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Digital Delivery of Content Via the Internet: Legal and Business Considerations for the Music and Film Industries

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I. SUMMARY AND OVERVIEW

This paper explores the possibilities, constraints and implications of distributing content—specifically, sound recordings, "multimedia" works, motion-pictures, and other audio-visual works—via the Internet.

Although bandwidth1 issues are far from settled, it seems increasingly likely that the Internet (and similar electronic networks) will emerge as an important means of distributing copyrighted works. The nature of web-based distribution could result in some fundamental transformations in the entertainment industries. For instance, it could permit the delivery of entertainment products to end consumers without incurring the substantial transaction, distribution, and reproduction costs associated with the delivery of such products in physical media through traditional retail channels. Given the high degree of concentration of the ownership of distribution networks in the music and motion picture industries, this delivery model would open up considerable new opportunities, particularly for independent film and music producers.

Apart from technological obstacles, the uncertainty about the legal framework and difficulties in monitoring, enforcing and safeguarding copyright interests have been frequently cited as casting the biggest shadow over the efficacy of the Internet as a means of distributing intellectual property.2 It has been asserted that until copyright owners are afforded the level of legal protection that they are accustomed to in traditional media, they

will refuse to place their works on the Internet.3

Copyright and the digital challenge

There have been various responses—in the United States and abroad—to the new challenges to copyright law posed by the Internet. In the United States, the Working Group on Intellectual Property Rights4 was formed to examine the copyright implications of the new technology and to propose amendments to existing statutes in order to adequately accommodate these challenges. Similar initiatives have been pursued internationally through the World Intellectual Property Organization (WIPO) and within the EC. For a variety of reasons, not least of which is manageability, the analysis here is limited primarily to the findings and recommendations of the United States' Working Group, which have been presented in the Report of the Working Group on Intellectual Property Rights (hereafter "White Paper").

The White Paper recommendations include a proposal to amend the copyright statute, in order to clarify statutory provisions in a new technological context. However, a number of the White Paper recommendations are inadequate, ineffective or inappropriate as responses to the challenges of the new technology. In particular, some of the White Paper conclusions unduly change the balance between copyright owners and users. For instance, the White Paper asserts in parts that the first sale doctrine is inapplicable in the digitally networked milieu and infers that "web browsing" fully implicates the reproduction right. These conclusions and recommendations are troubling because their implementation would adversely affect the development of the Internet as a viable, legitimate medium for

distributing copyrighted works, without really improving the protection of copyrighted works on the Internet. Other recommendations—primarily centered in proposals to add a new chapter dealing with copyright protection and copyright management to the U.S. Copyright statute—present a vision that seems woefully under-informed about technological prospects, instead appearing to be driven by an unfortunate aspiration to rein in rapidly changing technology.

As this topic involves substantial interplay between the legal and business arenas, this paper will analyze some of the legal issues—primarily copyright concerns—surrounding content distribution via the Internet (Part II); outline some of the business factors involved in implementing content distribution via the Internet (Part III); and finally, examine one of the current technological solutions for content delivery on-line (Part IV). With this analysis, I hope to aid in the resolution of what the exclusive rights granted by the Copyright Act mean (or should mean), and how they may be effectively administered and enforced in a milieu in which the physical limitations that inform the legal model and traditional conceptions of copyright law have significantly changed or have been eliminated. Further, I intend to outline some of the circumstances and situations under which the Internet can be effectively utilized to deliver intellectual products to the end consumer.

II. LEGAL ISSUES

Introduction

In this part, I introduce copyright law generally, then identify some of the particular concerns unique to recorded music and audio-visual works. I then evaluate a number of the recommendations made in the White Paper and make suggestions on how copyright policy

may be achieved through alternate constructions. Specifically, I urge the application of the first sale doctrine to copies5 of works delivered by authorized transmissions and advocate that private, non-commercial users be exempted from infringement liability for "browsing" activities on the World Wide Web. Finally, I point out some of the limitations of purely legal constructs to the practical necessity of safeguarding and enforcement of copyright interests in the light of technological innovation, and also urge a more open-ended approach towards implementing a copyright management system.

Outline

Section A introduces the Internet, the World Wide Web (WWW), and digital technologies. Section B raises some of the copyright issues implicated by the transmission of digitized material on the Internet; discusses the recommendations made in the White Paper for dealing with the reproduction right, web browsing, the distribution right and the first sale doctrine; and makes alternative suggestions as to how copyright law might be adapted for these issues. Section C summarizes the diminished impact of copyright in the new milieu and makes observations on the opportunities for technological solutions.

A. Copyright, the digital format and the Internet as a medium

1. The Internet as a medium

The Internet is a collection of inter-connected computer networks which has grown from a thousand or so networks in the mid-1980s to about 30,000 connected networks in mid-1994, and doubled by mid-1995 to more than 60,000.6 These interconnected networks

enable the sharing of resources, permitting users to communicate using services such as electronic mail, Usenet news, Gopher, WAIS, FTP, and—most important for this analysis—the World Wide Web. Information on the Internet is uploaded—transmitted for storage—to file servers, machines which make files available for users to download—retrieve by transmission—to their local machine.

Technically, only computers that communicate using the Transmission Control Protocol/Internet Protocol (TCP/IP) are part of the Internet. However, the 'Internet' and other related descriptions—"the 'Net," "Cyberspace," etc.—are used to refer generically to all the interconnected electronic networks through which computers may communicate. Other electronic networks include Bulletin Board Systems (BBSs) which are usually run by and for local users, commercial service providers like America Online and CompuServe, and private corporate networks. Networks in the latter group are usually closed—that is, access to them is limited—but they can often connect to the full Internet through gateways—computers that exist on two networks and permit data transfer between both.

The number of Internet hosts is estimated to have grown to 4.8 million by early 1995 from 1.3 million in 1993.7 There are wide ranging estimates of the number of users of the Internet. In 1996, the Economist estimates the number of users of the Internet to be between 40-50 million and doubling every year.8 To put these figures in perspective, there were 80 million TV sets in the US at the end of 1995, and 30 million PCs.9 The number of Internet users is likely to increase with the introduction of new, relatively inexpensive hardware that combine traditional entertainment with Internet access—such as Web TV and Apple Computer's Pippin.

