The Challenges and Opportunities of Online Music: Technology Measures, Business Models, Stakeholder Impact and Emerging Trends

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NOTE

To enhance its understanding of the online music business, the Copyright Policy Branch engaged technology expert Cathy Allison to capture a "snapshot" of current business models and technologies, and to contemplate possible future scenarios regarding the control and compensation for use of music.

Your feedback is welcome to assist us in our own analysis of this study.
http://www.pch.gc.ca/progs/ac-ca/progs/pda-cpb/contacts/index_e.cfm

You may wish to consider the following questions:

- Is digital rights management (DRM) technology sufficiently effective (or will it be) for rights holders to control the use of their copyrighted works?
- What alternative future models are suitable for ensuring compensation for rights holders?
- Does the current copyright law need to be amended to support these models?

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Background and Objectives of this Report

Since late 2002 there has not been a single day without a newspaper or journal article, website or blog entry, radio or television story reporting on at least one of the following topics in the music industry: online music piracy – music downloading – ripping CDs – peer-to-peer networking – copyright policy – rights management – intellectual property legislation – technology protection measures – record labels suing downloaders – and so on. So much has been written (and voiced) by so many, yet so little has been resolved. The abundant body of knowledge, opinion and analysis has failed to move the online music argument, and a workable solution, forward – at least, at no more than a snail's pace.

The debate over downloading and sharing music over the Internet, and the copying of music using hardware devices, has certainly created a thriving business for copyright and IP (Intellectual Property) lawyers, an active roster of artists' collectives, and a heap of academic proposals, counter-proposals and impassioned presentations and seminar topics that fill many a conference hall. Although lawsuits have been filed by the RIAA (Recording Industry Association of America) and now CRIA (Canadian Recording Industry Association) against private citizens, citing that these practices amount to stealing money from the record companies and the artists they serve, proponents say that downloading and file sharing introduce artists and their music to a greater audience, as well as promoting additional sales and increasing live concert attendance. There are many viewpoints on this topic: the good, the bad, the ugly, and many other positions as well.

The intent of this report is not to pose yet another model or solution which would only add to the existing confusion, complexity and overabundance of opinion. Rather, this report aims to:
- Identify and briefly describe the online technologies currently in use in the music industry;
- Describe and analyze the major online business models/scenarios that are either in-use today or have been proposed, from both a control and a non-control perspective, i.e. those utilizing technology protection measures (including digital rights management) and those using blanket licence remuneration/compensation methods;
- Discuss the impact of these technologies and business models on the music industry from the perspective of creators, content owners, distributors and consumers, including both short and longer-term effects.

In addition, the report will include a discussion of some of the emerging technology and business trends that will undoubtedly put yet more spin on the industry "argument" that is already spinning out of control. This discussion will also include an attempt to envision the future of the online music situation over the longer term (anywhere from three to five years from now, and beyond) to provide a directional vision for those curious to know "how things might turn out". These ruminations will also include some comments about how the creation, production and use of music might evolve over time to produce some interesting cultural and/or sociological effects.

Finally, the report will attempt to draw some conclusions about further investigation and research that would be useful for Canadian Heritage's Copyright Policy Branch to undertake; which trends ought to be followed in the ongoing debate; and a set of recommended actions and next steps for consideration by the Branch.

Synopsis

The **first section** of the report defines and explains the concepts surrounding Digital Rights Management (DRM) and its existing and future implementations. It also examines the effectiveness of the available technology, and highlights some of the issues around these technology protection measures (TPMs). The major suppliers and vendors that either use or supply DRM technology in the music industry are discussed, as are firms who measure online music use (such as BigChampagne, Audible Magic Bay TSP). Finally, circumvention and effective control issues are discussed.

Certain business models for online digital media, including downloading music, are in use today, but have met with criticism by various stakeholders. Several other models have been proposed. The **second section** describes the most popular models, or scenarios, currently in use, or those which are under consideration for possible adoption in the future.

Since mid-2003, some progress has been made to protect rights-holders and their works through the introduction of legal download sites which use DRM measures, allowing users to download the music they desire for a fee. The **third section** of this report will identify these sites and comment on their features, pricing models, file formats, and, where possible, their success from a user adoption perspective. A brief description of music downloading sites which are available in Canada; sites originating in other countries (mainly the U.S., but also European-based sites); and new sites which will be launched in 2004, are listed and described.

Non-TPM (Technology Protection Measure) models, discussed in the **fourth section** of the report, generally make use of a fee-based service, often referred to as "blanket licensing", where consumers are charged a fee based on their use of digital media, and creators are rewarded through the distribution of these fees (e.g., based on the popularity of their work). Creators would need to register their work, and then through collective licensing agreements, a levy or user service fee would be charged to generate funds. Alternatives include a government-run, or music industry-run collective. Another variation of this scenario, currently under consideration by the Supreme Court of Canada (SCC) and known as "Tariff 22", proposes that ISPs / IAPs (Internet Service/Access Providers) would be required to pay tariffs for Canadian music downloaded by the public. In December 2003, the SCC began hearing arguments over whether ISPs should start collecting royalties by placing a blanket fee on Internet caches to compensate the music industry for downloaded music. Tariff 22 faces an uncertain future – the Supreme Court will decide by mid-2004 whether to reverse a Federal Court of Appeal decision that SOCAN is entitled to collect fees on music downloaded from outside the country, and for music stored temporarily in caches that ISPs use to speed Internet surfing.

In the **fifth section**, the report discusses the major stakeholders' responses to the areas most impacted by online music as it exists today (chiefly, economic and socio-cultural impacts); and, where applicable, comments on some of the major changes anticipated in this area (for example, solidification of Canadian copyright policy; different technology issues; and concretization of some of the more creative ideas that are only just now being considered). The five major Stakeholder groups include: *Creators/Artists* (i.e., musicians, composers, performers); *Content Owners* (i.e., recording companies, producers); *Distributors* (i.e. retailers, Internet Service and

Access Providers); *Technology and Consumer Electronic Vendors* (i.e., hardware manufacturers and software vendors); and of course, *Consumers* (i.e., users, audiences and downloaders).

The information for this section is summarized in a table which briefly reviews different types of impact created by online content downloading on each of the major stakeholder groups, and suggests the near-term outcome in each case (i.e. positive, negative, or something in-between). Following the "Impact Matrix", each of the five major stakeholder groups is discussed in more detail in terms of the different business models, different types of impact and, where applicable, potential effects on stakeholders of some of the emerging trends. Direct quotes made by individuals in various stakeholder groups are included.

The **sixth section** of the report attempts to answer questions such as, "What does the future hold?" and "How will this complex puzzle be solved?" Emerging technologies are already having an impact on the way music is created and consumed; how will technology change the way the issues are resolved? Although sociologists and anthropologists (including those who study technology) are not fortune tellers, one might say that the greatest predictor of the future behaviour is to examine the past … or, will a whole new world of music access emerge? Specific emerging technologies and trends that are discussed include: wireless, WiFi and mobile music; how technology impacts new music creation; the emergence of new genres; Retailers transforming into "eTailers"; gadgets (e.g., the iPod); portable streaming devices; fan culture; and the PC as a "home entertainment centre". The section also takes a "sneak preview" into the long-term future, briefly discussing how music will originate twenty years from now, how and where will we listen to it, how it could be created, distributed, accessed; who and how much will be paid for it.

The **final section** outlines possible actions the Government of Canada ought to consider taking as a result of the issues and opinions discussed in this report. These include studying and analyzing music creation and consumer trends; monitoring technology vendors and online sites; hosting debates and discussions amongst the stakeholder groups; and suggested possible new programs or initiatives that might help to move the discussion along to some form of resolution.

A list of acronyms and terms are defined at the end of the report.

Introduction

Technological anthropologists like myself know that ever since the human race became aware of the relationship between people and technology, instability has resulted, as disruptive technologies and social structures arise and are overthrown. Traditional ways of thinking lose their appeal, and this can lead to social chaos, but new ways of thinking that have yet to appear on the horizon can lead to social progress. Just when we think that things are at their worst and the situation is totally out of control, real advances are most likely to take place. Turbulence and chaos often turn out to portend new forms of order. Sometimes things have to get really awful before they can get better, but the bad is what fuels the search for the good, and so, time and again, the reciprocal evolutionary processes linking technological and social structures result in a greater benefit for an increasing number of people.

Digital technology and the Internet are perfect examples of disruptive technology. Combined, they have already altered many industries and, as we will describe in this report, have changed the way people use consumer electronic products, media and entertainment. This evolution has increased the tension between copyright holders (individual creators and corporate content providers), technology companies and consumers. This tension is an important business driver and it is no different than any other system of free-enterprise in our economy today: products are created, developed and distributed; consumers choose from a variety of contents and goods; and they pay a price they perceive as reasonable. However, when some aspect of the digital media ecosystem gains a disproportionate measure of influence, the system that is in place will flounder until balance is restored. Technological development is the spur for change today and, as in other technologically turbulent periods, old methodologies and business models persist as new consumer-behavior models develop. In the case of digital media (chiefly music, movies, visual art and print), the transition to fully-formed digital distribution services is now in progress.

Five years ago, Napster came into being, forever altering the architecture of the entertainment industry, technology and the law, yet society has yet to come to terms with these changes – we're still in crisis mode. The headlines are full of shotgun litigation, ruined business models and calls for a reconfiguration of copyright law and even the Internet itself, and the debates over piracy, file sharing and the ethical limits of techno-defense continue to rage in courtrooms, chat rooms and blogs, and show no signs of ceasing. Five years later, we still have yet to come to any conclusion about what the post-Napster world should look like.

What we can do is examine where we currently stand in this world of music + technology, and, based on what we know today, extrapolate to where things might end up. The latter is the most important aspect of this report, but to get there, we must have a base line understanding of what the current state of affairs is. Let's begin.

The current state of Digital Rights Management
and other technology related to online music

This section of the report defines and explains the concepts surrounding Digital Rights Management (DRM) and its existing and future implementations. It also examines the effectiveness of the technology and highlights some of the issues around these technology protection measures (TPMs).

- *Definition of Digital Rights Management*
- *The Technology "Hype Cycle", and where DRM currently sits*
- *Vendors using or supplying DRM technology in the music industry*
- *Measurement (Big Champagne; Audible Magic; Bay TSP)*
- *Circumvention issues*
- *Effective control issues*

The wired and wireless world has produced a vast amount of digital content that demands protection from theft and prying eyes. This escalating need is driven by two trends. The first is the mass piracy and theft of intellectual property and proprietary information. Although the content industry argues that piracy has cost them billions of dollars a year, there is no empirical evidence to support the claim. There is even contrary research from industry analysts, such as Forrester, Gartner Group and most recently from Harvard University, which argues that the exact cost of piracy is statistically unsupported and is unlikely to be as high as the content providers claim. What is known is that with technology advances (from CD-R discs to peer-to-peer networking), lack of strong legal norms and enforcements, and a lack of attractive business models for consumers, there are good reasons why individuals are copying, storing, and sharing billions of intellectual property files freely on an open, unsecure network – the Internet.

The second trend driving technologies for securing digital content is the increase in the amount of sensitive information available in digital form that must be securely stored, shared, or distributed within and between organizations. In addition to security needs, there is an increasing need for privacy protection for personal content, such as financial statements, medical records, and contracts. The growing number of organizations, companies, and individuals connected to networks of various sorts, and the increasing legal acceptance of e-business transactions by major industries, are all driving this trend.

