except 5C – the 5C rules for using content are especially instructive.

The encoding rules for 5C ("what may be done with flagged content protected by 5C?") are not set forth as part of the MPAA proposal, but are part of the 5C licensing agreement. 5C allows digital use of DTV content in accordance with four possible settings:

1. *copy freely* - encryption/decryption not required at all and 5C not applied (for unprotected content like news, public affairs programs, e.g.);
2. *EPN (encryption plus non-assertion)* - This is the setting that will be applied to flagged DTV content. It requires that all copies have to be encrypted – and can only be read on another 5C-compliant device - but allows users to make as many copies as they want on 5C devices;²¹
3. *copy one generation* - for subscription television. Content can be copied once but cannot be copied further – you can make a copy but cannot make a copy of the copy;²² and
4. *copy never* - for pay-per-view television. Content cannot be copied. For personal video recorders, "copy never" is subject to an exception – this rule can be set to mean "copy never but watch for a limited period of time," with a maximum of 90 minutes of "pause" time from the time the program is downloaded.

EPN is most relevant to the flag proposal. All flagged DTV content will be treated by 5C devices as EPN, meaning that 5C devices can send it to any other 5C device – although at

¹⁹ MPAA et al. Joint Comments, Attachment A.

²⁰ Today, none of these technologies allow transmission over the Internet of protected content. Until recently, none allowed transmission of flagged content over wireless networks. In late September 2003, the DTLA announced that it had adopted DTCP for WiFi devices. The resulting technology will be known as DTCP-IP. It is not clear whether studios are prepared to support such networking using 5C technology.

²¹ 5C creates a secure channel to transmit market content to another device, after "checking" (authenticating) whether the second device has 5C installed. Because 5C does not allow its authentication/encryption "handshake" sequence to take place over an Internet connection, this setting bars emailing flagged content or opening a flagged file to the public Internet. Thus, this setting also bars emailing excerpts of flagged content. 5C was designed to protect content delivered to the home network, not to provide for secure Internet transmission.

²² We understand that the 1394 connection allows sending a file simultaneously to 62 different recording devices. Thus, "copy one generation" would allow a user to make 62 different simultaneous copies, but each of those copies would be marked "copy no more."

this point 5C devices can only be connected on certain kinds of local networks, so this does not and currently will not permit redistribution over the Internet. EPN also allows users to make as many physical copies of a program as they want, so long as they make these copies and play them back on other 5C devices that agree to obey the same rules.²³

Looking beyond the licensing terms currently associated with 5C technologies, different groups have different interpretations of what uses will ultimately be allowed under the flag. For their part, some studios have indicated a relatively permissive view of what actions would be permitted under future sets of encoding rules in connection with new technologies that were added to Table A. They indicate that technologies could be approved that allow unlimited use of programming in the home environment, and a large amount of physical copying as well – so long as secure technologies are used that do not permit widespread Internet distribution. As MPAA General Counsel Fritz Attaway indicated in Congressional testimony in Spring 2003:

“The broadcast flag does not prevent copying at all, as I stated earlier. With today's technology, it would prevent [a] student from e-mailing [a] project [including marked video content] because a secure system does not yet exist for e-mailing. But as soon as that technology is developed, and I believe it will be, then that would be made possible, as well. The only thing that the flag is designed to do is to prevent the mass redistribution of television programs on wide-area networks like the Internet.”²⁴

At the same time, consumer groups have raised concerns that the flag may limit many uses, especially innovative new uses. For example, they worry that secure technologies may never be approved that would allow people to securely email a program or an excerpt of a show. They also wonder whether a more restrictive future version of 5C, or some more restrictive replacement for 5C, could become a dominant and limiting technology.

At this time, under the current proposal, there is no way to know exactly what uses will be permitted of flagged content. In fact, the proposal before the FCC does not explicitly propose 5C, even though all parties appear to assume that if the FCC adopts the flag proposal, 5C will be approved with whatever initial broadcast flag regulation is issued. This state of play is likely to confuse many who are trying to evaluate the flag proposal.

²³ The creators of 5C indicate that these categories represent ceilings, not floors, for particular kinds of programming. If, for example, basic cable programming was marked "copy never," that would be a violation of the 5C license. It is not expected that these encoding rules would ever change, although it is possible that the licensors of 5C technology could change them.

²⁴ Testimony of Fritz Attaway before the House Judiciary Subcommittee on Courts, the Internet, and Intellectual Property (March 6, 2003.)

3. THE BROADCAST FLAG POLICY DEBATE

The broadcast flag has become a topic of extensive debate in Washington. The FCC Notice of Proposed Rule-Making in connection with the flag proposal prompted over 5000 comments. Most were filed by individuals concerned about the flag proposal's impact.

Supporters in the content industry have touted the flag proposal's narrow focus, and have reminded policy makers of the growing need for protection given the planned transition to DTV. Consumer groups have raised questions about risks to reasonable uses of content posed by the flag proposal, as well as its effectiveness and its impact on future consumer products. Many information technology and consumer electronics companies have raised concerns about the impact of the proposal on innovation, the costs of content protection, whether reasonable uses of devices will be permitted, and whether the FCC will face increasing pressure to regulate further given the limited scope of the proposal's protections.

3.1. Assessing the Flag: Themes

Four themes have emerged in our interviews with stakeholders:

Content Protection. The producers and distributors of digital television broadcasts fear uncontrolled, massive online redistribution of their content if it is broadcast digitally without protection. Because content producers may have greater incentives to distribute high-quality programming if it is protected, significant consumer benefits may flow from some form of protection.