With the advent of the World Wide Web and the removal of the restrictions against commercial uses of the Internet, the utility of the Internet for commercial purposes has increased dramatically. It has been noted that "[W]ith commerce on the [Internet], the incremental cost of distribution is zero,"10 making it a desirable means for distributing intellectual property products—such as publishing, software, music and video—that can easily be digitized. Indeed it has been asserted that "the movement of pictures round the Web that will be the main consumer of bandwidth."11

Although accessing these products directly over the Internet has been constrained by available bandwidth, constant technological innovation—for instance some Advanced Digital Subscriber Line (ADSL) proposals—promises to vastly increase available bandwidth, enabling users to access a full range of intellectual property products including digital audio and video. Through 1996 though, it ought to be noted that "the most popular service on the Network [was] being able to buy stamps from the US Post Office."12

The introduction of the HyperText Transport Protocol (HTTP) driven World Wide Web has greatly extended the capabilities for manipulating and transmitting data other than text via the Internet. Traffic in digitized graphics, pictures, music and video over the Internet has increased accordingly. Using HyperText Markup Language (HTML), users can create Web pages—documents which can include hypertext links—highlighted text which point to further accessible information or data. In the case of data files—digital audio, video, etc.—users can download such files from a web server by clicking on a link. The practice of navigating the World Wide Web to access the information available on the vast number of Web pages—much as one might examine volumes in a library or bookstore—is described

as "browsing" the Web.

Browsing over the World Wide Web takes place between computers with software serving respectively as client and server applications. Users download information by using client software—such as Netscape Navigator—on their local computer to request information from a server software which processes the requests and sends the data from the appropriate server machine to the client.

An important twist with present browser technology that has significant implications for the use of copyrighted works online is that transmission of such works is not neatly delineated into reproduction or distribution, but in fact implicates the two exclusive rights. Thus, when one requests a data file consisting of copyrighted material—on the WWW, by clicking on a hypertext link—a data stream is transmitted to the requester (implicating the distribution right) and reconstituted into a copy of the original file in the recipient computer's storage media—RAM and/or hard drives or other storage media (implicating the reproduction right).

2. The Internet and digital technology in tandem

The significance of the digital format in the copyright context is that physical limitations do not inhibit the making of unauthorized reproductions of digitized material as they limit the copying of analog source material. Once content—information such as literature, music, audiovisual works, etc.—has been digitized it is easily duplicated and distributed with practically the same quality as the original and with no limitations on the number of copies that can be made.

The parallels between the advent of the Internet and the introduction of other

technologies in previous eras has not gone unnoticed. Invoking the sweeping copyright implications of the successful introduction of photocopying technology, Marybeth Peters, U.S. Register of Copyrights, has described the Internet as "the world's biggest photocopying machine."13 However, the concerns raised about the new digital information age are not singularly about the intrinsic utility of the digital format for reproduction, but the consequences of its combination with the Internet as a distribution medium.

To capture the full magnitude of the way that the new technology can affect copyright, one may simply contemplate the ease with which digital copies of copyrighted works may be distributed, at a scale so vast that it is practically unprecedented. With direct delivery over the Internet, digital copies of sound recordings, pictorial, graphic, musical, audio-visual, and literary works can be made and distributed over an open network linking millions of people without regard to jurisdictional or physical geographical boundaries.

One may add to the foregoing the absence of centralized control over the Internet and the ease with which users—downloaders and uploaders alike—can attain and maintain anonymity. Then, the depth of the problem is revealed—not only can millions of perfect or near-perfect copies be made and distributed without authorization across physical and legal boundaries, but it would also be a Herculean task to trace the infringers. These factors all add up to the potential for huge revenue losses for content providers which—as well as the extent of current losses—has galvanized the copyright industries and lawmakers.

In sum, the combination of a reproduction facilitative format, a unique and far-reaching distribution med content via this medium is what truly distinguishes the challenge of digital works on the

Internet from other instances—the onset of radio, television, cable in the broadcast arena, as well as the introduction of the video cassette and digital audio tape—that presented the challenges of the digital format or new distribution media in isolation.

B. Copyright implications of disseminating digitized works via the Internet

1. The Copyright Act and the U.S. Constitution

Article I, Section 8, Clause 8 of the U.S. Constitution authorizes Congress "to promote the progress of science and the useful arts, by securing for limited times to authors and inventors the exclusive rights to their respective writings and discoveries."

As the Copyright Act is the Congressional execution of the constitutional mandate; particular legislative choices about amending the statute should be guided by the primary goal of "promot[ing] the progress of science and the useful arts"—encouraging the growth and dissemination of knowledge and culture.

The Copyright Act of 1976 extends protection to "original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device."14 § 106 of the Copyright Act enumerates six rights that copyright owners may exclusively exercise or authorize:

(1) the right to reproduce the copyrighted work in copies or phonorecords;

(2) the right to prepare derivative works based upon the copyrighted work;

(3) the right to distribute copies or phonorecords of the copyrighted work to the public by sale or other transfer of ownership, or by rental, lease, or lending;

(4) the right, in the case of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works, to perform the copyrighted work publicly;

(5) the right, in the case of literary, musical, dramatic, and choreographic works, pantomimes, and pictorial, graphic, or sculptural works, including the individual images of a motion picture or other audiovisual work, to display the copyrighted work publicly; and

(6) the right, in the case of sound recordings, to perform the copyrighted work publicly by means of a digital audio transmission.15

These rights are not unlimited, however. Apart from limits on the duration of the exclusive rights, the Fair Use and First Sale doctrines, as well as various other limitations and compulsory licensing schemes all act as mechanisms to mitigate the effect of the copyright monopoly granted to copyright owners over the use of their works.16

2. Copyright in the context of open electronic networks

The various mechanisms for using copyrighted works online can be summarized as follows: the uploading of copyrighted material to servers for subsequent downloading, including uses on web pages (commercial and non-commercial); the downloading of files embodying copyrighted materials, including "browsing" of web pages by private, non-commercial users; and a h technologies—through which the end recipient is supposed to perceive the copyrighted work in real time, including Internet 'broadcasting' services (although 'streaming' theoretically

eliminates reproduction implications for end users, streaming technologies still result in the creation of copies, even if temporarily in RAM or on intermediate servers enroute to the end user).

One of the main challenges facing industry and lawmakers is how traditional copyright concepts should be applied to the digital networked environment. Predictably, uncertainties have arisen in terms of analytical approaches to this issue. One set of approaches has to do with delineating the scope of the exclusive rights within the online environment—for instance, the extent to which the transmission of copyrighted material online implicates the distribution, reproduction, public performance and public display rights. Another set has to do with establishing appropriate bases for applying traditional limitations in the networked milieu—the application of fair use and first sale doctrines in the online context, for instance.