These two trends have created a belief that digital content ought to deliver the same guarantees and trust in delivery as physical content does – especially when the ease and cost of reproduction and distribution of digital content has decreased to near-negligible amounts. This makes managing, controlling, securing, and tracking digital content a core business and individual requirement, to which the digital management of rights is emerging as an essential component.

What is "Digital Rights Management"?

"Digital Rights Management" is not a new concept and has had many names over the past several years. For example, a few large companies and public entities began research into "Electronic Copyright Management" in the early 1990s, which led to first-generation rights management systems. The term "Electronic Rights Management" later evolved to "Digital Rights
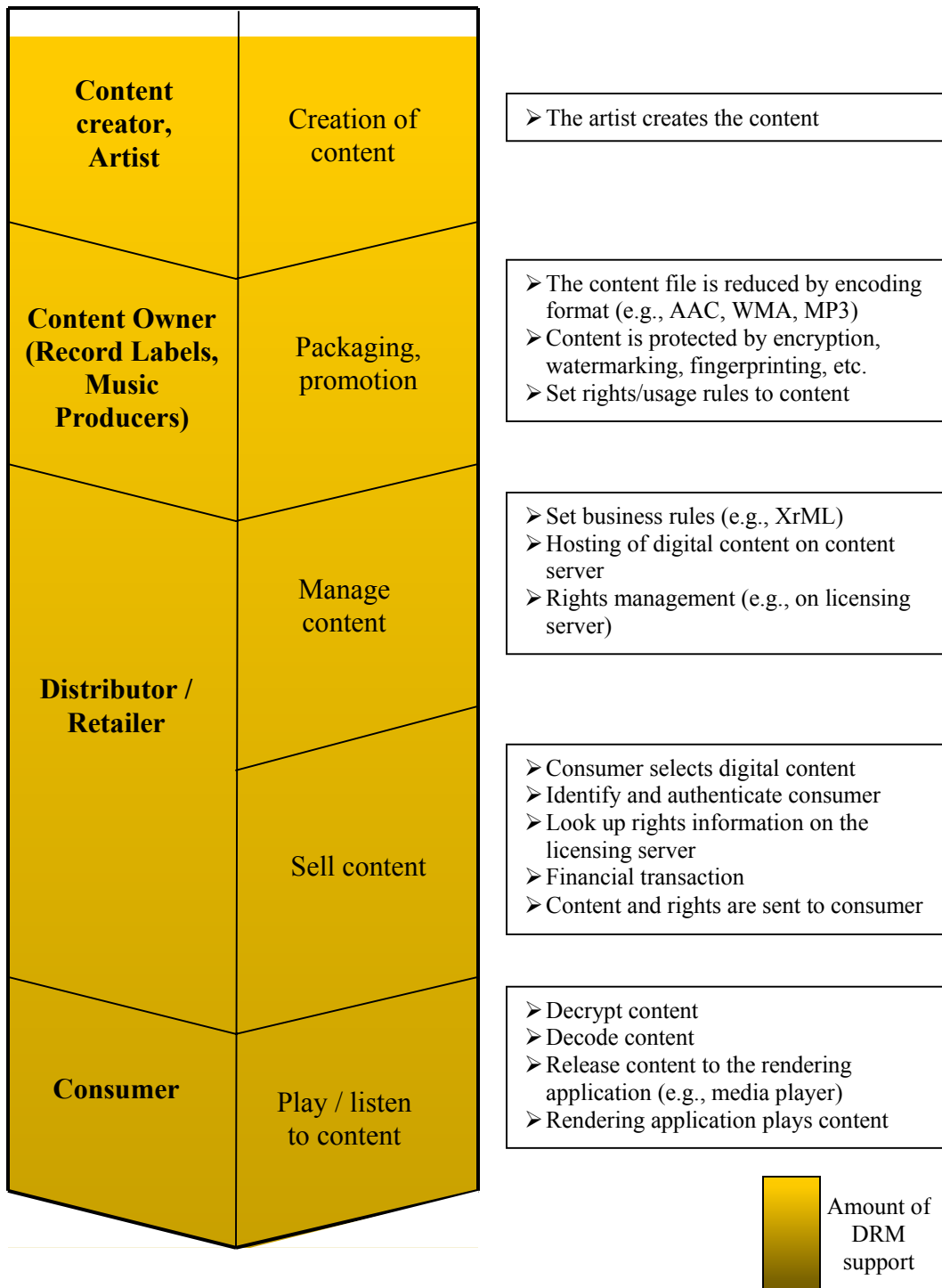
Management", or DRM. Despite its existence for several years, there is no unique or standard definition for DRM. It is generally thought of as a combination of the technologies, tools and processes that protect intellectual property during digital content commerce that form a system of information technology components and services to distribute and control digital products. DRM enables the operation of a control system that can monitor, regulate, and price each subsequent use of a computer file that contains media content, such as video, audio, photos, or print. Most definitions describe the different DRM components, such as access or usage control, and the underlying technologies, such as encryption or watermarking.

The context in which DRM is applied is important to its definition. Managing rights in the digital environment means managing rights throughout the entire value chain and the life cycle of a digital content (Rosenblatt, Trippe and Mooney, 2002). Figure 1 (next page) provides an example of the key functions of a DRM system throughout the value chain of the music industry.

The role of DRM is to protect and manage digital information or intellectual property ownership as content travels through the value chain from the content creators to consumers, and even from consumer to consumer. While an in-depth analysis of DRM components and the underlying technologies goes beyond the scope of this report, a brief description of these components can be consulted in the Terms and Definitions section of this report.

It is important to recognize that there is no unique DRM technology or standard. DRM will change to include different components according to the type of content (e.g., audio, video, text), the desired level of protection and the technology the vendor uses. This variability and lack of a common standard has ensured that virtually every deployed DRM system is proprietary and unique. For example in terms of protecting a text document, a "weak DRM" would include simple password protection for access control and some metadata for the identification of the text document. A "strong DRM" would include encryption, password and watermarks for access and usage control, digital signature for protection of authenticity and integrity of the text document, metadata for the identification of the content creator and the content itself, and may also require a specific end-user device, such as an e-book, to view the content. In addition, if the user has to pay for the content, a billing system or integrated e-commerce system may exist to support the legal, business, and financial transaction.

There is an abundance of research and excellent resources that can be consulted for more information on DRM. The two I would recommend are Arkenbout/van Dijk/van Wijk's paper (Arkenbout, 2004) and William Rosenblatt's book entitled "Digital Rights Management" (2002).

The following describes the Digital Rights Management Value Chain:

Content creator, Artist — Creation of content
- The artist creates the content

Content Owner (Record Labels, Music Producers) — Packaging, promotion
- The content file is reduced by encoding format (e.g., AAC, WMA, MP3)
- Content is protected by encryption, watermarking, fingerprinting, etc.
- Set rights/usage rules to content

Distributor / Retailer — Manage content
- Set business rules (e.g., XrML)
- Hosting of digital content on content server
- Rights management (e.g., on licensing server)

Distributor / Retailer — Sell content
- Consumer selects digital content
- Identify and authenticate consumer
- Look up rights information on the licensing server
- Financial transaction
- Content and rights are sent to consumer

Consumer — Play / listen to content
- Decrypt content
- Decode content
- Release content to the rendering application (e.g., media player)
- Rendering application plays content

Amount of DRM support

Figure 1. **Digital Rights Management Value Chain**
The key functions of a DRM system through the value chain of the music industry

(Based on Fetcherin, 2002. "Present State and Emerging Scenarios of Digital Rights Management Systems")

How effective is DRM?

The digital media contradiction (i.e., efficient delivery versus uncontrollable redistribution of content by end users) created the content-protection business virtually overnight. To date, content-protection solutions have proven that it is difficult to use technology to protect copyrighted material and maintain protection of that use for consumers, since the definition of "fair dealing" (known as "fair use" in the U.S.; see Terms and Definitions at the end of this report) shifts with every new technology introduction. Early attempts have indicated that an over-emphasis on copyright protection stifles innovation. Protecting digital content requires a multi-faceted approach comprising technology, consumer education and the law. Flexibility is very important in responding to hackers or changes in consumer behavior.

Content-protection schemes for broadly distributed digital media have been few, although the effects of commercially distributed unprotected digital content have been magnified in the music industry, with the emergence of copy-protected retail CDs and digital files distributed via online subscription services over the past 12 – 18 months.

As we have seen, technology protection measures such as DRM software let a content provider "wrap" a set of rules around musical content, to define how that control can be manipulated and shared by the purchaser of the copyrighted or premium content. The rules can include how many copies of the original file a user may make, whether a back-up or archive file can be created or whether a user can move the content to another device. Typically, content is encrypted; to access the decryption key, a user must either pay money, provide an e-mail address or agree to use tracking, for example. DRM software vendors deliver the tools, but it is up to content owners to set the conditions.

At the heart of all DRM technology is a rights model. Rights models are schemes for specifying rights to content that a user can obtain in return for some consideration, such as registering, making payment or allowing his or her use to be tracked. DRM software defines the rights to that content according to some rights model and to enforce the granting of those rights. To function effectively, the DRM software has to understand the core entities and the relationships between them.

There exists no single "rights model". Work in this area includes the framework and the Open Digital Rights Language (ODRL). In ODRL, if a right is not explicitly permitted, it has not been granted; that is, it is prohibited. For example, an agreement may state that a particular video can be played a maximum of 10 times (a numeric constraint) in any semester (that is, a time constraint) for a $10 fee (a requirement to pay).

- **Digital watermarking** embeds invisible markings into a digital object to track the use of and access to content. Digital watermarks are digital identifications inserted into digital copies of works when they are manufactured. Users cannot hear or see watermarks, but computers and software can detect them. Unfortunately, watermarking methods can be easily defeated with shareware available on the Internet; moreover, few digital versions of works on the Internet contain watermarks because many digital copies of copyrighted works are created without watermarks. For example, when consumers digitally copy

analog works from music cassettes, video tapes, photographs, and texts, they do not insert watermarks into the copies they make. Consumers can also strip a watermark off a digital work by converting the work to analog and then recording the work back into a digital format. Watermarking methods and other methods of embedding files with data can only track those files that have been watermarked. There are companies (BayTSP, Audible Magic, discussed later) which provide technology that can identify files on the Internet without modifying them, allowing them to backtrack and locate content obtained prior to being watermarked.

- More robust than watermarking, copyright owners can create digital identifiers for copies of their works by "**fingerprinting**" a digital version of their work. Digital fingerprinting, or signatures, use public-key cryptography to provide user authentication, verifying the identity of a user, thus proving that a sender sent a message (for example, an online subscription service proving it delivered the requested content), and that a recipient received a message (the customer of the online subscription service). Fingerprinting converts the work's content into a unique digital identification mark by applying an algorithm to selected features of that content.

- **Secure content delivery** guarantees electronic delivery using secure document hosting and e-mail notification (for example, to notify a recipient of a pending document and to notify the sender that the document was retrieved).

Controlling the distribution and consumption of content requires industry standards that deliver the interoperability needed for consumers and media companies to select and deliver content across multiple networks, services and devices. One language that is becoming a standard is Extensible rights Markup Language (XrML), promoted by ContentGuard. XrML is designed as a universal method to securely specify and manage rights and other conditions for a variety of resources including digital content and services. This technology can help deliver the interoperability required to build "end-to-end" DRM solutions.