Future Innovation. Many information technology (IT) companies, consumer groups, and some consumer electronics (CE) companies have expressed great concern that any flag regulation will damage competition and innovation. In particular, they worry about establishing gatekeepers over future product development and regulatory creep of the flag. They argue that, if the FCC proceeds, more functional and objective standards for "approved technologies" are better for the marketplace and for consumers.

Reasonable Uses of Content. Consumers want to use content in reasonable ways, including time-shifting (watching a program at a different time), space-shifting (watching a program in a different place), and other innovative forms of reasonable copying and sharing. Many are also concerned that certain "fair uses" rooted in copyright law and the First Amendment are threatened by the flag proposal.

Public Interest Values. Many consumer groups want to ensure that flag regulations protect the lawful free flow of information over the Internet and other important free speech values. They argue that news, public affairs, and other programming important for public discourse should not be flagged, and flag technologies should not require the collection of private information in order for people to have access to flagged content.

No group we spoke with disagreed with these goals in general. However, in assessing the flag, different groups have reached different conclusions based on how they reconcile tensions among these competing aims. The following sections summarize the arguments we have heard.

3.2. Need for Content Protection

We heard broad agreement that massive online redistribution of video should be avoided, and that copyright protection has substantial public benefits. We also heard agreement that both licenses and technical protection measures (at some level) will be used to protect content in the future, but disagreement as to the role of the Federal government in requiring companies to adopt protections through systems like the broadcast flag proposal.

The MPAA Consortium has stated that implementation of the broadcast flag scheme is essential to protect the continued viability of free over-the-air broadcasting, and that, without the flag, free broadcasting will be at a competitive disadvantage. They reiterate that broadcast program suppliers rely on after markets like syndication, foreign distribution, and home video sales, because TV license fees alone do not cover the cost of production. They point out that cable and satellite services, because they operate through conditional access systems, can offer program suppliers technological protections against Internet redistribution of their programs, and broadcasters cannot. They suggest that, in order to provide a level playing field between cable, satellite and broadcast television, the FCC must implement the broadcast flag, and note that there is evidence in the record before the FCC that some program distributors will not license high value HDTV programs to free broadcasters in the absence of a flag scheme.

Others have argued, however, that protection of aftermarkets for digital broadcast television should not necessarily dictate that every device touching DTV content (including general purpose computers) be redesigned to incorporate approved technologies that prohibit not only all online redistribution but also all copying and playing by noncompliant devices. Moreover, there is considerable concern that government regulation should not be used to protect existing market models, which are clearly evolving in the digital age just as they have in the face of new technologies like the player piano, the radio, the television, and the VCR. Such critics also point out that there probably never has been a level playing field between cable and satellite, on the one hand, and broadcast, on the other.²⁵ These critics have noted that Congress and the FCC have received no guarantee either that program distributors will not license HDTV programs to broadcasters in the absence of a flag scheme or that such distributors will license *more* programs to broadcasters if the flag is implemented.²⁶

We heard arguments both for and against "encryption at the source" as an alternative to the broadcast flag. Under such a solution, broadcasters would encrypt their broadcasts rather than broadcasting "in the clear" and having encryption take place at the receiver level. Although this solution may be more technically elegant, and provide better protection to content, many view it as politically infeasible because of the US tradition of free over the air broadcast. Encryption would leave those television receivers in consumer hands today unable to receive DTV broadcast content, and consumers would have to buy converters.²⁷

²⁵ These commentators note that cable and satellite distributors condition access to their programming on the payment of fees – fees they share with creators of content, making their channel more desirable for such creators and distributors.

²⁶ Many consumer groups are not convinced that the studios' arguments in support of using the broadcast flag proposal to solve the problem of massive online redistribution are compelling. Nor are all convinced that the studios have stated a real problem, in large part due to "last mile" bandwidth issues.

²⁷ We also heard that since high definition digital television (HDTV) is being transmitted in compressed form, it requires converters and decoders in order to be viewed on standard digital televisions.

Estimates for the cost of these converters range widely, but they would probably cost on the order of \$100 each for several hundred thousand users.

There may be great advantages – and great risks – to using digital copyright protection systems to deliver content to consumers. Content protection technologies could enable a market with many more choices of rights packages to consumers – from low-cost, transient uses of content (like streaming a movie in real time) to higher-cost, valued-added packages (like renting a movie for a month or being able to manipulate it). The digital world in general is likely to give rise to exciting new business models that will be attractive to consumers. At the same time, rights management systems can place limits on consumer use if very few choices of protection systems and rights packages are available. Similarly, the flag proposal has the potential to offer many delivery choices but also the potential to offer very few choices.

Critics of the flag have also noted in some detail how limited the flag's protections might be. Broadcast in the clear, DTV signals will remain susceptible to interception by demodulators that are not compliant with the law but may be easy to build or obtain. Analog outputs in flag-compliant devices – critical to ensuring that tens of millions of analog TVs, VCRs, and DVD recorders continue to function – will permit easy redigitization of DTV broadcasts. Hundreds of thousands of existing DTV receivers, manufactured before the flag proposal's restrictions, will continue to allow digital output of DTV programs. Other sources of video content will remain, such as theft by studio employees and contractors or even simply recording a program or movie with a video camera. In response, some proponents note that the flag is part of a very long term strategy to protect digital copyrights, that it is only one step in limiting sources of video content online, and that the flag has a more limited goal of making easy, widespread unauthorized redistribution more difficult for the average unsophisticated consumer.