Unsurprisingly, there have been private efforts to police the use of copyrighted works online and enforce copyrights. Such efforts have been reactive—through the institution of lawsuits against unauthorized uses;17 and pro-active—through contracts, notably the music licensing efforts of the primary U.S. performing rights societies, ASCAP and BMI.18 Nevertheless, the industries affected by these recent developments have been eager for a legislative solution.

In aid of such a solution, the White Paper has made the following recommendations to deal with the copyright implications of the digital networked milieu: (i) that

"transmission" be expressly designated as a form of distribution;19 (ii) that the definition of transmission be amended to include reproduction, not just performance or display;20 (iii) that the transmission of copyrightable works online be deemed publication triggering deposit requirement;21 (iv) that devices or services primarily capable of facilitating infringement by tampering with technological protections22; and (v) that the provision and distribution of false copyright management information or tampering with copyright management information be prohibited.23

In addition, the White Paper supports proposed legislation that would make persons tampering with technological protections or copyright management information face new levels of civil and criminal sanctions.24 Elsewhere, the White Paper makes the recommendation (not included in the proposed amendments) that vicarious liability attach to persons who have the 'right and ability' to supervise infringing actions, and have an obvious and direct financial interest in the exploitation of the copyrighted material—whether or not such persons have actual knowledge of the infringing action;25 and that liability for contributory infringement be based on "the provision of services or equipment related to the direct infringement."26 The White Paper also makes the pronouncements that the first sale doctrine is inapplicable to distribution by transmission;27 and that the browsing of copyrighted material on the World Wide Web is activity that implicates the reproduction right.28

On the whole, the White Paper recommendations appear to favor copyright owners, since they strengthen existing rights while they reduce the applicability of the limitations to the online context. Given that the White Paper's pronouncements increase penalties for, and widen the range of, infringing activities, it is a significant shortcoming that the White Paper fails to deal adequately with the likelihood that an absolute standard of liability for copyright infringement may no longer be appropriate—especially for non-commercial, private downloaders. Its failure to adequately distinguish between the relative impact of uploader activity on one hand and downloader activity on the other, is a serious flaw, one that becomes evident when examining three of the exclusive rights (and related limitations thereon) in the online context.

a. Transmission as reproduction and infringement liability

Presently, copyright law imposes strict liability for direct infringement of copyrighted works. When any of the exclusive rights are infringed, liability attaches automatically to the infringer unless one of the exceptions or limitations apply—there is no inquiry into the infringer's intent.29 An example of the strict liability standard is afforded by Bright Tunes Music Corp. v. Harrisongs Music, Ltd., in which copyright infringement was found "even though subconsciously accomplished."30

Upon the determination that infringement has occurred, the copyright owner may seek the following as remedies: injunctions,31 impounding and disposition of infringing articles,32 costs and attorney's fees,33 and damages and profits.34 Statutory damages,

however, may be reduced at the court's discretion (under the so-called "innocent infringer provision) where the infringer can prove that the infringement was inadvertent.35 As additional remedies, unauthorized copies and articles for reproducing the unauthorized copies may be subject to seizure and forfeiture,36 and criminal offenses may be brought against persons who infringe willfully and "for purposes of commercial advantage or private financial gain."37

Noting that "when a computer user accesses a document resident on another computer, the image on the user's screen exists—under contemporary technology—only by virtue of the copy that is reproduced in the user's computer memory," the White Paper concludes that web browsing implicates the reproduction right.38 This conclusion is informed by a string of cases that espouse various reproduction theories—notably that copyrighted work is reproduced if it is "fixed in RAM"— but deal exclusively with commercial defendants.39 In contrast, the White Paper's application of the 'fixed in RAM' rule to browsing will primarily affect non-commercial, private end- users or recipients who are often unaware of the copyright status of the downloaded material but are nevertheless subject to the strict liability standard.

While this standard of strict liability might be appropriate in the commercial context—for instance, where the infringement is in furtherance of a profit-seeking venture, the standard becomes problematic when applied to private, non-commercial users in the online browsing context. Since browsing constitutes reproducing under the White Paper's analysis, a user who accesses a web page reproduces any copyrighted works included in that

page. When such copyrighted works are uploaded and included in a web page without authorization, the web page owner or uploader's liability does not absolve a downloader or browser of liability for reproducing the work without authorization. However, as browser browser of liability for reproducing the work without authorization. However, as browser technology is currently implemented, a person browsing a web page often has no way of ascertaining beforehand what data is about to be downloaded (or indeed that anything will be downloaded!), and is accordingly oblivious about the copyright status of the data. Imposing liability on downloaders in this situation seems inappropriate. The White Paper's adoption of the stance that browsing implicates the reproduction right does not sufficiently resolve this problem but in fact compounds it.

An alternative approach would be to limit liability for copyright violation to the party that made the work available for downloading—the uploader (and, as appropriate, the service provider), and restrict the right to bring suit against, and limit the liability of, non-commercial, private downloader

Although, Congress has been unwilling in the past to change the standard of liability—arguing that the mechanism of the "innocent infringer" provision40 was sufficient to deal with inadvertent violations,41 that intransigence was directed at commercial users, not private users like the browsers described above. Moreover, the "innocent infringer" provision appears to mitigate the strict liability regime for copyright infringement only when the copyright owner elects to recover statutory damages under § 504 (c) rather than actual damages and profits under § 504 (b). As § 504 is drafted, the copyright owner is always entitled to actual damages, and even when statutory damages are elected the court may only

reduce these to "a sum not less than $200."42 The application of the "innocent infringer" provision to browsing by private users could result in serious inefficiencies since there could be millions of instances of such innocent infringements made by Internet surfers, each of which could give rise to $200 in statutory damages. This approach could have the additional undesirable consequence of chilling access to the Internet if private users perceive a threat that copyright owners could bring suit for infringement about which the users were unaware.

Recognizing the difficulty (and potential undesirability) of policing, identifying, and enforcing against infringements associated with downloading, I suggest that no remedies other than the granting of civil injunctions and the impounding of unauthorized copies should be available against private, non-commercial downloaders. At a minimum, scienter should be introduced as factor in determining downloader liability.

To maintain balance, statutory damages could be sharply increased for willful infringement by uploaders, Internet Service Providers (ISPs), BBS operators, and online services. The innocent infringer provision could still be applicable to these category of persons when they can prove that they inadvertently uploaded copyrighted works.