Some of the de facto standards are:

Content scrambling system: CSS is the encryption standard used to "lock" all commercial DVDs containing copyrighted material, developed by various industry groups. The content is compressed and encrypted on a disc, with one set of "keys" embedded in the code. The other keys are located on DVD players. The disc looks for the keys on the machine and, once matched, plays the disc.

Adobe Systems PDF technology: For print content, Adobe's Acrobat application program is used to read content protected by Adobe's Acrobat authoring tools (PDF). The read-only software is available for free download, but the authoring tools are not (unfortunately, the locks on PDF have been picked).

Real Networks, Microsoft and Apple (used in music and video content): Many content providers deliver their content through the products of these two companies and their media players. Microsoft has Windows DRM for Windows Media Architecture; Real's

DRM tool runs on its RealOne player and other media players. Apple's QuickTime is also used, but not deployed as often as the other two. Apple's iTunes Music Store, a pay-per-download digital music service, distributes content in Advanced Audio Coding (AAC) format. If the iTunes AAC files are burned onto a CD (which removes the DRM), and those files are ripped into MP3s, there is a noticeable degradation in sound quality, which happens when any audio file is compressed, decompressed or recompressed.

We find ourselves in the current rights management situation after the rise and fall of the Secure Digital Music Initiative (SDMI). This was a prominent copy protection scheme, the aim of which was to develop open standards to protect digital music. A consortium of technology companies and vendors proposed a number of watermarking technologies and challenged cryptography engineers and others to break the code. The watermarks were quickly hacked and the vendors that had so eagerly participated in SDMI abandoned their collaborative efforts, realizing that they were unable to solve the problem, and simply gave up.

Indeed, this cycle of launch-and-crack has endured, and will persist, according to many commentators and participants in the security business and digital content distribution industry. New copy control or DRM technologies are continually being launched and while they are used to lock popular content such as software, computer games, music or movies, there will always be individuals who will spend time trying to break those locks. One copy protection scheme, developed and implemented by the industry after years of research and millions in expense, turned out to be defeatable by any consumer equipped with nothing more than a black felt-tipped marker, used to draw a wavy line around the outer edge of a CD. This reality of hacking requires that media companies and copyright holders have less reliance on creating unbreakable locks and more on creating offers that are flexible enough to provide a decent level of copy protection while also ensuring that a cracked copy protection scheme or DRM technology can be easily replaced and upgraded. It also points to a longer-term requirement for media companies and copyright holders to shift away from a mindset of absolute control over every piece of content.

Important as these technologies are, however, the way they are applied is critical. If content control and copy protection remain top priorities for digital media content providers, DRM will be deployed. Given that, in order to avoid consumer alienation, DRM standards must be flexible enough to protect the content, be replaced when they are hacked, and be flexible enough to accommodate changes in consumer behaviours and the tenets of fair dealing, which can be disrupted by the introduction of new technologies. This is problematic, considering two difficulties associated with DRM:

- *The use of technology to enforce copyright rights*: technology can never accurately map fair dealing, particularly since this is an evolving doctrine.

- *Protecting intellectual property with DRM comes at the price of innovation*: it either stifles it, or penalizes it.

Where is DRM technology "at" today?

It is useful to illustrate the status of rights management as a technology entity using Gartner Group's "Hype Cycle" concept: (http://www4.gartner.com/research/special_reports/hype_cycle/hc_special_report.jsp). Gartner uses "Hype Cycles" to graphically represent the maturity, estimated time for adoption and business application of a specific technology. Since 1995, Gartner has used Hype Cycles to characterize the over-enthusiasm or "hype" and subsequent disappointment that typically happens with the introduction of new technologies. Hype Cycles are developed based on analysis of hundreds of technologies from many different technical, business and industry perspectives, and show how and when technologies move beyond the hype, offer practical benefits and become widely accepted.

Gartner suggests that there are five phases of a "Hype Cycle". These are:

1. **"Technology Trigger"**
   The first phase of a Hype Cycle is the "technology trigger" or breakthrough, product launch or other event that generates significant press and interest.

2. **"Peak of Inflated Expectations"**
   In the next phase, a frenzy of publicity typically generates over-enthusiasm and unrealistic expectations. There may be some successful applications of a technology, but there are typically more failures.

3. **"Trough of Disillusionment"**
   Technologies enter the "trough of disillusionment" because they fail to meet expectations and quickly become unfashionable. Consequently, the press usually abandons the topic and the technology.

4. **"Slope of Enlightenment"**
   Although the press may have stopped covering the technology, some businesses continue through the "slope of enlightenment" and experiment to understand the benefits and practical application of the technology.

5. **"Plateau of Productivity"**
   A technology reaches the "plateau of productivity" as the benefits of it become widely demonstrated and accepted. The technology becomes increasingly stable and evolves in second and third generations. The final height of the plateau varies according to whether the technology is broadly applicable or benefits only a niche market.

A standard Hype Cycle has three key areas:
- The section from "Technology Trigger" up through the "Peak of Inflated Expectations", where emerging and first generation content management technologies are typically found.
- The second part of the cycle is the decline from the Peak into the "Trough of Disillusionment", where technologies that have yet to live up to their potential are found

- Finally, there is a section from the Trough up to the "Plateau of Productivity" in the cycle, where one finds technologies that are proven to deliver business value. These markets are largely mature and have typically gone through significant consolidation.

At the time of the writing of this report, the most recent analysis that Gartner had completed regarding positioning of digital rights management in the technology Hype Cycle was in June 2003. This information is included in a larger Strategic Analysis Report focusing on the technology known as "Content Management" (CM), an umbrella term that describes a range of technologies from web content management to streaming media to consumer and enterprise digital rights management. The full report is available at:
http://www4.gartner.com/DisplayDocument?id=396759&ref=g_search .

Based on Gartner's analysis, Consumer Digital Rights Management (defined by them as "consumer-oriented protection and control of intellectual property distributed in digital form from misuse or copyright infringement, usually focused on anti-redistribution mechanisms") is placed dead-centre at the bottom of the "trough of disillusionment"! I believe the Gartner Analysts have got this placement absolutely right. The chart indicates a "Time to Plateau/Adoption Speed" for consumer DRM of within five to 10 years – also a very sound prediction. Their justification for both the position on the Hype Cycle chart, and the Adoption Speed, is due to what they term "bad press" of DRM since 1999, combined with a confused marketplace and regulatory environment, and the failed SDMI (Secure Digital Music Initiative) initiative. They predict that efforts at hardware-assisted security mechanisms, including Microsoft's next operating system release with embedded rights management, and various vendor alliance working groups, such as the Trusted Computing Platform Alliance (TCPA), the Open Mobile Alliance (OMA) and the Content Management Licensing Authority (CMLA) alliance, will significantly impact the market. Pressure from perceived erosion of markets due to unlicensed distribution of copyright works has also had an effect. Gartner has based their predictions on a narrow but important group of selected vendors: ContentGuard, Macrovision, Microsoft and RealNetworks.

However, there are other vendors to be examined in this space. The next portion of this section of the report touches on the major vendors contributing to this technology in the online music world, some recent announcements pertaining to rights management and other related technology protection measures, as well as disruptive technology that is either in the R&D stage or has been announced for imminent release.

Major Vendors using or supplying DRM technology to the music industry:

Apple (www.apple.com/itunes)

Since Apple launched iTunes and its hand-held iPod in April 2003 (with its aggressive "Rip. Burn. Mix." campaign), it claims to have sold 30 million songs (as of January 2004) from all five major record labels who have licensed their music for inclusion in the iTunes catalogue. They claim that 95% of the 500,000 catalogue tracks have sold at least once. Individual downloads are offered at 99 cents (U.S.) each. The service is not yet available in Canada (payment must be made by credit and the origin address of the credit card is tracked). Apple's CEO, Steve Jobs, was

recently quoted as saying that "there's no money in online music", and Apple's success therefore seems to come from selling iPod players, not licensed music. Currently iPod enjoys a 31% U.S. market share by units and a 50% market share by revenue: more than 2 million iPods have been sold since its introduction, solidifying its position as the top digital music player in the world. The iPod is the only player that supports iTunes' proprietary DRM system called "FairPlay". All tracks are encoded using the open standard, Advanced Audio Coding (AAC) at 128 kbps, rather than the ubiquitous, though marginally lower quality, standard, MP3 (MPEG Audio Layer-3), although iTunes can burn protected tracks to CDs; and conversely, iTunes is the only digital music store that the iPod supports (although it can also play unprotected MP3 files). The iPod price ranges from $399 Cdn (stores 3,700 songs) to $549 (stores 5,000 songs) to $699 (stores 10,000 songs); and in Canada there is also an additional $25 "Blank Media Levy", mandated by the Copyright Board.

In contrast, the CEO of Roxio (Chris Gorog), the parent company of Napster 2.0, and a chief rival of the iTunes service, believes that "the consumer model of choice will be subscription, even though à la carte has been great for jump-starting the business. Subscription will help our industry cross the chasm from early adoption to mass adoption. The ideal consumer model is an all-you-can-eat monthly subscription priced at $9.95, which offers a full menu of songs, not the limited catalogue à la carte model offered by iTunes."

In early January 2004, Hewlett-Packard and Apple announced a strategic alliance to deliver an HP-branded digital music player based on the iPod, using iTunes to introduce HP customers to the online music world through HP's extensive global distribution network. As part of the alliance, HP consumer PCs and notebooks will also come pre-installed with Apple's iTunes software and an easy-reference desktop icon to point consumers directly to the iTunes Music Store. HP has stated that this will be an exclusive relationship with Apple, and will therefore undoubtedly assist Apple in capturing even more of the online music market.

Microsoft: Windows Media (and other technology)
(www.microsoft.com/windows/windowsmedia)

Microsoft's suite of DRM products, known as Windows Media, is the most ubiquitous digital media platform available to consumers, content providers, solution providers and software developers. The Windows Media 9 Series platform, available in 26 languages, includes Windows Media Player 9 Series; Windows Media Services 9 Series (a streaming server feature in Windows Server 2003 for distributing content); Windows Media Encoder 9 Series (for content creation); Windows Media Audio and Video 9 Series (for audio and video); Windows Media Digital Rights Management (to protect content); and the Windows Media Software Development Kit (for software developers to create digital media products and services).

Microsoft's newest DRM offer (introduced in early 2003) could become a standard for the commercial distribution of CD-based pre-recorded music: Windows Media Data Session Toolkit, designed for developers, especially those working for content providers and copyright holders. It supports delivery of so-called "dual-session" or "second-session" CDs, in which the "first session" contains the work in a secure format, and the "second session", which is protected with a DRM tool, Windows Media DRM. The second session version can have multiple rules or rights

that enable a consumer to do some things (such as a certain number of times that the work can be copied), but not others.

For example, consumers have complained that pre-recorded CDs they purchased do not play at all or deliver poor playback quality when played in a PC-based CD player and in some car stereo systems. These problems are typically caused by copy control burned onto the disc to prevent copying or duplication, confining quality playback to conventional CD players. Windows Media Data Session Toolkit allows the creation of secure CDs and DVDs for PC playback by setting specific rules or rights for each disc. For example, a disc might allow a user to play back a CD or DVD on a PC and allow the user to transfer content onto a portable music device or DVD player.