Having listened carefully to all of these points of view, we believe that providers of broadcast digital television have articulated a real problem that they are making a serious effort to address. Content provider concerns about the long-term risk of widespread online copying of DTV content have merit, and it is reasonable to seek a solution with all deliberate speed rather than waiting until it is too late. At the same time, it must be recognized that the broadcast flag proposal will not make unauthorized distribution impossible or prevent the appearance of "perfect" digital copies of DTV content online. Rather, the major rationale for the broadcast flag is as a "speed bump" with limitations, whose effect will be merely to make it harder for average users to engage in large-scale unauthorized redistribution of digital broadcast television content outside the home network. We agree that implementation of the broadcast flag would probably help make widespread online redistribution of DTV more difficult for the average consumer - though by no means impossible.

3.3. Innovation Concerns

Many members of the IT and CE industries (as well as consumers) are concerned about competition and innovation. In particular, many companies are worried that the proposed flag regulation will establish "gatekeepers" over future product development, who are free under the proposal to apply subjective criteria in withholding approval of new products. They argue instead that more neutral and functional flag criteria or standards for "approved technologies" would be better for the marketplace and for consumers – but that it would be better for consumers and ultimately content providers not to have any technology mandates in place at all. They are also concerned that the flag rule is just the first in a series of rules

that will broadly chill innovation; given the limited protections offered by the “speed bump” model of the flag, they fear that the FCC will be under increasing pressure to augment the flag system with additional control over information technology and consumer electronics devices.

For their part, the flag’s supporters have stated that in order to protect intellectual property rights they need a governmental mandate requiring all devices that touch digital broadcast content to be sufficiently “robust” (secure and nontamperable) and “compliant” (possessed of approved technology to prevent unauthorized flows of content through digital outputs). They argue that this request is merely incremental and that, in the future, virtually all TV equipment will already contain protected inputs and outputs in order to make use of protected content delivered by cable and satellite services. Therefore implementation of the flag will merely require flagged broadcast programming to be directed to these preexisting protected inputs and outputs – which in many cases will already be protected by the 5C suite of technologies.²⁸

Consumers and content providers both stand to benefit from competition among multiple potential Table A technologies. However, discussions of the proposed regulation almost always take it as a given that the 5C suite of technologies will be approved for Table A. Concerns have been raised that this “first-mover” advantage for 5C, coupled with the hurdle of Table A approval and the potential use of licensing terms to stifle competition, could have unintentionally anticompetitive effects.

Several parties are concerned about the effect of Table A implementation on innovation with respect to the general-purpose computer. As we understand it, 5C would not permit transmitting flagged content to a computer through a digital connection unless the computer is “compliant” – which means untamperable and with secure digital outputs. This would require the general purpose computer—still an open platform device—to become “untamperable” and would mean that computer makers who want their devices to participate in home networks will not be permitted to have unregulated digital outputs, a major architectural change. Computer makers will have to create different product lines if they wish to keep some digital outputs unregulated. This, coupled with developments like the existence of computer software demodulators, create a real concern that the flag proposal will extend far beyond the devices typically thought of as processing digital TV and squarely impact the open architecture of the computer, which has been a driving force in the digital revolution.

3.4. Reasonable Consumer Uses

Consumers are just beginning to learn about copying and sharing video files, and will expect to be able to continue to do so on interoperable devices for their own private purposes. Consumers enjoy recording, storing, and viewing programs in many different places. They own a great deal of legacy equipment, and will be frustrated if their machines stop working with DTV content.

²⁸ Some have noted that this “incremental” argument depends in significant part on the Cable/CE Memorandum of Understanding currently being finalized by the FCC. Because the final contours of that agreement are not known, some believe it would be unwise to assume that all future devices will incorporate the 5C associated technologies. Moreover, this agreement as well as the flag regulation create concerns for the IT industry about the increasing role of federal regulation in dictating personal computer architecture.

However, there is no requirement in the flag proposal that approved technologies provide for reasonable consumer uses, such as recording a program onto standard-format, non-compliant devices; time-shifting (to watch a program at a later time); space-shifting (to watch a program in a different place); excerpting; skipping over content consumers do not want to see; transferring content within a personal network and among formats; continuing to watch content on millions of legacy devices; and other as-yet-unrealized reasonable uses of content (such as, for example, securely emailing files to family members). While many of these uses might be permitted by 5C technology, for example, the language of the broadcast flag proposal speaks only to preventing "unauthorized redistribution" – which could include reasonable uses that are not infringements of copyright.²⁹ A fear is that protection technologies that restrict more uses might grow to dominate Table A, giving consumers little choice but to forego some reasonable uses in order to access DTV content.

The flag's supporters have asserted that the broadcast flag will not prevent any of the activities that the typical consumer engages in today with television, including recording and copying programs. This is a welcome statement for consumers but is best understood with certain caveats. As noted, the language of the proposed rule is not clear on this point. Also, a consumer may be required to purchase new equipment to continue to enjoy these activities. For example, once a 5C-compliant device recognizes flagged content, it cannot be transmitted to (or played on, or copied by) any noncompliant legacy device. So while 5C's EPN encoding rule may allow unlimited physical copies (like DVD recordings) and transmission within a home network (like through a WiFi network),³⁰ consumers will only be able to view those copies or transmissions on compliant devices.