This approach places emphasis on dissuading unauthorized placement of copyrighted material on the network in the first instance by increasing penalties for uploading copyrighted works without authorization. It also brings the effect of judicial discretion as to damages in the case of "innocent" infringement to the forefront—before trial—rather than permit the inefficiency (and possible chilling effect) of allowing lawsuits against individual downloaders, establishing infringement, and then reducing the punitive consequences through the innocent infringer provision of the statute (or excusing the infringement on the

exclusive rights under a fair use analysis). This approach is also consonant with the Home Recording Act and its legislative history,43 as well as the Supreme Court's approach in Sony Corp. v. Universal City Studios, Inc.,44 both of which suggest that copyright law treat private, non-commercial users leniently.

b. Transmission as distribution and the First Sale doctrine.

The White Paper recommends that § 106 of the copyright Act be amended to reflect the fact that copies and phonorecords can be distributed by transmission, and that such transmission is within the exclusive distribution right of the owner.45

At least one commentator has described this recommendation as "baffling, since in order to transmit a copyrighted work, one has to copy it into the memory of the receiving computer."46 Thus, any transmission, unless privileged or authorized, would necessarily violate the right of reproduction and accordingly, the recommendation is redundant. In response to this argument, the White Paper takes the position that since the exclusive rights are independent and alienable, multiple bases—corresponding to each of the violated rights—for asserting copyright infringement must be permitted.47

One can certainly appreciate that a person who uploads a copyrighted work to a web server, making it available for further downloading, should be held responsible for violating the distribution right. However, the White Paper asserts that the first sale doctrine—which permits possessors of lawfully acquired copies of copyrighted works to sell or otherwise

dispose of such copies—is inapplicable to transmitted works since it only limits the distribution right and not the reproduction right, both of which are implicated by transmissions.48

§ 109 of the Copyright Act, which codifies the first sale doctrine, provides in relevant part that "Notwithstanding the provisions of section 106(3), the owner of a particular copy or phonorecord lawfully made under this title, or any person authorized by such person, is entitled, without the authority of the copyright owner, to sell or otherwise dispose of the possession of that copy or phonorecord."49 However, the application of the first sale doctrine is limited by §109(b)(1)(A), which prohibits the unauthorized rental, lease, or lending of copies or phonorecords for the purpose of direct or indirect commercial advantage.

The White Paper states that since the first sale doctrine is conceived for the traditional physical media model, wherein sale or transfer of a copy of a copyrighted work requires that the initial owner is physically dispossessed of the copy, it is inapplicable to transmitted copyrighted works from which the transferor/owner may create, or cause to be created, an additional copy for the recipient/transferee without dispossession.50

Of course, it is logical that the first sale doctrine should not be used as a license to make and distribute unauthorized copies of a copyrighted work. But the White Paper rejects the suggestion that a purchaser of a transmitted work may utilize the first sale doctrine by transmitting one copy and simply deleting the original copy to avoid infringement liability. It states: "[t]he question is not whether there exist the same number of copies at the completion of the transaction or not. The question is whether the transaction when viewed

as a whole violates one or more of the exclusive rights, and there is no applicable exception from liability....To apply the first sale doctrine in such a case would vitiate the reproduction right."51

This dogmatic focus on analogies to physical media seems odd since it does not explain how this proposal—creating an additional copy only temporarily, perhaps nearly momentarily—would adversely affect the economic effects of the reproduction right of the copyright owner any more than does the current application of the first sale doctrine in traditional physical media.

Moreover, the conclusion that first sale doctrine should not apply to copies obtained or intended to be disposed of by transmission simply because an additional copy is made as a necessary step to such disposition is not necessarily inescapable. There are other instances—for bona fide uses such as archiving—in which owners of copies of works are permitted to make additional copies, especially where the owner of the copyright is not adversely affected by such use.

Contemplating the issue of bona fide uses of copyrighted works in an analytically analogous set of circumstances (indeed the first such consideration in the U.S. of copyrighted material in the digital format), another body of experts—the National Commission on New Technological Uses of Copyrighted Works (the "CONTU")—recommended proscribing the unauthorized copying of computer programs but permitting a 'rightful possessor' to make or authorize the making of another copy of that program.52

Just as the CONTU reasoned that "[o]ne who rightfully possesses a copy of a program...should be provided with a legal right to copy it to that extent which will permit its

use by the possessor,"53 an authorized owner of a copyrighted work should be able to make a temporary copy to the extent necessary to utilize the first sale doctrine.

Following the court's analysis in Vault Corp. v. Quaid Software Ltd. of the archival and temporary copying provisions of the CONTU Report,54 such permission—in this case for transmission pursuant to exercise of first sale—would not be construed as authorizing the creation of additional copies of the copyrighted material or permitting the exploitation of other exclusive rights.

There is no need to eliminate the first sale doctrine for transmissions, when copyright law permits temporary and even permanent copies to be made in connection with other bona fide uses. After all, if the copyright owner doesn't erase the original copy after transmitting to a new recipient/owner, then the first sale exemption doesn't apply (since a copy hasn't been exchanged) and the distribution right is infringed upon. There would also be grounds for an infringement action (for violation of the reproduction right) since an additional copy would be created. Applied in this manner, the first sale doctrine could therefore not be used as a defense to an infringement claim.

This approach is not likely to increase non-commercial private infringement because the burdens of policing and enforcing copyright laws are unchanged with or without the provision. The only thing that eliminating the first sale doctrine would accomplish in this instance, would be to deprive bona fide purchasers of copyrighted works of a legitimate avenue for alienating such copies.

Since copyright infringement by private, non-commercial users of the Internet would be hard to police without deep intrusions into the right of privacy,55 focusing unnecessarily

on technical aspects of browsing technology—even when no economic significance can be attached to such aspects—to deem the first sale doctrine inapplicable is misdirected. The effort should be on ensuring effective protection (through technological standards such as suggested below as an alternative to the White Paper's proposed Chapter 12) rather than unnecessarily expanding conditions that constitute copyright infringement.

In any case the perseverance, and indeed proliferation, of the software industry—source of the first commercially significant digital copyrighted works—in the 17 years since the CONTU recommendations were enacted into law with the Computer Software Copyright Act belies any contentions by the White Paper about deleterious effects for copyright owners.

Indeed, the broad assertions made in the White Paper about the negative prospects for creativity likely to be engendered by a perceived laxity in copyright protection should be tempered with the experience of the computer software industry. Although significant revenues are lost due to infringement of copyrighted software, calls to eliminate the above-mentioned CONTU r suggests that the existing statutory treatment satisfies Congress as providing adequate incentives for authors to create, pursuant to the constitutional clause.