Another important development from Microsoft that will accelerate some of the emerging trends in online music and streaming performances is their September 2003 announcement of the Windows XP Media Center Edition 2004. This software is available pre-installed only on Media Center PCs, and delivers integrated digital entertainment (live and recorded TV, movies, music, photos, and radio). The concept behind the product is that all user digital media would be concentrated in one place, accessible on either a PC monitor or TV display, using a single remote control to operate all activities: for example, to pause and rewind live TV or radio; digitally record an entire TV series or program category; watch DVDs and videos; organize and play an entire music collection; and showcase digital photos. The system offers additional services on this converged platform, such as full-screen visualizations that animate to the beat of the music; FM radio with pause and rewind features ("time shifting"); 16:9 display support to maximize viewable content in order to see a greater number of photo and video thumbnails; phone call notification, which provides an on-screen alert and displays the calling phone number; various international versions (now available for Japan, Germany, the UK and France); and for European markets only, support of Teletext, an interactive television service providing news, weather, sports, television program listings, and other up-to-the-minute information services.

Naturally, all this sophisticated technology requires a "super PC" to run on: indeed, Windows XP Media Center is available as an operating system installed only on new, next-generation Media Center PCs. These PCs, built by partner PC manufacturers (HP was the first to offer them, but they are also available from Dell, Gateway, Sony, Toshiba and others), provide the hardware configuration necessary to use the enhanced digital entertainment capabilities: high-end processors, high-capacity hard drives, CD-ROM and DVD drives, remote control, advanced graphics and audio capabilities, and high-speed networking connectivity.

The important point here is that Microsoft is developing technology that encourages the accessibility of online music and entertainment, well beyond simple rights management protection; and that these concepts are being offered in a suite of products designed to work together seamlessly.

So if you thought the online music dilemma was just a question of downloading songs to an MP3 player or a hard drive … think again. This Media Center concept is disruptive technology which changes the entire concept of entertainment for consumers. The digital, personal media and entertainment centre has arrived! More discussion on this topic can be found in the "Futures" section of this report.

It is also rumoured that Microsoft is planning to introduce an online music store as well. It is not known whether they will build this service from within, or buy one of the already established online music stores. Their goal is to make the WMA format the standard for digital music sales. Their codec is found on more portable MP3 players than any other, though the lure of the comprehensive music catalogue offered by Apple's iTunes service hasn't convinced users to switch from the MP3 format – yet.

Apple realized that content was the way to get users to use a second codec. Part of iTunes' success is that it has propelled Apple's proprietary version of the AAC codec past WMA to be the second most-used music file format. Most notably is that they did it in the first few weeks iTunes was open for business.

Owning the standard format in *any* medium is a windfall for the company holding the patent. Microsoft knows this better than anyone else – they built their business on it. Indeed, Microsoft could buy all five of the major record labels in cash, although they didn't seem to have any interest in the struggling Vivendi music, which was recently sold to NBC. Acquiring Vivendi (or any other online music service) could be an opportunity for them. Had they bought that company, which alone had 20% of the market, they could have changed the rules by saying that the label would then supply all iTunes-like services – including Apple's – with music already formatted. The hook would be that the only format available would be the WMA codec. In that case, Apple could continue to sell the music it already has in AAC format, but they would no longer be allowed to convert new music digitally themselves; only the Microsoft company could do that, in that case.

This scenario hasn't happened – yet (Microsoft's anti-trust problems are one reason), but Microsoft is as tenacious as any other company and are in business to serve their best interests. Stay tuned!

Real Networks (www.realnetworks.com)

RealNetworks is another familiar player in the digital media software and services industry, offering RealPlayer 10, software which integrates finding, organizing, buying, playing and managing digital audio and video in a single product. Users can access audio/video programming and download this free software at www.real.com. Broadcasters, network operators, media companies and enterprises use RealNetworks' products and services to create and deliver digital media to PCs, mobile phones and consumer electronics devices. In early 2003, RealNetworks announced "Helix DRM", a digital rights management development platform that provides secure digital content on consumer electronics devices. Helix DRM, which runs on Windows, supports various digital media specifications, including MP3 and MPEG-4 (the standard for multimedia for the fixed and mobile web), and addresses one of the inhibitors of consumer use of DRM: the lack of portability of DRM formats, which prevents consumers from being able to play content on different devices. RealNetworks also owns the Rhapsody Internet jukebox service (a legal online music downloading site).

In early March 2004, RealNetworks launched <u>live</u> video streaming capability. Named "Down the Alley", this service provides access to exclusive live performances and interviews from established and emerging artists through the RealPlayer 10 Media Player and Rhapsody online service. Video footage of performances are offered via a music guide, where fans can also enjoy free music videos, complete CD listening "parties" (packaged music tracks), and access to over 3,000 Internet radio stations. Complete audio clips of performances are available for on-demand listening through the Rhapsody service and for sale through the RealPlayer music download store. "Down the Alley" interviews and performances are performed and taped at RealNetworks' studios in Seattle in a studio environment where the artists choose their own performance material and give fans the ability to enjoy exclusive performances in whatever format they desire: by watching the videos for free, listening to the songs via Rhapsody, or buying downloads in the RealPlayer Music Store. Video streaming is an evolutionary leap in entertainment from what is already provided to consumers with online music. The implications of this content format will be discussed in more detail in the "<u>Futures</u>" section of this report.

Coincidentally, on March 22, 2004, QUALCOMM, a manufacturer of digital wireless technology, announced plans to license RealPlayer, RealAudio and RealVideo for its integrated cell phone chips. Chipsets for the CDMA, GSM and GPRS cell phone markets (which pretty much covers most of the wireless world) will be available in the second quarter of 2004. Consumers will be able to stream, download and play back multimedia content from RealAudio and RealVideo services, providing 3G standards-based content through wireless devices using QUALCOMM chips. The integration of Real's Helix DRM technology into wireless devices will help boost MPEG-4 technology, enabling wireless carriers (i.e. telephone companies) to offer high quality audio and full-motion video content, which will accelerate the availability of mobile services for consumers. RealNetworks is also scheduled to ship RealPlayer with phones manufactured by five major mobile handset manufacturers (Nokia, Motorola and others).

These announcements herald a new trend in music consumption: the ability to download full motion video from the Internet, and then view that streaming content in real-time or near real-time situations. This will undoubtedly become a competitive threat to MP3 players and the Apple iPod, which today can only handle music downloads. The live, full-motion video capability of Real's service on a hand-held "gadget" (in this case, a cell phone with "deluxe" features) signals yet one more example of how the Internet acts as disruptive technology, changing the way musical performances can be experienced by audiences.

Macrovision (www.macrovision.com)

Macrovision develops and markets copy protection, DRM and electronic licence management technologies for the video, music and software industries, having already protected over 200 million music CDs or over 2 billion protected tracks. Macrovision has worked in partnership with the leading content companies worldwide including recording companies and music publishers, consumer electronics manufacturers and CD replication facilities, to develop and deploy technologies that serve the interests of the both rights-holders and consumers.

Macrovision produces "dual session" music CDs that contain both "red book" audio files, which play on traditional music playback devices and car stereos, and "second session" data files that can be played on a consumer's PC. Macrovision's CDS technology prevents the ripping of the audio files and inhibits unauthorized file sharing and CD burning. These copy protected CDs have excellent playability and effectiveness across the widely diverse base of consumer electronic and PC hardware. Macrovision's "dual session" solutions are compatible with Microsoft's Windows Media Player and Windows Media DRM solutions, and are designed to support other third-party DRM vendors.

In January 2004 Macrovision announced the CDS-300 multi-level protection and rights management solution for pre-recorded music CDs. CDS-300 provides a high level of copy protection while offering flexible usage rights using Windows Media DRM and offers dual session functionality, playlists, exports to portable devices, authorized burns to a CD, and provides one-click access to bonus content on the disc or premium content via web links. The product provides full playability of music CDs on audio CD/DVD players and PCs; yet prevents unauthorized ripping, burning or file trading. Content owners are able to set the usage rights, allowing consumers the ability to export to compliant portable devices (with specified number of exports), as well as burn CDs (with specified number of burns). Copied files will not play if e-mailed or distributed via the Internet.

Hewlett Packard (www.hp.com/hpinfo/newsroom/press/2004/040302a.html)

In early January 2004 at the Consumer Electronics Show in Las Vegas, HP announced a new suite of products and services aimed at providing personal digital entertainment content for consumers. As mentioned previously, HP will be installing Apple's iTunes software on every PC they build. A second strategic alliance venture between the two firms was also announced: to deliver an HP-branded "Digital Music Player" based on Apple's iPod, with access to iTunes for musical content.

This is significant news for the online music industry. Consider for a moment that HP is one of the few "jumbo" information technology (IT) hardware manufacturers still standing after the high-tech crash from a few years ago. It has access to over 100,000 retail outlets in countries around the world, and has the scope, scale, and supply chain to mass-market this technology to a much wider audience than Apple currently enjoys, and sell it at a fair price. HP is known as an innovator with strong R&D and engineering capabilities, and is known to actually excel at partnerships. HP has the production capability, technology scope and ability to bear risk in a now somewhat over-crowded, low-profit-margin online music industry. The bottom line is that they are poised, like Microsoft on the software side, to dominate in this sector.

In addition, in early March 2004, HP announced several initiatives to advance the security of digital entertainment content for consumers, artists, media companies and distributors. First, they have licensed new video protection technologies from Intel to ensure that video cannot be intercepted as it travels between devices and that the destination device also follows the usage rights associated with that video. Second, they are partnering with Philips to propose a copy protection technology solution for DVD-R and DVD-RW discs to the U.S. Federal Communications Commission (FCC).

Third, they have announced that they have become a member of a digital rights management licensing and compliance framework alliance, the Content Management Licensing Authority (CMLA), as a founding Contributing Member, in order to support industry-wide adoption of mobile handsets and other devices that deploy the Open Mobile Alliance's (OMA) Digital Rights Management version 2.0 technical specification.

The CMLA will address digital content delivery concerns by creating a licensing and compliance entity that implements the specification. This entity will provide the necessary keys and certificates to licensed device manufacturers and service providers, and will enable interoperability between participants. The CMLA will also facilitate open participation in the OMA DRM environment by defining standard agreements among service providers, content providers and device manufacturers (apologies for all the acronyms!). Members of CMLA include companies such as Intel, Nokia, Panasonic and Samsung.

This is significant in light of the recent complementary announcement by RealNetworks and QUALCOMM (mentioned previously, and also both members of the OMA) to provide video streaming capabilities in cell phone chipsets. It is obvious that a number of manufacturers in different segments of the IT industry are becoming more responsibly aware of the need to protect the artists and creators of digital content, and are thus working together to create the necessary infrastructure.

In fact, HP has taken a very admirable and a very public stand on anti-piracy. In her keynote speech at the Consumer Electronics Show in January, HP's CEO, Carly Fiorina stated that:

> "HP is stepping up its commitment to building, acquiring or licensing the best content protection technologies for our devices to secure copyrights without sacrificing great consumer experiences. We've been active through the Business Software Alliance to educate consumers and businesses that digital piracy is a threat to economic growth. We've worked in cross-industry efforts like the Secure Digital Music Initiative to develop a solution to digital piracy. And in partnership with Microsoft, our Media Center PC responds to a copy control flag embedded in current generation TV signals.

> "Starting this year, HP will strive to build every one of our consumer devices to respect digital rights. In fact, we are already implementing this commitment in products such as our DVD Movie Writer, which protects digital rights today. If a consumer tries to copy protected VHS tapes, the DVD Movie Writer has HP-developed technology that won't copy it – instead, it displays a message that states, 'The source content is copyrighted material. Copying is not permitted.' That same kind of technology will be in every one of our products. HP will also work constructively with technology and content industries to implement Broadcast Flag into some of our products this year.