For many consumers, this means they may need to substantially upgrade or replace their televisions, DVD players, computers, and other devices to handle flagged content if they wish to do many of the same things they are able to do with broadcast content today. Consider a consumer who buys one of the increasingly popular DVD recorders, personal digital recorders (like TiVo), or other digital recorders in a few years when we expect VCRs will be increasingly less attractive and when the flag will be in place. That consumer will be able to record a favorite DTV show on their flag-compliant recorder just as they do today, and play it back on that same recorder. But they will not be able to play that show back on any of their existing, non-compliant DVD players or computers; their compliant recordings will not operate with their existing non-compliant devices as required. As Americans make the transition to DTV and digital recording – and the flag proposal clearly contemplates that they will – we believe such incompatibility issues will impact many of them.³¹

The flag also raises concerns because it provides no guarantees that consumers will be able to share content – even securely – over network connections. Given the explosive

²⁹ The MPAA proposal states that the goal of the proposed regulation is: "Protection against unauthorized redistribution, including Internet redistribution, of protected content." This goal (protecting against any redistribution, to any machine) suggests that the proposed regulation is aimed at protecting against unauthorized redistribution to any machine not in compliance with the flag system as well as protecting against massive file trading online.

³⁰ Note that the concept of a "home network" or "personal digital network environment" is not clearly defined today, and raises difficult questions – who decides what is included in such a network?

³¹ Some argue that this expense and confusion will actually slow down DTV transition.

growth of the Internet and wireless networks like WiFi, this approach seems destined to upset consumers. For example, consumers might expect to send excerpts of content (or entire shows) to their families via the Internet. An increasing number of homes and offices will have WiFi networks and might expect to send programming over them. Little guarantee is offered that Table A will include technologies that make such reasonable redistribution by consumers possible.

Some are also concerned about future, innovative uses of content that may be barred by implementation of the broadcast flag even though they are otherwise reasonable and legal. Our inquiry has focused on whether there is a way to think about technology and law that recognizes existing patterns of reasonable consumer uses and allows for new, as-yet-undiscovered reasonable uses to emerge. It seems to some people that the law should apply the first sale and fair use doctrines to digital content regardless of the digital rights management scheme imposed by the rights holder. At the same time, many have stated that the law should not permit anyone to make and distribute unauthorized copies of digital content to the public just because technology makes this possible. No answers to this set of concerns have been put forward to date.³²

CDT recognizes that it is very difficult to state what are "reasonable consumer uses" and what are not. Nevertheless, flag implementation should adequately recognize legitimate consumer demands and leave room for future innovation.

3.5. Public Interest Values

Implementation of the flag could have a negative effect on important public values such as fair use, access to public interest/educational content, and access to public domain materials. Because no one knows yet how the rules will work (or even what the rules are) we are necessarily dealing with hypothetical concerns, but they are important concerns nonetheless.

The "fair use" questions are difficult, and are closely related to the reasonable use concerns we raised in the last section. "Fair use" is a specific legal category, protected under the First Amendment. Determining whether a particular use of copyrighted content is fair use is case-by-case, fact-specific, and often subjective inquiry. For this reason, it is extremely difficult to "code" the legal principle of fair use comprehensively into any copy protection scheme. Additionally, if anyone tried to "code" fair use as it is now, they might inadvertently cause future uses deemed "fair" to be blocked. Indeed, "coding in" fair use might itself stifle innovation. However, it is not sufficient to say "it is too hard" to "code" fair use, and therefore block all reasonable consumer uses – including fair uses – for to do so would allow technical code to amend legal code (the rules, however ill-defined, of fair use). We believe a

³² Other very difficult questions not addressed by the current proposal include: What will the consequences of license and other obligations imposed on home network devices be for consumers? Who, if anyone, will have the affirmative obligation to review these agreements on behalf of consumers? Who, if anyone, will have the affirmative obligation to review the impacts of "approved technologies" on personal privacy? Many consumers are concerned about the effect on their privacy of the proposed flag scheme. Having the ability to offer consumers finely-tuned rights packages carries with it the potential ability to know what each individual is watching, where that person lives, and how long they watch what they watch – information that broadcasters do not now collect.

credible point has been raised that mandating technologies that effectively prohibit what would otherwise be fair use of DTV content raises copyright policy and First Amendment concerns.

Additionally, some believe the flag proposal raises other important free speech values concerning access to educational and news content (and content already in the public domain). Some proponents of the broadcast flag say that they do not intend that such content will be flagged. But the current flag proposal is silent on this point.

Public-interest advocates raise other concerns. Compared with the regular version of any device, the "compliant" version will have many new ways of failing. Equipment companies will have to staff help-desks and fund higher support costs. Also, compared to the regular version, the compliant version may have more versions, more customization features, and more internationalization issues, and will therefore be more expensive to keep in inventory. Finally, some approved technologies might collect information about users and their viewing habits – perhaps in part to promote security – raising privacy concerns (and creating potential data privacy liability for manufacturers under the EU Privacy Directive or other similar laws).³³

³³ For example, technologies that allow people to securely distribute a program within a registered home network, might do so by requiring registration of all the televisions, computers, etc. within that home network. Then they might check the use of content on that network. That in turn might enable a content provider to gather and match information about a person's viewing habits.