C. Diminished impact of copyright; opportunities for technological solutions

A broader point should be made—the reactive nature of copyright enforcement renders the law rather ineffective as the primary basis for copyright protection in the digital age. Short of damages, there isn't much of a solution available through the legal system once

a cognizable harm (e.g. copyright infringement) has been effected. Particularly if the network is open, the initial dissemination of the image sets in motion a chain of events that is difficult to contain, much less reverse.

The international nature of the Net will diminish the effectiveness of any unilateral efforts at controlling infringing uses. However, even standards selected by the World Intellectual Property Organization (WIPO) is unlikely to substantially affect piracy—monitoring and enforcement will be extremely difficult as long as the anonymity afforded to Internet users and geographical dispersion of Internet access points exist. Information flow across borders is more effectively controlled via the enabling technology rather than through individual country or even collective legislation.

The White Paper recommends broadly redefining contravention of anti-copying protection and increasing penalties therefor, without requiring that any manufacturers affirmatively implement copy protection schemes.56 The likely result is that would-be copyright infringers would have no reason to seek devices that circumvent copy protection, but instead purchase hardware that fails to implement any copy protection scheme in the first case.

If it is deemed necessary that the copyright law contain provisions on technological protection, a better approach would be to facilitate the accommodation of protection schemes possibly selected through a process that reflects the concern of copyright owners and hardware and software manufacturers) in devices capable of enabling the exercise of any of the exclusive rights. Then copyright owners will be completely free to implement any of the supported technologies. The scope of the prohibited devices could be narrowed to those with

applications that violate the adopted protection schemes, decreasing uncertainty about potential manufacturer liability.

In addition, the White Paper recommends a scheme for copyright management that would involve encoding copyright information into every copy of a copyrighted work. The White Paper envisions a system in which would-be licensees of the exclusive rights in a work could find all the information relevant to completing a licensing transaction—copyright owner/licensor information, licensing fees and conditions, etc.—on any copy of the work. The response of the American Film Marketing Association (AFMA) to this proposal is quite illuminating.57 The AFMA points out that such a management scheme would be unworkable because although the owners and licensing conditions for each copyrighted work can and do change constantly, the copies would be encoded with static and inevitably inaccurate information. Instead, the AFMA suggests that individual copies of a copyrighted work be encoded with a key that points to a central database (perhaps accessible through the Internet), from which copyright ownership information may be obtained and updated and thus facilitating an efficient and up-to-date licensing process.

As they stand, the White Paper recommendations focus excessively on reactive approaches to the problems presented by the Internet and not enough on technological solutions. The emphasis should instead be on introducing robust technological safeguards that build copyright management and payment/accounting system into the content-transfer-enabling software an of such safeguards. With the practical insignificance of jurisdictional and geographic

boundaries and anonymity attainable for users of the Internet, technological solutions are far more likely to staunch the hemorrhage of lost revenue from copyright infringement.

D. Conclusions

The White Paper notes: "when technology gets too far ahead of the law, and it becomes difficult and awkward to adapt the specific statutory provisions to comport with the law's principles, it is time for reevaluation and change."58 However, the nature of the reevaluation and change should be made consonant with the overall objective of copyright protection indicated in the Constitutional clause. The copyright statute should not merely be tinkered with to increase the level of protection for copyright owners (or indeed, to maintain a static level of protection). The balancing of public and private interests should be made in reference to the Constitutional mandate in its totality.

The willingness of the White Paper to effectively increase the scope of copyright liability without concurrently extending the limitations on the exclusive rights in the online context seems to confirm that it unduly favors copyright owners despite the declaration that "the goal of [the White Paper] recommendations is to accommodate and adapt the law to technological change so that the intended balance is maintained and the Constitutional purpose is served."59

Paradoxically, if the letter of the White Paper proposals on characterizing transmissions and implementing copyright protection and management measures is enacted into law, the development of the Internet as a means of distributing the fruits of intellectual labor and creativity will be severely constrained. A consequence of this will be the loss of

an opportunity for actual authors and content creators to participate fully in the revenues resulting from the exploitation of content. Just as with the earliest antecedents of current copyright law, statutory provisions purportedly in aid of the author's right to adequate remuneration would actually work to solidify the concentration of the control over content within a handful of conglomerates—at the expense of the actual content creators and consumers alike.

As the Supreme Court noted in Sony Corp. v. Universal City Studios, Inc.: "The law of Copyright has developed in response to significant changes in technology. Indeed, it was the invention of a new form of copying equipment—the printing press—that gave rise to the original need for copyright protection."60 It is not enough that copyright law develop in response to the significant changes. These changes should reflect the concerns that informed the Constitutional clause—protection of authors *in order to ensure the promotion of knowledge*.

The Internet offers new and exciting opportunities for doing just that—sharing information and thus promoting the dissemination of knowledge. It would be a grave pity if this potential were hobbled by a legal regime that effectively restricts access to copyrighted works without efficaciously accomplishing its objective of strengthening copyright interests.

III. DIRECT DELIVERY—SOME BUSINESS CONSIDERATIONS

This section identifies some necessary conditions, possible means, and plausible objectives achievable through the use of the Internet as a content delivery medium.

A. Introduction to the Internet as a direct delivery medium

The Internet has distinct appeal as a distribution medium for businesses that produce intellectual property—news, music, video, "content"—that can be delivered directly to the consumer. Once content has been created and placed on a server, the distribution costs via the Internet—whether the product turns out to be wildly successful or a dismal failure—remain equivalently negligible. In addition, the Internet is well suited to disseminating time sensitive products, and the centralized nature of distributing from a web server permits changes—upgrades, new editions, etc.—to be made to a product line without costly recall costs or rendering physical existing stocks obsolete.

Despite invigorating the media and entertainment industries with the promise of providing a medium for selling new products and services to a geographically unrestrained and rapidly growing market, actual business success on the Internet has been elusive. Thus far, few companies have been able to profitably harness the potential of the Internet in business undertakings. Several high profile Internet efforts—Microsoft's Slate magazine, Time-Warner's Pathfinder web site—have failed to produce any profit.

One of the key problems with these attempts to utilize the Internet as an alternate business medium is that the products and services offered are merely ported over traditional business environment to the online setting without regard to the value or advantage to so doing. This shortcoming is evident in two of the primary ways in which attempts have been made to use the Internet as a business tool-- net advertising and net publishing.