> "Later this year, we'll also introduce a new protection technology that encrypts recorded content. Going forward, we will actively promote the interoperability of content protection technologies to ensure that content protection becomes the enabler it was intended to be – not the obstacle to compelling content that many fear. And we will also step up our efforts to work with anti-piracy industry advocates and consumer advocates."

> *(The full text of Carly Fiorina's speech "From Creation to Consumption: The Future for Digital Revolutionaries", January 8, 2004, is available at: www.hp.com/hpinfo/execteam/speeches/fiorina/ces04.html)*

This type of statement by such a powerful "mega" corporation makes one think that perhaps despite the complex and antiquated copyright policies and conflicting business models, there is

hope to sort out the online music issues – and it might not be done in court rooms, but in Board Rooms.

Other companies who are collaborating to deter file-sharing

In January 2004, several of the world's most powerful computer, cell phone and electronics companies are working on a new system to protect digital music, video and software from unauthorized file sharing and will soon unveil details on new DRM technology intended to secure multimedia content on wireless systems. The consortium, which includes Intel, HP, Nokia, Samsung and Matshushita, announced that it has found a way to limit the illegal copying of CDs and DVDs, and to protect digital content in the expanding market for hand-held devices that play music, video and computer games while connected via wireless networks to the Internet.

The Open Media Alliance (OMA) includes heavyweights Intel, Nokia, Panasonic and Samsung, who will also supervise a licensing body to promote the new DRM technology. The licensing entity will be known as the "Content Management License Administrator (CMLA)" and will work to maintain adherence to the latest OMA standards. CMLA's purpose is to ease piracy concerns among record labels and movie studios over the growing number of devices capable of connecting to wireless networks. The DRM technology will be built into mobile handsets, allowing encrypted files to be streamed onto compliant devices. Known as OMA DRM 2.0 Enabler Release, the specification would also support devices connected in wireless networks based on the 802.11 standards, or Wi-Fi. Despite being a relative newcomer in the crowded DRM space, the CMLA plan has already won some early support from major content owners, including Sony Music and Universal Music Group.

It is unclear how, or if, the OMA specification will work with competing DRM technology, particularly Microsoft's Windows Media technology. Microsoft has been a member of the OMA for some time and claims to be a backer of open standards and interoperability. However, the company has been pushing to make Windows Media and Microsoft's version of DRM tools a standard for distribution of content on virtually all devices.

Technology Vendors involved in embedding DRM into Consumer Devices

When digital works are not encrypted, the only way copyright owners can have control over access, copy, and redistribution is if computers and consumer electronics devices contain circuitry that recognizes and responds to the authorized use information. Without such circuitry, computers and other devices would play unencrypted works and permit them to be copied and redistributed.

Besides HP's definitive stance on incorporating technology protection measures within their consumer devices, and the previously mentioned RealNetworks' launch of Helix DRM, we understand that Philips Electronics and Sony acquired InterTrust in early 2003, and in late 2002, Sony also licensed DRM patents from ContentGuard, a company which promotes its DRM language, Extensible Rights Markup Language (XrML), as the industry standard. Viewed together, these activities indicate a trend towards serious commitment to embedded DRM in the hardware of consumer appliances by PC and consumer appliance vendors. Although DRM

technology has not succeeded as a stand-alone prevention measure, DRM vendors have diligently filed a number of technology patents related to rights management. By acquiring ContentGuard and InterTrust patents, Sony and Philips have a clean slate for choosing or building their own DRM technology for their appliances. This will also reduce requirements for paying licensing fees and limit their chances of becoming embroiled in patent infringement litigation. Microsoft has also licensed ContentGuard's patents (and continues to battle InterTrust in patent litigation).

Like the media played on their devices and software, makers of consumer appliance hardware and software receive significant royalties in licensing fees. Digital media vendors with DRM technology have increasingly sought to induce other vendors to choose their particular DRM products. Real's Helix DRM addresses the lack of portability of DRM formats, preventing consumers from playing content on different devices. In 2003, Microsoft announced that Windows Media 9 can be used on non-Windows platforms. It appears that hardware-backed DRM, using some form of XrML for policy rules, will become the next battleground. Microsoft's next operating system will have built-in, granular DRM and will run head-to-head with DRM technology from device makers (PC vendors and consumer electronics firms, such as Sony and Philips). Realistically, PCs and consumer devices will only come embedded with hardware-backed DRM and other policy controls by the latter half of 2005.

Circumvention technology

The following is a list of the most common peer-to-peer protocols sites for free downloading of music:

- KaZaA
- Grokster
- iMesh
- BearShare
- XoloX

- LimeWire
- Gnucleus
- Gnutella
- Morpheus
- WinMX

- eDonkey2000
- Direct Connect
- Hotline
- BitTorrent

These are the companies or organizations that run or own the free downloading sites that are so bothersome to the record label business. In addition to these, there are two other systems that are worthy of taking a closer look at: "WASTE" and "MUTE". These are not music downloading sites, but rather services that offer "protection" from those that would attempt to block the use of the above sites – either through "hiding" in a protected chat space in order to share music files (WASTE); or to maintain anonymity from organizations like the RIAA or CRIA who attempt to identify uploaders through IP addresses (MUTE).

WASTE (waste.2mbit.com)

WASTE allows any user with a computer and an Internet connection to set up private peer-to-peer networks over the Internet. While not explicitly made for illicit file sharing, WASTE essentially provides a protected space for up to 50 users, where instant messaging, group chat and file sharing can all be accomplished anonymously under the

cover of weapons-grade encryption. Only other users on the network know it's there, and no one outside the space can tell exactly what's going on within its virtual walls. New members need to be brought in by someone already on the network and authenticated using an encryption key. Though disowned by its creators (Nullsoft, a division of AOL Time Warner), WASTE is readily available online (see waste.2mbit.com for a list of mirror sites), and runs on most current versions of Windows.

Interestingly enough, Microsoft has introduced a Windows XP–based program called "threedegrees" (threedegrees.com) that bears some remarkable similarities to WASTE. Threedegrees allows users to create small private networks of up to 10 people to exchange instant messages, animations, pictures and, yes, music. Members are able to communicate with an entire group by simply dragging and dropping items onto the group's icon. Dropped images immediately pop up on the screens of all the group members, and dropped music files are added to members' play lists. The music sharing comes with one important proviso, however: group members can't save their own copies of songs played by other members. Audio files are streamed between users' computers, not copied. Microsoft has ensured that the activity on their system doesn't involve any unsanctioned downloading.

MUTE (mute-net.sourceforge.net)

"MUTE" is a file-sharing network, developed by California-based programmer Jason Rohrer, that provides easy content search and download functionality while protecting a downloader's privacy. It does this by routing all messages through a network of neighbour connections, using virtual addresses and encrypting all the traffic (using RSA for public/private keys and AES for the actual encryption). MUTE's routing mechanism was inspired, strangely enough, by ant behaviour. The program is available for Linux, Windows and Mac OS X. MUTE claims to "protects a user's privacy" by avoiding direct connections with other sharing partners in the network. Most file sharing programs use direct connections to download or upload, making the user's identity available to "spies from the RIAA and other unscrupulous organizations" (according to the MUTE website). The website explains how this clever technology works in great detail; basically MUTE protects the contents of each neighbor connection in the network using military-grade encryption (e.g., using private keys, size-selectable by user at runtime, and separate new secret keys are selected each time a new stream is established) to exchange secret keys. Although the RIAA could tap the network that a user is connected to, and monitor their Internet traffic, all MUTE messages would be unreadable and would therefore be unable to corner the user in the network or obtain an Internet address in connection with their virtual address.

Of course, a user's neighbours are able to decrypt the messages which are sent through them. Thus, if the RIAA was able to hijack every single one of a neighbour's nodes, it could again corner the user and link their Internet address to their virtual address. However, it is unlikely that the RIAA would be able to take over a large number of nodes in the network, and since users tend to discover their neighbours in a somewhat

randomized way, it is unlikely that every single one of their neighbours would be an RIAA node.

How effective is circumvention?

Adding anonymity to peer-to-peer systems involves a trade-off in efficiency, creating performance overhead that can bring a network to its knees. Indeed, some security experts argue that privacy is impossible to achieve in a peer-to-peer network, given that the technology requires creating direct connections between computers. Most of the newest generation of file-swapping systems use some type of encryption, scrambling files so they become impenetrable strings of data as they are transferred online. This helps keep out some prying eyes, but most monitoring services, such as BayTSP (see below), simply pretend to be an ordinary file-swapper, searching and downloading files instead of trying to break into the network from outside. No matter how powerful the encryption in the network, a digital handshake is required (Borland, February 2004).

Many of the services are also moving toward Internet "proxies" as a way to mask identities. Under this model, the direct handshake between uploaders and downloaders is interrupted by a digital middleman. Instead of being downloaded directly, a file is handed off to another Web server, or passed through another set of computers, before finding its way to the downloader. The latest version of Morpheus allows its users to connect to these online proxy servers, send search requests and upload and download through them.

Rohrer's MUTE is a more extreme version of this proxy idea, in which every computer on the file-swapping network becomes a middleman, passing on search queries and actual files that are on their way elsewhere in the network. This makes it nearly impossible to determine who is uploading or downloading what information, but there is a downside. Ordinary file-swapping networks transport content quickly, because only small bits of information (namely, search queries and background data) are relayed between most of the computers. In MUTE's model, each computer serves as a courier for vastly larger multimedia files. That can quickly clog users' Internet connections, slowing or stalling the network altogether.

Rohrer says this is the natural trade-off between speed and complete anonymity. What has been surprising is "how many people have been willing to use the network even though it takes as much as an hour to download a song", he states. "People seem to be willing to deal with it given the privacy issues involved." At last count, his software had been downloaded nearly 80,000 times, according to his host site.

There are other circumvention techniques. Spanish developer Pablo Soto, whose Blubster (www.blubster.com) and Piolet (www.piolet.com) software have attracted several hundred thousand users, is taking a decidedly different tack. While including strong encryption and some privacy-enhancing features in a new version of the software expected to be released by the end of March 2004, he's also changing the way files are downloaded.

Information such as an MP3 song will still be downloaded from its original source, he claims, but a song will be scrambled, and downloaded simply as raw, unintelligible data. This means that the actual copy of a song is not being exchanged. If downloaders want to turn that data into useable music, their software must seek the encryption "keys" that will unlock the data elsewhere on the file-swapping network to transform it back into an MP3. Separating the download of the data and the keys may help protect file sharers from lawsuits, making it more difficult for courts to say exactly which party is responsible for copyright infringement.

The RIAA's official position on these technologies is that they're "unimpressed". File swapping is file swapping, no matter how the way networks function are changed, their lawyers have argued in court. Indeed, the RIAA has already sued people who have used Blubster and other privacy-focused networks before (Borland, February 2004). "Our investigators are well-versed in what these technologies do and how they work," an RIAA representative is quoted as saying.

Effective Prevention Remedies

The record labels are pursuing a range of strategies simultaneously to marginalize and emulate peer-to-peer culture: they have lobbied governments for sympathetic copyright legislation to criminalize P2P networks and their users; they have attempted to hack into unlicensed music files in what is called 'spoofing'. Other ways in which the major labels and their trade associations are confronting the threat of P2P include education, litigation against "pirates"; and they have even acquired or invested in the development of new online services that would complement their existing businesses and in some cases compete with some of the legal online music sites. They also work with crime enforcement organizations, even recently announcing a campaign to put stickers on CDs and other copyrighted material, with warning to users about the legal implications. These efforts will be discussed in more detail later in this report.