4. ISSUES FOR POLICY-MAKERS

4.1. Addressing Concerns with the Flag

Based on what we have learned in our dialogue with key stakeholders, CDT believes that if the FCC chooses to adopt the broadcast flag approach, targeted adjustments to the broadcast flag proposal put forward by MPAA could improve the proposal consistent with its stated goals, while mitigating some of the important concerns that have been raised. Here are our suggestions, keyed to the discussion sections above:

Innovation concerns

- *Functional criteria should be used instead of, or alongside, the "as effective as" test.* Such functional criteria should be rooted in clear goals for the flag, should be reasonably easy to understand, and should permit developers to self-certify. For example, criteria could include "effectively frustrates the Internet distribution of protected content to the public" or "effectively frustrates the Internet distribution of protected content to more than x devices" (where x is a somewhat arbitrary but reasonable number).
- *The "market acceptance" test should be eliminated.* No group of incumbents should be privileged to approve technologies. If retained, all approvals should be completely transparent.
- *Self-certification* should be permitted to allow for relatively fast and simple addition of compliant technologies to Table A
- *Quick, independent arbitration should be established* for cases where a self-certification is challenged. The FCC should not act as the arbitrator. A representative arbitration/review board, with participation from the content, IT, CE, and consumer points of view, might be a better solution.
- *It should be made clear that software solutions are on the same footing as hardware solutions* in terms of eligibility for being approved technologies. Software solutions offer some advantages; for example, software would be upgradeable if breached.
- *Any flag regulation should include more than 5C technologies on Table A, and should not permit licensing terms that prohibit interoperability.* The terms of any private license agreements for Table A technologies (and the associated encoding rules for these technologies) should be made public in an easily accessible way. The regulation should not become effective until there are a minimum number of technologies on Table A.

Such steps will promote competition and creativity, and will ultimately provide consumers with a greater array of choices.

Reasonable consumer use concerns

Consumer and computer user concerns about reasonable uses are closely linked to issues of innovation addressed above. Additional suggestions include:

- *Secure online transmissions*, to limited numbers of addressees, should be facilitated.
- *Consumer input should be sought* in implementation of the flag regulation, including regarding the details of the encoding rules associated with Table A technologies. In some cases, specific rules would be most appropriate, subject to public comment. One goal of such input would be to ensure that a breadth of technologies supporting a variety of evolving consumer uses are available under the flag regulation.
- The FCC should establish a process for *periodic oversight of license limitations* associated with Table A technologies, which may impact consumer use.
- To support such a process and to more broadly promote public awareness, the proposed flag regulation should *require transparency for Table A technology licensing agreements*. The agreements (and the associated encoding rules for these technologies) should be made public in an easily accessible way (subject to protections of proprietary terms.)
- *The definition of "personal digital network environment"* should be subject to notice and comment, and should allow for expansive and flexible consumer uses of content.

Public interest concerns

- *Further discussion is needed about marking of news and public affairs material*, including the encoding rules for Table A technologies with respect to such publicly important content, sensitive to its role in public discourse.
- *A standing oversight body*, made up of consumer representatives as well as industry representatives, should be constituted to provide advice with respect to public interest issues, including but not limited to fair use questions.

Should the FCC move forward with the broadcast flag approach in the near future, it should also consider creating some follow-on proceeding to address these and other the outstanding issues with the flag that have not received a full hearing or debate before the Commission in its first NPRM or other policymakers to date.

4.2. Other Concerns

Even if these changes are made to the flag proposal, the proposal prompts other concerns:

Precedent set by the flag for regulation of the computer - Personal and business computers are capable of demodulating TV signals and serving as "downstream devices" and therefore will be covered by the flag. Computers are (or will be) a key component of many consumer home networks. They are also a source of enormous innovation and economic growth in this country. Their essential feature has been the open platform, which permits innovation. We are concerned about the precedent the flag proposal will set for regulating the computer.

Precedent set by the flag for technology mandates - While many argue the flag proposal is narrowly focused, it would unquestionably be a technological mandate: all machines handling DTV content would have to adhere to a particular set of rules. Public policy to date has largely resisted such mandates, especially with respect to computers, for reasons that remain compelling.³⁴ In an era of rapid change and technical complexity, government technology mandates have been heavily resisted in part due to the slow speed and inflexibility of regulation, as well as the expertise that resides in the private sector rather than the government. We share this concern about technology mandates, and recommend that policy makers continue to follow the no-tech-mandate principle.³⁵

No consumer choice due to market dominance by one or small number of protection technologies - Although we have argued in favor of multiple Table A entries and self-certification of copy technologies, we are aware that the investment required and the already-entrenched position of 5C may mean that new protection technologies do not emerge for some time – if at all. This will be bad for consumers. Consumers will benefit from having choices of protection technologies and from competition among technologies. While we have suggested functional criteria and a minimum number of technologies on Table A to promote competition, there is a chance this will not be sufficient.³⁶

Few new consumer uses permitted, with possible retrenchment over time - Similarly, we are worried that under a flag scheme, manufacturers would lose the incentive (or legal ability) to develop new uses of content that would comply with the broadcast flag regulations. Again, this is not good for consumers, for innovation in this country, or for the long-term health of the content providers, who benefit from new and innovative markets for content delivery and use.

Content protection and piracy problems remain - As has been noted, the broadcast flag will be limited in its effect. It is technically quite easy to circumvent. The easy digitization of

³⁴ As the head of the RIAA said in announcing an agreement with key IT trade groups in early 2003, "Another important plank in this agreement is a firm commitment to opposing government-imposed technological mandates. The RIAA believes in innovation. And we believe that consumers in the marketplace, not the government, should decide which technological innovations will thrive." Hillary Rosen, *Business 2.0*, <http://www.business2.com/articles/mag/0,1640,48572,00.html>.