With net publishing (for example, Slate and Pathfinder), the universe of subscribers—persons with computers and Internet access— is not only smaller than for

traditional print media, but there are also significant aesthetic disadvantages to the online product—it is much more difficult to read substantial amounts of text on a computer screen than on paper. In addition, electronic publishing—at least until hand held readers become widely available—lacks the portability of traditional publishing products.

B. Prospects for sound recordings and audio-visual works

However, other products—for instance music and video—are candidates for successful distribution via the Internet, especially as more bandwidth becomes available. The aesthetic differences between sound recordings and audio-visual works delivered over the Internet and these works delivered on traditional media are far less pronounced than those between electronic publishing and print media. Other characteristics make these entertainment industry products strong prospects for business application via the Internet.

The media and entertainment industries in the United States—and, indeed globally—can be fairly accurately characterized as being concentrated within a handful of conglomerates. Along with this concentration, certain similarities can also be observed within these industries' revenue structures.

In the music industry, for example, retail markups and distribution costs typically count for a large proportion—typically more than half—of the retail price of sound recordings in the traditional consumer formats. The actual remuneration that the majority of featured artists receive on album sales varies between 4% and 15% of the retail price even though artist recording contracts typically recite gross royalty rates between 10% and 30% of the retail price of albums. This differential can be explained by the accounting practices in the music industry—from artist royalties on the gross retail price, deductions are typically

made for packaging, manufacturing and marketing costs. In addition, the production costs for the album—studio costs, producer fees or royalties, and sometimes video production costs—are typically deducted from the artist's gross royalties.

The motion picture industry presents a similar picture, as recent coverage of the plight of profit participants—directors, writers, actors, etc.—indicates. Typical arrangements provide for the payment of profit participations only after a whole litany of expenses purportedly associated with getting finished motion pictures to the viewing public have been deducted from gross revenues. After such deductions, even works readily identifiable as box office and video blockbusters are declared losses, with no revenue due to profit participants.

Although the entertainment industries typically claim that successes are far and few between—purportedly, one or two outright hits end up balancing the bulk of financially unsuccessful releases—it becomes apparent that the major studios and recording and distributing labels reap a considerable premium from the concentration of resources—financial and organizational—in their hands.

C. Niche markets

Regardless of what one's assessment of the accuracy of entertainment industry claims about profitability and revenue structure, it becomes evident that the current mega-hit driven nature of the motion picture and music industries makes it very difficult to gain consumer exposure to products with more limited appeal.

For certain types of content, given the inaccessibility of regular retail channels, the Internet will be a particularly potent tool. In the music market, for instance, certain music genres are often difficult to "break" in a market place optimized for generalized mass appeal.

Artists in distinctive sorts of musical genres—e.g. "ethnic," "world," jazz, gospel, reggae, bhangra, etc.—tend not to meet very widespread appeal.

Even though such artists may have very loyal followings, these audiences may be too small and/or widely dispersed—e.g. the patrons of Indian bhangra music in the US, reggae music in Scandinavia, or Latin Jazz in Japan—to permit successful sales and marketing through traditional retail outlets.

This is part of the reason, for instance, that small independent labels, distributors, have thrived with the blues, folk, reggae, "ethnic," and dance genres in the U.S. Sales of music in these genres are often made through specialized music retail outlets—particularly in large urban areas where there is more likely to be a significant market for esoteric tastes—or through non-traditional retail like mail order; areas in which the major labels do not possess the same extent of advantage over independents. These examples are particularly true for the United States but apply as well to markets with less geographical dispersion—the United Kingdom, for instance.

Even for entertainment content targeted at the broad popular appetites, it stands to reason, in light of the premiums exacted by major studios and label from the control of distribution, that alternative and effective means of channeling content to the final consumers would be a significant boon to independent film and music producers.

This is clearly evident for the music industry but should hold true even in the motion picture industry in which the financial success of feature releases is often contingent on success at the box office. The fact that some independent motion picture releases on videocassette have attained some degree of success, even with limited or no theatrical exposure, suggests that if the promise of direct real time delivery of quality video through

the Internet becomes a reality, the profit margins for such releases will likely increase (all other things held equal).

D. Ripeness

Still, Internet distribution is not yet a panacea for all the problems of media concentration—the number of people with Internet access remains low in comparison with the overall size of the music buying population; of the individuals with Internet access, few have access to bandwidth capable of delivering CD quality audio in real time. These factors present an even stronger barrier to delivery of audio-visual material which typically contain present an even stronger barrier to delivery of audio-visual material which typically contain substantial amounts of data.

Compounding these factors, there isn't yet sufficient interchangeability between consumer entertainment and computer systems. There is a strong need for a convenient means for transferring content stored as data within a computer system to a format that can be played on traditional consumer entertainment systems.

It seems fairly certain that these issues will be resolved in the next few years—bandwidth by upgrading of telecommunications infrastructure, or adoption of cable modems for downstreaming content; and a dual computer/consumer content storage medium when record-capable DVD machines become available at affordable prices.

E. The economics of direct delivery

The main advantage of using the Internet for direct transfers of sound recordings and audio-visual works is that manufacturing, distribution and retail markup costs associated with traditional sales are sharply reduced. Careful observers will point out that the distribution

and storage media costs are not completely eliminated, merely passed on to the consumer.

It is evident, nevertheless, that even when these costs are not completely eliminated, they are significantly reduced in the online context, regardless of whoever directly absorbs them. In addition (as is explored below), where the audio-visual work is transmitted for a single viewing on demand (similar to a videotape rental), the manufacturing cost is completely eliminated. As a result, a direct content delivery system would present a smaller, more predictable cost structure than traditional methods.

For instance, once content—like a sound recording—has been acquired (by original commission or license), a would be exploiter would face only the cost of creating a commerce ready web site and uploading the song to a web server. With the constantly dropping price of computer processors and storage, a single server can act as a repository for hundreds, if not thousands of songs, providing access to consumers worldwide.61

In contrast, entrepreneurs trying to distribute non-popular music in traditional media have to make an up front investment in creating physical copies of works. The fact that manufacturing economies dictate minimum order runs (often in thousands of copies) in various consumer formats—compact discs, cassettes, etc.—further complicates matters. This initial investment must be made even though there is no guarantee of adequate access to the consuming public, since it is exceedingly difficult for independent labels to get the products on the shelves of retail outlets; when they do, it is frequently at a substantial disadvantage.

The task becomes even more onerous for independent labels or producers seeking to

tap into foreign markets. If a particular album or artist has only prospective sales of three thousand units in a foreign territory, the transaction costs of physically shipping goods to the market frequently forces independents to ignore markets in which they could be developing a new artist base. Even in foreign markets where significant prospects exist, the barriers to market entry erode the value of the market to independents. Negotiations which would be necessary in the traditional model—obtaining distribution in these foreign territories or arranging for licensing or manufacturing with local companies—can be avoided through an effective direct delivery model.