However perhaps the most successful strategy they have undertaken is to encourage technology vendors to continue the development of copy protection systems that outwit potential pirates and protect their traditional business models.

A number of technology firms have emerged which have either seen the business opportunity on their own, or are enthusiastically supported by RIAA and CRIA, which have developed monitoring tools that can detect specific activity on P2P free download networking sites. Three of these firms are described here. These vendors' services basically filter and monitor content and then relay that information back to ISPs on behalf of those who intend to prosecute. In addition, some of the new technology that is under development is essentially a network-based "appliance," which would sit inside an ISP (Internet Service Provider), or any business network, and monitor data traffic throughput. If a copyrighted song is identified, the technology would stop the transfer in progress. As a result of trials conducted using these technologies, some users have complained about

privacy invasion, therefore versions of this technology are evolving that simply block the copyrighted songs, and do not link specific downloads to specific computer users.

One comment worth mentioning here is that these monitoring, filtering and detection technologies and tools do exist, and are in use today – squashing the protests and arguments by ISPs that it is difficult or "impossible" to monitor and report on what content is downloaded, who the downloader is, and where (i.e. which country) the user who originated the request for content is from or where the content is going to. This is important to note with regards to the recent Tariff 22 hearings in Canada. The ISPs and IAPs (Internet Access Providers) represented by CAIP (Canadian Association of Internet Providers) have argued vehemently against having to collect royalties on behalf of content owners. Part of their argument is the cost, inconvenience and overhead involved in setting up monitoring systems. However, as described below, these systems do exist – and they work. For more on the ISPs' involvement in online music, see the section on Non-TPM models, and the discussion of blanket licensing and Tariff 22 later in this report.

BigChampagne (www.bigchampagne.com)

This Los Angeles-based company, founded in 2000 as a technology market research and marketing consulting firm, monitors online music downloads without collecting or reporting any identifying information about individual users. The company's programmers have developed a series of patent-pending systems that organize the data they extract from the Internet and dump it into a database. They are also able to establish correlations between artists by recording the entire contents of users' shared folders; in this way, they can determine that, for example, 58 percent of people with a Norah Jones song also have at least one track by John Mayer. This lets the company categorize users by radio format, as well as providing information about what kind of listener is making a certain single popular. By matching partial IP addresses to zip codes, the company's software creates a real-time geographic map of music downloading. With this information, BigChampagne's clients can access information about popularity and market share (for example, what percentage of file sharers have a given song on their hard drives) and can also drill down into specific markets (to see, for example, that 38.35 percent of file-sharers in Omaha, Nebraska, have a song from the new 50 Cent album) (Howe, 2003).

The company sells subscriptions to its database that allows an album to be tracked for $7,500 US; the larger record labels have annual contracts for up to $40,000 per month. In a strange twist, many of the record labels are quietly relying on the market data BigChampagne provides, but are reticent to admit their relationship for public relations reasons, as well as legal rationale: the record industry's lawsuits against file-sharing companies are based on their allegations that the P2P programs have no use other than to help infringe copyrights. If the labels acknowledge a legitimate use for P2P programs, it would undercut their case, as well as their zero-tolerance stance.

"The fact is, P2P is a likely distribution channel for our wares," Jed Simon, head of new media for LA-based label, DreamWorks Records, was recently quoted as saying. "If we're going to be intelligent businesspeople, it behooves us to understand it." BigChampagne is more than happy to provide that understanding, even if it has to operate on the sly.

One interesting observation that BigChampagne's President, Eric Garland, has been able to make, based on analysis of his firm's market research data, is that the decline in record sales is abating, which counters the belief that downloading a song and buying a CD are mutually exclusive events. "This really is forceful evidence that those are independent variables," he says (as quoted in Hindo, 2004). He maintains that file-trading is but one of many factors that has affected music sales. Others include pricing issues, the ubiquity of CD-recording drives on PCs, and fewer new CD releases.

Audible Magic (www.audiblemagic.com)

Established in 1999, Audible Magic (Los Gatos, California) provides content management technology and copyright management solutions for content owners, publishers, broadcasters and IT organizations to identify multimedia content used in broadcast monitoring, royalty distribution, consumer devices, and piracy detection. They have assembled a suite of services by acquiring a number of technology companies: in 2000, Audible Magic acquired Muscle Fish. Founded by former researchers from Yamaha Music Technologies Lab in 1992, Muscle Fish possessed audio intellectual property technology including systems for content-based audio classification and retrieval. Based upon Muscle Fish research, Audible Magic developed a technology for repeat segment content matching, which is used in its broadcast monitoring systems. In 2002, Audible Magic purchased the technology and intellectual property of IpArchive, which had developed technologies to track, monitor and block P2P file sharing activity.

The company's unique competence is its reference database used to identify over 3.5 million recorded songs and maintain them in play lists, supporting the record industry and artists' promoters to react quickly to emerging trends and help performing rights organizations disburse royalty payments equitably. The content-matching technology works by identifying "psycho-acoustical" properties – essentially the computer equivalent of listening to the song itself. A song might be compressed into a lower quality recording, or have a few seconds of silence taken out at the beginning or end, or be otherwise transformed, but the technology will still recognize it as the same song. This technology and the database provides the foundation for Audible Magic's "content-aware" services, enabling applications and devices to handle and track content. These services allow applications, devices and users to make decisions based on specific content and allow different use of content based on the content itself without relying on watermarks, meta-data or the source of the content.

Audible Magic's products and services identify, monitor, track and manage copyrighted multimedia content including, radio and TV analog broadcasts, Internet and satellite streams, stored digital files and network file transfers.

The company's core copyright-sensing technology, *CopySense*, and a companion technology, Repeat-Audio Detection System (*RADS*), helps media monitors, ad agencies, and PR firms identify new content within minutes of a broadcast and produce comprehensive occurrence reports automatically. *CopySense* identifies digital or broadcast media content based on the characteristics of the content itself. Built on a patented electronic fingerprinting process, the technology is robust, efficient, and claims to be massively scalable, though parts of it have only been demonstrated on a trial basis. Also available are a suite of applications and anti-piracy tools including:

- *RepliCheck*: Prevents the replication or duplication of copyrighted music and software content on CDs and DVDs.
- *CopySense Network Appliance:* Allows network operators, such as universities and corporations, to identify and manage illicit sharing of copyrighted media files.
- *Content Alert*: Allows corporate IT teams to remotely examine PC hard drives for copyrighted multimedia content.

In addition, Audible Magic's song registration system allows labels and independent artists to register their music in a reference database, thus providing a monitoring capability for chart play which then assists them in recouping performing rights royalties.

BayTSP (www.baytsp.com)

BayTSP Corporation, a privately held company also located in Los Gatos, California, offers their *Media Enforcer* product, used by entertainment, music industry and software publishing firms who own digital rights, trademark, and copyrighted information to protect their assets by monitoring for illegal file sharing, automatically issuing take down notices and monitoring for compliance. Each day BayTSP servers scan satellite feeds of the Internet at over 50 million bits per second for clients' assets in inappropriate uses or locations, finding on average over 1.5 million unique infringements.

BayTSP also uses "fingerprint" technology to identify files containing clients' pictures, music, movies, or logos, irrespective of the file name, surrounding frame of pictures or data it may be placed in. Media Enforcer continuously monitors websites, FTP sites, P2P networks, IRC channels, newsgroups and auction/retail sites. Suspected violations are then handed over to the clients' legal department for action decisions.

BayTSP searches all websites worldwide, regardless of server location, and they notify and take action against infringements from all over the world; they have established relationships with foreign service providers should the infringer decide to not comply.

Two other companies that have the attention of, or are attempting to work with the labels to bring legitimacy to online music downloading, are **Snocap** *and* **Altnet***:*

Snocap (www.snocap.com)

If you access this website, you won't learn much. Apparently, the original Napster creator, Shawn Fanning, has an intriguing new company, Snocap, and is working in stealth mode on a version of Napster technology that gives record companies and music studios a way to make money from peer-to-peer networks. The technology supposedly being used is "audio fingerprinting," which, as we have already discussed, monitors the sonic characteristics of music files. That fingerprinting tool could be integrated into the file-swapping software itself so when a file is being downloaded, the software could check its "fingerprint" and compare it against a database Snocap operates, for example. Once an identification is made, the download could be blocked, unless the computer user pays a fee, as if they were downloading a song from iTunes or another digital song store. Alternately, some mechanism could be established, under which the file-swapping network operator would pay for the downloads that are tracked by Snocap's system and would later be reimbursed by subscription fees or advertising revenue.

This is technology under development that in effect serves two purposes: first, it acts as a blocking mechanism; but then, it offers the capability for users to download music for a fee. Fanning has been explaining his ideas to record label executives, who are interested but not entirely sold on the idea (Borland and Olsen, January 2004). His background with Napster may help to convince the record labels that Snocap is viable, since he is a part of a world that the record labels desperately want access to.

This company, and its activities, is definitely one to watch. If there is indeed interest in Snocap on the part of the labels, it may just be an indication that they are slowly coming around to the conclusion that consumers are winning, and the recording industry is making peace with their demands. Although some might say that that will *never* happen – or not until "hell freezes over" – Fanning has definitely chosen a prophetic name for his newest business venture!

Altnet (www.altnet.com)

With the tag-line "Profit with Peers", Altnet, a division of Brilliant Digital Entertainment which seeds file-swapping search results with authorized music files, is closely affiliated with Sharman Networks' KaZaA. Altnet has been trying unsuccessfully for more than a year to strike distribution deals with major record labels and movie studios. Sharman is suing the entertainment companies on antitrust grounds, alleging that they are colluding against peer-to-peer companies. Altnet and Sharman have created a forum called the "Distributed Computing Industry Association", which is trying to bring entertainment companies and file-trading companies together to work out their differences; however that effort is still in the early stages.

Altnet takes advantage of peer-to-peer technology but in a way that disturbs many recording companies because it partners with and distributes music through Kazaa. Users who search for songs on Kazaa see authorized files on Altnet marked with an orange icon, alongside the regular file shares in blue. After downloading an Altnet item, another click obtains a license and information on payment due. It uses concert tickets, DVDs and even laptops to encourage people to trade authorized files.

Derek Broes, the company's executive vice president, says that "by pouring licensed content into the system, legal files will eventually outnumber the unlicensed ones." (as quoted by CBS News.com, February, 2004). The RIAA maintains that P2P is a great technology, as long as companies and artists are getting paid, but it's skeptical about Altnet in particular, given its ties to Kazaa.

Conclusion

Encouraged by the RIAA, during the month of March 2004, several of the above companies have been demonstrating the capabilities of their products, and the technology has been given new credibility in legislative and regulatory circles. For example, a version of Audible Magic has been in operation within Gnutella software during March 2004 (Borland, March 2004), suggesting that it could be built into any other popular file-swapping package. In the Gnutella trial, the technology watches which songs are being downloaded, and when it has enough data to make a match (usually about a third to half of the file), it uses an Internet connection to call up Audible Magic's database. If it finds a match with a copyrighted song, it stops the download midstream. Similarly, when files are put into a shared folder, the demonstration software calls up the Audible Magic database. If it finds a match, it prevents the song from being shared with other people on the network.