³⁵ This model has been codified in part in the DMCA, which states that manufacturers of computers and consumer electronics products have no obligation to ensure that their devices respond to particular copy protection technical measures (Section 1201(c)). Many view this as a critical element of the balance struck under the DMCA. The Act does feature an analog mandate for manufacturers of VCRs to use Macrovision (which prevents VCR-to-VCR copying) in their devices (Section 1201(K)).

³⁶ At the same time, given the slow sale of DTV receivers and the fact that most Internet users cannot yet easily transfer large HDTV files, there is some time to promote consumer choice and avoid lock-in of a single technology.

analog signals – which must continue to be available as they are essential to ensure that hundreds of millions of existing televisions, VCRs, and DVD players continue to operate – will be the source of digital copying for years to come. A huge number of video programs already exist in unprotected digital form and can be traded online. Regardless of its effect as a hurdle against easy copying of DTV broadcasts by unsophisticated users, the flag proposal will do little to address these other very serious potential sources of copyright infringement. Rather, it must be viewed as only one part of a much broader debate about protecting content in the digital age.

Thus, even if the changes we suggest to the flag proposal were implemented, significant concerns about consumer uses, innovation, effective copyright protection, and government regulation of computing and consumer electronics more generally would remain unresolved.

4.3. Non-Flag Protections for DTV Content

We have explored with dialogue participants options for addressing concerns about video piracy that do not involve an implementation of the broadcast flag. Regardless of the ultimate approach taken by the FCC, and given the limits of the flag proposal in stopping unauthorized redistribution, we believe that a “three-legged stool” of approaches taken together hold out great promise for having a broad impact on digital piracy online: Enforcement, Education, and new Economic Models.

Enforcement - Current copyright law provides copyright holders with very significant enforcement tools. Laws in the U.S. against copyright infringement carry substantial criminal and civil penalties – but are rarely enforced today against many online infringers. CDT believes that it is unhealthy for our country, and unfair to copyright holders, for millions of computer users to routinely violate the law of the land. The recent efforts by the recording industry to sue suspected infringers who use peer-to-peer file-sharing systems has already had a major effect on public awareness, and we believe could mark a turning point in music file-sharing if it is accompanied by serious educational efforts and rapid release of attractive, legal alternatives in online music distribution.

To be effective, legal action must be coupled with attractive legal alternatives and broad education efforts, and must be pursued consistent with due process and proportional penalties. Such action by the video industry, while undoubtedly unpopular, could go a long way towards raising awareness about copyright issues among consumers and computer users. CDT believes that targeted enforcement – consistent with due process, and coupled with education and attractive legal alternatives to digital piracy – could have a substantial deterrent effect on piracy.³⁷

Education - Many content companies are frustrated because they believe that consumers – and young people in particular – do not seem to care about copyright. Enforcement efforts will help address consumer apathy, but large-scale public education is needed to transform the awareness created by enforcement into a genuine understanding by consumers of their rights and responsibilities under copyright law. The Business Software Alliance, for example, has made a good deal of progress through a concerted public campaign of awareness and learning about software copyrights; the video content industry should embrace a similar approach.

³⁷ See, e.g., CDT Testimony before the Senate Commerce Committee (September 2003).

Several educational efforts are already underway. The recent public awareness campaign and commercial announcements by the motion picture industry are a fair start. The collective rights organizations, the American Society of Composers, Authors, and Publishers (ASCAP) and BMI, have spent a great deal of money educating students and practitioners for many years about copyright law. Universities are increasing their copyright education efforts. The Copyright Association of America hosts town meetings and conferences about copyright, and many other trade associations do the same. These efforts should continue, but we believe education will be most effective over time if people are able to hear from traditional sources of objective consumer information as well as the affected industries.

New Economic Models for Digital Distribution - The old conventional wisdom among copyright holders has been: “You can’t compete with free.” As the music industry is finding, new digital distribution systems provide ways to compete with free. Consumers have shown that they believe that easily searchable, downloadable, value-laden content is worth paying for online. Faced with the choice of purchasing a legitimate copy of a valuable piece of entertainment using a high-quality service and at a reasonable price; or illicitly downloading the same content over an error-prone, unfriendly connection with the risk of an enforcement action, we believe that the majority of consumers will gravitate towards the higher-quality, lawful offerings of the major content producers. The incredible success of Apple’s iTunes Music Store, which has quickly surpassed 10 million downloads of major-label songs and albums despite serving only a small percentage of consumers, is a powerful demonstration of this point.

While the music industry was caught off guard by the spread of online file sharing—and as a result took several years to develop legal alternatives with satisfactory copy protection schemes even as a file sharing “culture” developed online—the video content industry has the opportunity to preempt online sharing of copyrighted video content by offering attractive legal alternatives from the start. The studios have begun moving in the direction of offering high-quality, value-added downloads. For now, these services are hampered by the same bandwidth constraints that are keeping video piracy in check, but as access to bandwidth in the “last-mile” grows, studios must be prepared to strengthen and expand these services.

4.4 Broadcast Encryption at the Source and Other Alternative Mechanisms

Other technical approaches to the copy protection problem faced by the video industry merit consideration. Foremost among them is broadcast encryption – permitting the encryption of DTV signals at the source rather than broadcasting them “in the clear.” It is widely agreed that encrypting the DTV signal would provide more effective protection than the flag scheme. Permitting marketplace use of broadcast encryption might also avoid the troubling technology mandate implicit in the flag and its Table A approval process. At the same time, broadcast encryption leaves unresolved questions about just what systems will be permitted to decrypt DTV, what licensing restrictions will apply, and consequently what consumer uses will be permitted. While CDT believes these are serious unresolved issues, the costs and benefits of this approach should be explored, and not rejected out of hand because of a possibly outmoded vision of broadcast – especially since an ever-growing majority of American households subscribe to cable or satellite TV, where video content is delivered in protected form.