F. Internet delivery options

How might this direct model work?

There would be two main product delivery categories: delivery on demand—the market for this would be most similar to broadcasting or rental target audiences; the intention is not to sell a permanent copy to the consumer but to permit a single viewing/listening at the customer's convenience; and direct sales—where the intent which would be to sell a permanent copy of the work to the customer, just as with the sales of the work in physical media through traditional means. These different categories offer varying levels of financial promise, depending in part on the nature of the content involved.

1. Audio on demand and direct audio sales

At current bandwidth availability, there are no real advantages of real time audio via the Internet over other sources. Even, when sufficient bandwidth is in place to permit high quality audio, this is unlikely to be of great financial significance, at least under the present

provisions of the Digital Performance Right in Sound Recordings Act as enacted in §114 of the copyright statute.

With the restrictions imposed by §114—no advance information on what is to be played, restrictions on the number of tracks by a single artist that may be played successively—the value offered by audio subscription and interactive services isn't remarkably different from traditional radio. Perhaps there might be a limited market for live concert broadcasts, or for interactive and subscription services for clubs, bars or lounges, but visions of celestial jukeboxes notwithstanding, it does not seem likely that a strong market for one-time listening will develop.

On the other hand, once Internet access becomes ubiquitous, and sufficient bandwidth for real-time receipt of audio and inter-operable consumer/computer storage formats are available, there should be distinct advantages to audio delivery via the Internet over traditional media and delivery methods.

2. Video on demand and direct video sales

If and when sufficient bandwidth is available for real time delivery of high quality video, and adequate interfaces to consumer entertainment systems become available, the ease and convenience of video delivery online should have a significant effect unlike the audio on demand market.

Compared with radio and the existing body of music, the various traditional audio-visual delivery syste slice of the body of existing films and other available audio-visual works.

When one considers current releases, the difference between the markets for sound

recordings and for audio-visual works become even more glaring—constant exposure (primarily through radio) is a major factor in the process of exploiting sound recordings financially. There could be a strong market for video on demand via the Internet since it would be less expensive and more convenient than renting physical videocassettes. It would also offer customers more complete control, compared with cable and pay per view services, over what and then they watch.

Further bolstering the case for the video on demand market is the fact that consumers are far less likely to accumulate video libraries than audio libraries. In addition, for new releases in the video market—a very large and significant portion of the $12 billion video rental market—there is no equivalent medium to radio through which customers are exposed to content for free.

These very characteristics, on the other hand, make the copyright issue doubly as important in the audio-visual context. If affordable recordability, and integration between computers and consumer entertainment systems become widely available, video on demand would be a perfect substitute for purchasing audio-visual works. The pricing for receiving an audio-visual work on demand, under these circumstances, would have to be adjusted to reflect this.

G. The need for effective copyright administration and protection

Indeed, the success of an entertainment model in which direct delivery of content via the Internet were a significant or perhaps even the primary means of distribution, would heavily depend on effective copyright safeguards. As a practical matter, however, protection against rampant copyright infringement will have to be achieved primarily from a

technological not a legal perspective.

With an open global electronic network like the Internet (to which illicit uploads can be performed anonymously from practically anywhere in the world), an illegal introduction of copyrighted material into the information stream, sets in motion a chain of events that is difficult to contain, much less reverse.

Nevertheless, concerns about possible unfair exploitation of creative efforts should be tempered with the experience of the software industry, which has had the longest experience with direct sales on-line. Despite estimates that as much as 50% of potential revenues are lost to piracy, software continues to be a highly profitable business.

Perhaps, if the pricing of intellectual property products is reduced to reflect the lower overall costs afforded by direct delivery, there would be less of an incentive for individuals to purchase pirated materials. The lower pricing possible under the direct delivery model could attract new consumers, effectively broadening the product base.

H. Marketing requirements of Internet delivery models

Despite the advantages of direct delivery, some of the costs associated with getting products to the end consumer will remain unchanged from traditional product delivery models.

This reflects the difficulty of attracting target audience to commercial web sites. Often, consumers find it difficult to identify web sites/companies that are of commercial interest because the relatively low cost of establishing a commercial presence on the Internet has resulted in a sheer inundation of the marketplace with companies offering a wide range of products and services.

Ironically, this online explosion will likely increase the value of traditional marketing and advertising (via the print and broadcast media) as means of communicating a particular company's existence or the type and quality of the product being offered.

I. Conclusions on the prospects for direct delivery

Essentially, the Internet direct delivery model moves away from the traditional media model in which the cost of creating or capturing the content is fixed and the cost allocable to copying, manufacturing and distributing increases in proportion to the number of units sold. Instead, both the cost of creating content and the distribution cost are more or less fixed, essentially eliminating economies of scale and the major expense is the cost of initially capturing or creating the content. In both the music and film industries, independent producers have proven their ability to raise financing for this aspect.

While the examples given have been primarily based on the music industry, the principles hold true for practically any intellectual property based industry, particularly those in which much of the aesthetic value of the traditional physical media is not reduced by distribution via bits.

Obviously, these principles hold true for the computer software industry, which, having relatively small data requirements, has been relatively untroubled by bandwidth issues and, since the increase in Internet access, has been able to generate significant sales based on direct downloading. It could hold just as true for the remaining intellectual property based industries, once bandwidth issues are solved and a sufficient installed access base is in place.

IV. THE CERBERUS SYSTEM—CONTENT DELIVERY IN ACTION

This section explores the implementation of a content delivery system by Cerberus Ltd. Although the focus here is on sound recordings—mainly because the bandwidth required to deliver video appears even further in the horizon—the principles explored here are readily applicable to the sale of audio-visual works—motion pictures, short and long-form videos, "multimedi

A. Introduction to the Cerberus system

A company based in the United Kingdom, Cerberus Central Ltd. (CCL) has created a complete turnkey solution for distributing sound recordings commercially via the Internet. The digital distribution, playback, and payment processing system enables users to purchase CD quality audio and download it to anywhere in the world via the Internet.
CCL offers two options—both based on the fore-mentioned payment and music delivery system—for persons seeking to sell sound recordings over the Internet -- the Digital Juke Box, and the Virtual Pressing Plant (VPP).