That aspect of the software has not been tested on a large scale. While it appeared to function well in a single-user demonstration, implementing it on a widespread basis, particularly in software such as Kazaa or Morpheus where tens of millions of search requests a day are made, could have unforeseen consequences. Moreover, for the filtering to work on a large scale, pressure to co-operate, probably through legislation, would have to be put on file-swapping companies, which would be unlikely to voluntarily adopt this technology universally.

Audible Magic's technology is far from perfect: its audio recognition software can't (yet) break through encrypted files and networks. No doubt hackers will attempt to circumvent this software, creating "cracked" versions of file-swapping software that have the song-recognition technology broken or stripped out, if legislators were to mandate its use.

However these very recent technology developments signal a quiet change in the file-swapping controversies, which are today as much about rhetoric and politics as they are about technology. As the founder of Audible Magic, Vance Ikezoye was quoted as saying (Borland, March 3, 2004), "I've achieved my objective, which is to say our technology

works. It is interesting that the question has shifted from 'Is this possible?' to 'How should this be deployed?'"

Unfortunately, although any sort of digital copyright legislation would naturally support the use of this "restraint" technology, and clearly, its implementation as yet another technological deterrent to free music downloading is imminent, the argument becomes whether it is realistically or practically useful or helpful in solving the online music dilemma. As will be discussed later in this document, music file-sharing is arguably viewed by some as a very positive activity, providing new economic opportunities for businesses which create the hardware and software that the new user community demands, and allowing the creation of new communities of artists and creators to emerge and be discovered and promoted, without the involvement of the "middleman" record labels.

And, as this section of the report has also indicated, some Internet companies are turning peer-to-peer file-sharing into a legitimate business. At least one major label, EMI Music, is absolutely determined to stay involved by taking peer-to-peer technology seriously, with the idea that even when fans copy files from other music lovers' computers, record companies and artists can still make money.

Legitimate peer-to-peer, or P2P, file-sharing has attracted mostly small labels, and it's likely to stay a niche market for a while. However, at an industry conference in January 2004 in France, an EMI executive urged people to give it a chance. "We want to learn how to embrace P2P," said Ted Cohen, EMI's senior vice president for digital development and distribution (as reported by CBSNews.com, February 2004). He believes it will take a year for the labels to come around.

Among companies trying to convince the music industry that P2P isn't all about piracy is Wippit (www.wippit.com), a British-based music subscription service. For $49 per year, users can download any of Wippit's tunes using P2P and save them in as many places they like — an idea that makes many big recording companies nervous (other fee-based downloading services limit copying). Most of the 200 recording companies that have signed on to Wippit are independent, and there are gaps in what music is available. However, EMI, whose artists range from the Rolling Stones to Coldplay, has made most of its catalogue available on Wippit as of February 2004.

Perhaps the tide is turning and the record labels are coming around – "If you can't beat 'em, then join 'em …".

Business Models: Existing and Proposed

Certain business models for online digital media, including downloading music, are in use today, but have met with criticism by various stakeholders. Several other models have been proposed. This section of the report describes the most popular models, or scenarios, currently in use, or those which are under consideration for possible adoption in the future.

Changes in copyright and intellectual property law have been driven by the emergence of devices that deliver increasingly higher quality reproduction and/or playback of copyrighted digital material, mainly seen with music and movies. The Internet has further complicated matters by giving consumers the ability to easily redistribute content in a digital form. Perhaps the most significant development took place in the early 1990s, when CD-ROM drives became commonplace in personal computers, initiating the PC's transition from a productivity tool to an entertainment platform. Mass adoption of PCs and VCRs marked the beginning of the end of the entertainment industry's ability to control the distribution of content by controlling the physical medium on which the entertainment was delivered. This ability to control how content reaches consumers is a cornerstone for the content industry (music, film, television and publishing companies).

Business models in the last century succeeded mainly by their ability to control distribution of product, commonly acquired in physical places, like a book or record store, or via controlled broadcast channels, such as in a movie theatre, radio or television. Copyright holders had straightforward (though not foolproof) methods to keep track of their work. Prior to digital technology, illegal copies were inferior to the original, thus making piracy less attractive. What confounds the content industry today is how to shift a century's worth of business models as quickly as digital technology evolves, or at a minimum, keep within sight of new technologies.

Specifically in the music industry, revenue streams are based on a complex series of relationships among composers, recording artists, record labels, performance rights organizations, broadcast outlets and retailers. Before the Internet arrived, these relationships worked to the extent that the means for producing and distributing content were complex, but relatively easy to control given the long history of industry standardization and legal protections. This control has now weakened, and with the arrival of the MP3 file format and the popularity of P2P file-sharing through Napster and its off-spring, the industry faces further challenges.

To develop useful business models, these relationships need to be re-examined. Napster terrified the music industry, but also illuminated the benefits of digital distribution. Chief among these was the ability to establish a relationship directly with individual consumers, without the burden and expense of a physical distribution network. The goal remains to secure this type of transaction and, in light of KaZaA and other decentralized P2P networks, to create an alternative service more compelling than illegal file-sharing. The industry can then begin to look at PC and Internet technologies as vital marketing tools for recording artists and the music labels themselves. Labels could use Web sites to

promote new releases and provide music samples as well as offer near-instantaneous access to an artist's back catalogue. While it may appear that the industry has clung to traditional business models, we now have a number of pay-per-download and online subscription services, described in the next section of this report. For a fee, these online services allow consumers to stream or download music, shift the content onto another device and, in some cases, actually burn the content onto a CD. Among the shortcomings of these services is that the music labels are not opening up their entire catalogues and that the terms of some subscriptions restrict the subscriber's ability to move the content onto multiple devices.

We don't know the exact future of digital media in cyberspace, but we do have an idea of some of the possible scenarios that may emerge in the next three to five years.

The Berkman Center for Internet and Society at Harvard Law School has attempted to define five scenarios, or business models, that are the most likely to happen in the future. I believe these scenarios provide the clearest foundation for answering the most difficult questions faced by copyright holders, technology developers and consumers. Among them are: How are the legitimate interests of copyright holders balanced with the legitimate interests of the public in the use and enjoyment of digital media? Should technology developers be accountable to copyright holders? What future strategies might compensate copyright holders while also protecting innovation? The five business models, or "scenarios", as Berkman likes to call them, are summarized here:

Scenario Number One: "No change in the law". This scenario is based on the assumption that in the next five years, copyright law governing digital media will remain the same and will still be enforced, though irregularly, and confusion over central doctrines like fair dealing will remain unresolved. In this scenario, the presumptions are that:

- The pace of the technology evolution would echo the past five years, sparking legal and technological "arms races".
- Enforcement efforts by copyright holders and government entities would achieve minimal results; the lawsuits by the RIAA and CRIA would drag on, and the music industry and the movie industry would slowly disintegrate.
- The prevailing opinion among individuals engaged in retail (rather than wholesale) piracy is that they would stand little chance of being caught, and confusion would persist around key doctrines like fair dealing defense to copyright infringement.
- Widespread file-sharing via peer-to-peer sites would continue as improved technology and bandwidth facilitate greater levels of piracy. Legal alternatives might gain some traction, but not enough to stop online file-sharing of copyrighted digital media. Consumers would continue to believe that digital media could be obtained online for free.

This scenario is the one least likely to play out, since the entertainment industry is unlikely to sit by and see their business models destroyed. Media companies have already attempted to address piracy via legal, regulatory and technology solutions. They will continue to pursue solutions for what they perceive as an attack on their traditional business models. *However, it is likely that this "no-change" scenario will prevail for the immediate future, as efforts so far have yielded minimal results and piracy is still widespread; elements of the no-change scenario will be present for some time (at least in the next six to twelve months).*

Scenario Number Two: "Taking property rights seriously". This business model predicts what could happen if owners of digital content are more successful than they have been to date in their efforts to protect against unauthorized use and copying. This model emerges from those advocates of intellectual property rights: that intellectual property rights should align more closely to other property rights. Implicit in this argument is that a copyright is a property right, and so infringement of a copyright is equivalent to the seizure, destruction or invasion of a piece of property, either personal or real. Entities such as a song or any other forms of digital media are treated just like any other form of property, like a house or a car. Such a revised view of intellectual property rights would change the digital media debate substantially.

This scenario involves legal reform and is linked conceptually to the third scenario, which involves technological change. The two ideas are joined by the notion that in both instances, holders of intellectual property rights in digital media will have a stronger grip on their intellectual property. The two ideas diverge in terms of how those rights are established and enforced. As such, the two ideas are conceptually distinct.

This model certainly plays to the interests of those in the media industry, and to copyright holders who would seek to maintain existing business models based on complete control of the content. However, it is probably the one model that best illustrates the great divide separating content owners/media companies from large segments of the consumer population. It is also the scenario that, if realized, would most emphatically underscore the differences in intellectual property laws and the problems of enforcement.

Scenario Number Three: "Technology Defenses work". In this model, CDs and DVDs are encrypted with a copy-protection code that secures the majority of content, and the music industry focuses on physical distribution as well as digital distribution. The assumption made in this model is that both physical and digital distribution of CDs and DVDs are heavily copy-protected, and consumers' needs are still being met after years of experimentation. Copy-protection includes portability of content, such as two-session CDs, or CDs that allow secured burning. Copy-protection assumes that the schemes will be broken, reviewed, improved, updated and then broken again, in an ongoing cycle. Technology developers have been seeking ways to lock down digital content including music and movies, such that creators are able to control the uses to which users put the work.

Under this scenario, the vision of technologists to lock down content is realized and could be described as, "technology rescues the content industries from wanton copyright piracy!" However, technological challenges are compounded by the numbers of increasingly tech-savvy consumers around the world. There is very little margin for error and the transition to universal copy-protection must be relatively quick. Otherwise, media companies and artists may find that large numbers of consumers will seek digital content from sources other than traditional music labels, movie studios and publishers.

Scenario Number Four: "The public utility model". This model shows similarities between the structure of today's vertically integrated and highly concentrated media industries and other regulated oligopolistic industries, such as telephone companies or power/energy corporations. The rights of intellectual property holders would have to be changed in several ways. For instance, digital content holders might be required to limit the amount, or pricing, or sales, of digital content. Such a limitation might curb the ability to price-discriminate. Other types of limitations might resemble restraints on vertical integration, similar to the traditional Competition Bureau rules barring certain forms of media consolidation. These types of regulations would likely need to be enforced by a federal regulatory body.

Under this scenario, an agency would place limits on the prices that would be charged for digital media and similarly on the concentration of media ownership. On one hand, further rights would be granted to the property rights-holders, but certain restrictions would be placed on the way in which these businesses operate on marketplace.

Of the five Berkman models, this one is the most tolerable to legal and consumer behavior. From a technology perspective, it is less complicated than it seems. There are technology providers in existence that have an offer that could track content distribution to the end user in much the same way power companies use meter-reading systems (BigChampagne and Audible magic are two). However, record labels and movie producers (not to mention conventional retail distribution entities) will be violently opposed to this scenario because they would see their revenue models altered significantly due to the elimination of most of the costs associated with distributing content and usage.