Another technical approach that might be useful – if only as a stopgap measure – would be to require that all DTV broadcasts be transmitted in high-resolution formats, rather than as

narrow slices of a channel's spectrum. Huge files are very difficult to trade online, and if the movie industry wants to slow piracy it could do that through keeping file sizes large.

5. SUMMARY AND CONCLUSION

The broadcast flag proposal is a complex and important approach designed to protect DTV broadcasts from unauthorized redistribution, with serious potential implications for consumer uses, technology innovation, and content protection writ large. The previous sections have provided a careful description and analysis of the flag proposal and the arguments for and against it. This section summarizes the reports major findings.

F.1 Protecting copyright in the digital age is important for both consumers and content owners; failure to protect content can have major implications for the availability of high-quality programs on new digital media; and genuine fears have been raised about unauthorized redistribution of unprotected digital TV.

The country's transition to broadcast digital television, slated to occur by 2006, is part of a broad content protection challenge facing movie studios and other video producers. DTV programs, broadcast with no protections, are one source of unprotected digital content that will make it increasingly easy for people – especially those with broadband connections – to share digital TV programs and movies. The creators and owners of video content understandably fear future widespread piracy of video online, and want to take steps to avoid its risks. The proposed “broadcast flag” – a combination of technical standards and federal regulations designed to mark and protect digital television – is a response to the DTV piracy threat and is now the subject of a major FCC rulemaking.

The broadcast flag proposal is, we believe, a genuine first attempt to resolve these issues in the context of a national tradition of “free” over-the-air television broadcast. CDT, based on its dialogue with key stakeholders, understands the goals of the flag to be to:

- prevent the widespread electronic redistribution of protected DTV programs, particularly on the Internet;
- allow many different market offerings and new content delivery mechanisms, consistent with content protections; and
- allow many reasonable uses of content, including the ability to copy freely within the home or onto physical media, so long as done in a way that does not allow widespread redistribution.

We perceive broad agreement among the flag’s supporters that the primary goal of flag regulations should be to prevent widespread online redistribution of digital content. There also appears to be agreement that many reasonable uses of content – including unlimited consumer redistribution within the home network and copying onto physical media – should be permitted under the flag. From a consumer perspective, these are both welcome.

F.2 Proposed broadcast flag regulations, currently before the FCC, create many legitimate concerns for television viewers, Internet users, and industry groups. As drafted they may restrict reasonable uses of content by viewers, hinder future technology innovation, and impose costs that are not worth the limited copy protection provided.

The main concern about the current flag proposal is that it fails to meet these goals because it provides little firm guidance about what consumer uses and future technologies will be permitted. Most critically, the “Table A” process of approving technologies permitted to

handle flagged programs is highly subjective – in essence making future consumer uses of television dependent on the approval of a small set of designated content companies.³⁸ As a result, television viewers can reasonably fear that the flag proposal –

- might prohibit reasonable future uses of programs or movies, particularly digital uses like distributing a program in a home entertainment system, emailing a program, or taking a small excerpt of a program;
- will impose new costs on them as they will be required to use flag-compliant televisions, DVD players, computers, or digital recorders to record and view flagged programs;
- could hinder broader use of news or public affairs programs; and
- could hinder innovation in new systems for delivering and using video content, which will now be subject to a gatekeeper approval process.

A major element of these concerns is that the broadcast proposal currently “leaves out the Internet.” While unlimited physical copying of programs is apparently to be allowed, no provision is made for emailing programs, or taking digital excerpts, or any number of reasonable uses – even if done in ways that prohibit widespread copying.

To their credit, many flag proponents have in principle supported secure Internet applications. They are among the first to argue that studios and other content producers will want new delivery mechanisms. Unfortunately, the procedures in the broadcast flag regulations do not give the public guarantees that in fact these future new applications will be permitted – a promising area for improvement. Most notably, the proposed regulations would in fact designate a small group of studios whose approval would be the speediest path – and in some cases the only path – to approval for future new applications.

F.3 Better versions of the broadcast flag proposal could be created to deal with many of these concerns, primarily by creating more clearly objective and focused functional standards for the devices and uses that will be permitted by flag regulations, and by creating a more open and accountable process for certifying permitted technologies.

There is a path to addressing many of these concerns. The goal of diverse delivery mechanisms could be better reached, and fears about the flag could be mitigated, by creating more objective criteria for permitted future uses. If the FCC move forward with the flag approach, among the steps we recommend are:

- Functional criteria should be used instead of the “market acceptance” tests now proposed. Such functional criteria should provide clear guidance about the kinds of uses and technologies that will be authorized. They should be based on the goal of preventing widespread digital redistribution, rather than the broader goal of allowing only authorized recording, copying, or use of programs. They should mirror the goals of the flag, be reasonably easy to understand, and permit developers to self-certify.

³⁸ As described in greater detail in the report, the one approval mechanism independent of studio consent – the allowance for technologies “as effective as” technologies already approved – itself fails to include clear criteria to answer the question: “as effective at doing what?” It is feared this path will not be useful for innovative delivery technologies different from those previously approved.