The VPP is the complete CCL software/server solution which CCL licenses to entities that want a self-administered, autonomous delivery system. It consists of a credit card payment authentication system, user-unique client software, and a server capable of delivering digital audio simultaneously to multiple destinations over the Internet.

The Digital Juke Box is essentially a full service version of the VPP that permits owners of sound recordings to place material in Internet Commerce with no initial investment. Rather than purchase a VPP server, copyright owners can send a digital sound

recording and any album art to CCL, who will then place it on their own servers for a percentage of the sales generated, and remit payments quarterly to the copyright owners' bank accounts.

Potential customers can view album covers and listen to samples or selected snippets of sound recordings on the VPP for free. In order to purchase full songs, the customer must supply credit card details using secure transmission modes to the server's associated web site. Once the server has authenticated the customer's credit card with the issuing bank or payment system, a registered copy of the Cerberus Audio Player, specially encoded with the customer's information, is transmitted to the customer's hard drive. The customer is not charged for the Audio Player software itself, just for music purchased for playback on the player.

Once the client has set-up and registered the initial player, and has previewed the songs from the samples on the server web site, she simply supplies the catalog number of the song as well as her registered player details to a Cerberus server to purchase a song using the system. After processing payment, the server then transmits an encrypted copy of the song which is encoded to playback only on that particular player. This method of restricting subsequent uses of the downloaded sound recording—"Coded Bitstream Reliant Software"—is a crucial aspect of the CCL system and has been patented.621 The player will also display the album cover art, liner notes and any other included information associated with each song.

If a client obtains a Cerberus Player and illegally publishes CBR Audio files on the Internet, they can be traced from their personal details embedded into their Player. Since each

registered player contains each individual's personal on-line banking details, there is a strong disincentive to further copying and distributing the user's own registered player software to third parties.

B. Copyright and related issues

Before individuals or businesses can license the VPP, they must provide information about themselves through a required application. Once they have received a VPP, they are required to register with the performing rights society in their country. The VPP system automatically supplies purchasing information to the performing rights organizations to ensure compliance with any copyright in the underlying musical composition.

VPP licensees must make any required payments—for mechanical licenses, publishing fees, etc.—on an ongoing basis, otherwise a delinquency report is issued to the performing rights organizations and any appropriate authorities. Since each VPP license permits the sale of restricted number of units -- licensees must renew their licenses once a certain threshold of sales have been made. This helps maintain some oversight over the licensees' commercial practices (apart from ensuring a steady revenue base for CCL) since, presumably, the licenses of repeat violators will not be renewed.

Thus far, CCL has entered into agreements and established coordination arrangements with the following copyright collection agencies: AMCOS (Australia), APRA (Australia), ASCAP (US), BMI (US), Harry Fox Agency (US Mechanical Copyright Collection), JASRAC (Japanese Copyright Collection Society), MCPS (Mechanical Copyright Collection Society), MPA (Music Publishers Association), NMPA (National Music Publishers Association), PRS (Performance Right Society), SICAM (South American

Copyright Collection Agency).

An issue that CCL encountered early on in their initial roll out (of the Digital Juke Box, before it was made available to licensees as the VPP) was an insistence by the UK's MCPS on characterizing the delivery of the sound recordings via the Internet as both a sound recording and public performance—requiring the payment of a mechanical licenses (for reproducing the musical composition) and a performance fee (for public performance of the musical composition).632

On analysis, the nature of the VPP system—with playback capabilities strictly on an individual basis—and the fact that the transmitted audio file is not (indeed, cannot be) perceived in real time (unlike Real Audio or Shockwave) mitigate against the characterization of the deliveries as public performances. It is an issue that CCL Managing Director, Ricky Adar, believes will be resolved on a country by country basis. Presently in the EC, all the fees paid in association with the exploitation of the underlying musical composition are applied towards the mechanical license, there is no public performance portion.

C. Copy protection

From a copyright protection standpoint, the Cerberus system is very important since it permit users to listen to the downloaded sound recordings only on specific authorized players. A user cannot purchase a song via the Digital JukeBox or Virtual Pressing Plant and distribute to ten friends. Or more accurately, the encrypted audio file would be inaccessible by anyone else.

Of course, critics will point out that once it has been converted to a consumer audio format, it can easily be re-digitized and transmitted to as many recipients as the user chooses. However, this observation is equally true for music sold through traditional media. It is rather elementary for a user to extract digital audio from an audio CD player through a CD-ROM drive to connect connected to the Internet.

D. Uploading and compression

Currently, sound recordings intended for delivery via the Internet are compressed before being uploaded to a Cerberus server. Cerberus uses a compression ratio of 15:1 which permits a four minute song to be downloaded in about ten minutes at a 28.8 kbps connection rate. Although CCL uses a special frequency dependent compression technology that simulates the psychoacoustic characteristics of human hearing and minimizes artifacting, there is a slightly perceptible difference in quality between compressed sound and Compact disc quality (16 bit, 44.1khz) sound.

Nevertheless, compression remains a necessity until wider bandwidth becomes available. Interestingly, the compression process created a bottleneck in the process of placing sound recordings online because the audio must be compressed in real time. At one point in time, CCL had a backlog of 170, 000 songs to compress. Eventually CCL created compression software capable of batch processing large numbers of audio files. This software is included with the VPP software for licensees.

E. Prospective applications

Although the CCL system works for sound recordings, there is no reason why a similar system could not work for other content types—audio-visual works. Indeed, CCL received a request from Philips to jointly develop a Digital Jukebox type system in conjunction with SGI (Silicon Graphics Incorporated) for Cable TV distribution system.

F. Conclusions

The Cerberus system provides a working example of a secure, integrated solution to the issue of delivering copyrighted content over the Internet in an period rife with affected uncertainty over the future of copyright. That there is a solution is not astonishing -- the software industry has provided copy protected software for downloading via the Internet for quite a while now.

Granted, significant differences exist between the delivery of software online and the delivery of music, video, and other content. One of the most glaring differences is that software is delivered to the very hardware with which it is intended for use. Sound recordings and audio-visual works, on the other hand, must yet be converted to a more consumer friendly format if the convenience afforded by traditional delivery systems is to be equaled and surpassed.

Still, the pace of technological innovation and the appearance of cross computer/consumer entertainment electronic products like WebTV indicate that this barrier will likely be overcome. When this happens, the integration of solutions similar to CCL's—for instance with DVD recorders—will help reduce the likelihood of copyright infringement. That the Cerberus system and others will not be 100% perfect is a foregone conclusion. The crucial thing is to create incentives and a conducive environments for

technological solutions, to what is at heart a technological problem, to flourish.