- The "market acceptance" tests (technologies may be approved by three major studios, or by ten equipment makers and two major studios) should be eliminated. They do provide a helpful expedited path to technology approval. Unfortunately, they also create an understandable perception that new market entrants will be disadvantaged because a few large companies will have the power to approve new technologies. If functional criteria were specified, the need for a market acceptance test would be obviated.
- Steps should be taken to mitigate concerns about reasonable uses, the future contours of "fair use," and access to news and public affairs programming. At minimum, some procedure for addressing these issues should be part of any flag approach – whether a follow-on rule-making, activity by another agency or office, or the creation of a forum in which consumers participate alongside industry representatives – to assess the effect of flag regulations on existing reasonable consumer uses, on uses and devices yet to be invented, on home networks, and on public values. We believe answers to these questions will be essential for any flag system.

Further exploration should also be given to "encryption at the source" as a potential way to address many of the concerns with the flag. Broadcast encryption provides more secure protection and could reduce concerns about technology mandates (as the government need not mandate the encryption used). However, it leaves open many of the same questions about permitted uses downstream raised above. Still, we believe the approach might yet provide a "win-win" compromise that has not received a full discussion among those debating the flag or before the FCC.

F.4 Even with those improvements, the flag proposal poses unresolved issues regarding technical regulation of computers and the Internet by the government, the impact of the flag itself on innovation and future consumer uses, and the definition of "fair use" and other copyright doctrines in the digital age. It also leaves other serious copy protection problems for television content unresolved.

Finally, we note that even these steps will not address all of the outstanding concerns with the flag. These include:

- The precedent set by the flag for technology mandates: The flag sets a precedent for regulation over computing technology that is understandably troubling to those concerned about innovation and access to information supported by the open Internet and the general-purpose computer. While many argue the flag proposal is narrowly focused, it is hard to argue that it is not a technological mandate, particularly from the perspective of consumers who have had little to do with its creation. To date such government regulation – and particularly FCC regulation - of computer architecture has been highly disfavored for important public policy reasons.
- The limitation of consumer choice due to market dominance by one or a small number of copy protection technologies: The standardization of first-mover technologies on Table A may mean that new copy protection technologies will not emerge for some time – if at all. This will be bad for consumers and the content industry, who benefit from having many choices of content delivery and protection technologies.

- The restriction of new consumer uses, with possible retrenchment over time: Nothing in the current rules requires that the technologies offered on Table A permit a range of reasonable uses, and nothing prohibits technologies today contemplated for Table A from limiting approved uses in the future.

These are all serious issues that are not easily addressed within the current set of proposals before the FCC. We believe that – at a minimum – further discussion is needed to develop approaches to dealing with these concerns.

F.5 Whether the FCC adopts the broadcast flag approach or not, the combination of copyright enforcement, new economic models and digital delivery mechanisms, and consumer education hold out great promise to have a broad, long-term impact on copyright infringement online.

A “three-legged stool” of approaches together hold great promise for a sustained impact on digital piracy online while avoiding many of the most controversial pitfalls of enforcing copy protections through imperfect technology protection mandates:

- Enforcement - US law provides copyright holders with powerful but rarely exercised enforcement tools against copyright infringement online. CDT believes that targeted enforcement – consistent with due process, and coupled with education and attractive legal alternatives to digital piracy – could have a substantial deterrent effect on piracy.
- New Economic Models for Digital Distribution - We believe that consumers will gravitate towards high-quality, lawful offerings that are affordable and provide them with adequate capabilities to use content. Studios have begun to experiment and are learning about what consumers want, and now have the opportunity to preempt online sharing of video content by offering attractive legal alternatives.
- Education - Large-scale public education is needed to transform the awareness created by enforcement and new legal alternatives into a genuine understanding by consumers of their rights and responsibilities. We believe education can be effective over time, especially if provided by traditional sources of objective consumer information.

More than any single technology regulation proposal we believe that attractive digital distribution, coupled with enforcement and education, has the greatest potential to curtail online infringement, reward creative production, and benefit consumers.

The broadcast flag proposal is a serious approach to real, though in some cases prospective, threats faced by the video content industry in the digital age. It could also have broad effects on the ways in which consumers view and use information generally, and the ways in which companies develop new products and devices to communicate and use digital video content.

Objective, functional criteria and transparent, independent processes appear to be the best approach to ensure that the flag is able to readily accommodate new technologies if it is

adopted. Taking such an objective, process-based approach will prompt investment in new technologies without compromising the protection of valuable copyrighted works. New distribution models that involve the Internet will mean larger audiences, satisfied consumers, and dramatic innovation. For these reasons, and many others, it is in the interest of everyone involved in this debate to ensure that paths to change are clear and objective.

At the same time, even with clearer, more objective criteria the flag proposal leaves big questions unanswered. Just as ten years ago we could not have foreseen how the Internet would develop, today, we cannot predict the paths of technology development. We need to ensure that the steps we take today to protect the legitimate interests of copyright holders do not stifle innovative models of digital distribution. We do not know what those future models might look like. We do know, however, that computing and the open Internet have fostered unimagined changes in the ways we communicate and share information.

CDT calls on stakeholders and policymakers to pursue a more open-minded and forward-looking dialogue towards balanced responses to the immediate challenges raised by the broadcast flag. We also believe that far more must be done to resolve the broader unresolved issues about innovation, content protection, and the user-empowerment potential of the Internet. The current polarized debate has not allowed adequate discussion or debate. CDT looks forward to facilitating a more balanced conversation, along the lines suggested in this paper, that seeks to promote what we believe are important and widely-shared values.

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