Scenario Number Five: an "Alternative Compensation System", or ACS. This model assumes that the copyright system now used to stimulate and reward the development of digital content would be replaced by a system whereby the creators and producers of such content were compensated by the government in proportion to the frequency with which their products were consumed. The revenue necessary to fund such a system would be raised through levies on consumer electronic devices and Internet access. In this scenario, the creator of a recording would register it with a copyright body (or counterpart in another country) and would then receive a unique file name, which would be used to track transmissions of the work on the Internet. The primary target of such a levy would

be ISP access. Secondary targets the government would collect from would include devices and services used to gain access to digital entertainment: CD-burners, blank CDs, MP3 players, etc. (this levy system is already in place in Canada). Using techniques pioneered by performing-rights organizations, a (possibly governmental) agency would estimate the frequency with which each song was accessed by consumers. Revenue from these collected levies would be distributed to creators proportionate to the frequency of access of their songs. In fact, this system for the music industry is already in place via SOCAN in Canada and ASCAP/BMI in the U.S. Once this alternative compensation mechanism was in place, the old one would be dismantled. In other words, the existing regime of copyright would be reformed, eliminating the current prohibitions on reproduction, distribution, public performance, adaptation and encryption circumvention of published music recordings, and would be replaced with an alternate means of paying artists for creating digital media.

While this scenario has its risks (such as giving a government entity significant discretionary power; and assuring the virtual annihilation of the physical retail market), the potential for reducing litigation, lowering the costs of enforcement and eliminating the incentive for an ongoing encryption "arms race" make it very attractive.

The Berkman Center believes that only Scenarios Three and Five are plausible.

After analyzing these five, Berkman at Harvard sees a realistic future either with the "techno-defenses" scenario, where Law and Technology works together (making it easier to enforce IP rights); or to scrap copyright altogether, with an "alternative compensation system", suggested by Professor Terry Fisher, whose forthcoming book (April 2004) outlines proposals on this subject. More detail on each of these potential workable models bears mentioning.

The problem with the **Technology Defense scenario** is that it relies on DRM, which has hovered like a "Holy Grail" for copyright owners who long to re-establish control over the marketplace. However, DRM as a total solution is "DOA": it doesn't work, and it never will on its own. Instead, energy needs to be spent on developing new business models, and they are starting to emerge: for example, iTunes, MusicMatch, Altnet, and a variety of efforts designed to break the impasse of delivering songs (singles) instead of albums. These models need to enable consumers to participate in the industry without making them feel like they're doing something wrong. "Free" is very tough to compete with, so artists and producers are looking for ways to make music sharing less cumbersome and hazardous without compromising their interests.

The recent threatening activities towards "pirates" by CRIA in early 2004, and the RIAA 2003-4 lawsuits, should be seen as an expression of desperation and as an affirmative strategy to re-educate the public with the view that there is something wrong with sharing music using peer-to-peer methods. These lawsuits and threats become tangible "reminders" about the risks involved, which then might lead a consumer to choose the

legitimate route. However, there has to be somewhere for them to go: which brings us back to the necessity of real, viable alternatives.

Consumers want to download music in ways that give them a reliable product (not full of spoofs, and not degraded), in a form that they can use, flexibly. Will they be able to download it to their portable devices? What if they owned two devices? What about use in the car? To date, the industry has been reluctant to provide flexibility, but this clearly is an issue that needs to be addressed.

It is interesting to see how well iPods have been embraced. As mentioned previously, by the beginning of January 2004, 30 million songs had been downloaded, making consumers' demands for flexibility clear. It's extremely important to see that a "total" solution is not needed; all that's required is *enough* of a solution to maintain a market. Copyright infringement does not need to be eliminated; in fact, eliminating copyright infringement entirely would be a total tragedy to artists who do need some way of protecting their rights.

This solution, then, is achieved through a combination of several elements:

- **new business models** offering music in terms that no longer leave people feeling compromised in terms of either price, choice, speed, flexibility, dependability and quality;
- **technological impediments** to unauthorized copying which, though not perfect, at least impose "speed bumps" sufficient to make illicit copying of music and movies difficult for those who lack skill, time and determination, including:
  - **spoofing**: putting up bogus files on the peer-to-peer networks that appear to be the real thing;
  - **interdiction**: competitive downloading by the copyright holder which effectively blocks others from copying the work;
  - **watermarking and fingerprinting**: unique identifiers that assist in tracing those who rip and post the work;
  - **DRM systems** that impede posting works to peer-to-peer networks.
- **legal sanctions:** focused on those who are ripping and seeding new releases, and credible enough to deter the timid and affirm the instincts of those who are normally law-abiding;
- **legal and legislative strategies** designed to shift responsibility onto ISPs to identify and terminate infringing activity;
- **public education** designed to sensitize consumers to the viewpoint of content producers who want to earn money from their work.

The **ACS (Alternative Compensation System) scenario**, proposed by Professor Terry Fisher) is the second model that the Berkman Center believes worthy of consideration. It creates an environment in which entertainment, like ideas, are truly free (Orlowski, 2004, and Fisher, 2004). Intellectual Property rights exist because some method is needed to provide a channel of money for the creators. However the current state of affairs has

created distortions and economic and political contortions in order to put a price on musical content; and still, some consumers think it ought to be free.

The basic idea behind an ACS (there are many variations: several other thought-leaders, including Neil Netanel, Lionel Sobel, Jamie Love and Peter Eckersley, have developed similar models) is to abandon a legal system in which consumers are charged for gaining access to particular recordings, and instead develop a system where the government collects money in the form of levies from all entertainment consumers, which is then distributed to copyright owners. Under this regime, all entertainment products would be free to all consumers.

Fisher suggests that there are four components of any ACS: *Register*, *tax*, *count* and *pay*.

First, the creator of a digital recording (audio or video) would *register* with a copyright body, providing some basic information about how long the work is, what type of work it is, what other works are incorporated in it, etc. The second step (the most complicated one) would be to create a *tax* (really, a collection system in the form of a levy) that would collect the money necessary to compensate creators. "How much" is a very complicated question – different analysts use different formulas – but roughly somewhere in the zone of $3 to $5 per month per user would be enough to raise each year about $2.5 billion. Step number three is "*count*", the idea that the government would use systems to estimate (they don't have to be perfect) the frequency with which each registered recording was being consumed, in the sense of being watched (film) or listened to in the case of a sound recording. This may appear to be the simplest of the tasks, but in fact it's the hardest because a mechanism to track what people are enjoying would have to be devised without invading their privacy, and without giving artists opportunities to fool the system, i.e. to exaggerate their consumption numbers. The last of the four components ("*pay*") is the simplest, that is, distribute the money, in accordance with the relative popularity of each work, so the basic idea is that it's based on consumer sovereignty; and artists make money in proportion to the value consumers place on it, not the value that government administrators place on it.

Some experts are critical of this model because they are nostalgic about copyright law for its conceptual elegance; in an ACS, it's true that monies collected will not match exactly the benefits gained from the system. Some people would pay more in levies than they would benefit from it, others would pay less than they benefit from it. However, consider that the average U.S. household spends about $350 per year for access to audio or video recordings (buying CD, videos, DVDs), but under an ACS, the number would drop to about $100 for the same amount of consumption, so there are huge cost savings; everyone could gain under this system. However there is an imperfect fit between payment and benefit, and this can be troubling to some analysts.

Indeed, what Professor Fisher has proposed is effectively a "Tax and Royalty System", using what amounts to a statutory or blanket license model, rather than one that uses technology protection measures or "TPMs" to measure every instance of an act of downloading all individual works by every artist. Under this system, the government

would tax ISP access and any technology used to perform music, including MP3 players, hard drives, and computers. The collected revenues would be distributed to copyright owners in proportion to how often their works were accessed based on survey algorithms. Professor Fisher's proposal focuses on the recorded music industry in particular, but there is no reason this Tax and Royalty System could not be used to compensate copyright owners in other industries as well.

Another version of the statutory licensing model has been proposed by Professor Neil Netanel of the University of Texas, which he calls a **"Noncommercial Use Levy"** (Netanel, 2002), a model which permits non-commercial copying, distribution, performance, and adaptation of copyrighted works in return for levies paid by the providers of products and services whose value is enhanced by file swapping. A statutory licence would allocate these collected levies among the categories of copyright owners (record companies, movie producers, book publishers, and so forth), and then among individual copyright owners within each category. Those entitled to levies would receive them in proportion to how often their works were used. Unless affected industry segments themselves agreed on the levies, copyright arbitration would determine the levy amount applied to each type of product or service. Presumably, this arbitration would also settle disputes over allocation to copyright owners.

Netanel's Noncommercial Use Levy and Fisher's Alternative Compensation Scenario are both models which use DRM to monitor the frequency with which users access particular copyrighted works. Under each, ISPs monitor the flow of copyrighted files through their routers and record the frequency with which a copyrighted work appears. The compiled data is used to allocate collections proportionately among copyright owners. Royalty setting and royalty allocation, the two key features of these models, are based on elements of existing copyright law. Legislation already sets statutory license fees and allocates collected fees in connection with cable and satellite retransmissions of copyrighted movies, television programs, the musical compositions in their soundtracks, and with consumer duplication of digital music recordings. The same arbitrations also determine the license fees for certain online digital performances of music recordings.

Although the Noncommercial Use Levy and the Alternate Compensation System are similar, they differ in at least one important respect. The Noncommercial Use Levy permits users to create new versions of digital works in addition to making and redistributing copies. Professor Fisher's ACS, on the other hand, does not contemplate the creation of new versions; it simply authorizes copying and redistribution. Thus, the ACS leaves more control in the hands of copyright owners, namely the right to license the creation of new versions of their works on terms agreed to in private negotiations.

Another similar, recently-discussed model gives copyright owners discretion over licensing terms and control over unauthorized uses of their works, rather than impose statutory licenses. In late February 2004, Fred von Lohmann, Senior Staff Attorney for the Electronic Frontier Foundation (www.eff.org) presented his vision of a "**Voluntary Collective Licensing**" model (von Lohmann, 2004) at a music trade show in San Francisco, and received strikingly positive responses.

The "**Voluntary Collective Licensing**" model acknowledges that "artists and copyright holders deserve to be fairly compensated." However, file sharing shows no signs that it will go away and evidence suggests that it "is at least as popular today as it was" before any of the lawsuits began. There are "millions of songs available on KaZaA," so if the legal issues were removed, "P2P networks would quickly improve."

Von Lohmann stresses that "any solution should minimize government intervention in favor of market forces." Therefore, the music industry would form a collecting society, which offers file-sharing music fans the opportunity to "get legit" in exchange for a reasonable regular payment, at around $5 per month. As long as they pay, "the fans are free to keep doing what they are going to do anyway: share the music they love using whatever software they like on whatever computer platform they prefer, without fear of lawsuits. The money collected gets divided among rights-holders based on the popularity of their music."

"In exchange, file-sharing music fans are free to download whatever they desire, using whatever software works best for them. The more people share, the more money goes to rights-holders." The existing systems would be allowed to improve and the fans would have more freedom "to publish what they care about," therefore the catalogue of music would expand.

The same thing that occurred with broadcast radio could happen today for file sharing: "copyright holders could get together to offer their music in an easy-to-pay, 'all-you-can-eat' model," with minimal changes to copyright law and government intervention.

In terms of collecting the money, von Lohmann suggests at first charging the "60 million Americans who have been using file-sharing (P2P) software": his calculations suggest that at $5 per month, the net result would be "over $3 billion of pure profit annually to the music industry, with no CDs to ship, no online retailers to cut in on the deal, no 'payola' to radio conglomerates, no percentage to KaZaA." The revenue would continue, as long as fans wanted to access digital music online. The pie would grow with the increase in music sharing on the Internet, instead of shrinking. "Total annual gross *revenues* of the music industry today are estimated at $11 billion. A collective licensing regime for file-sharing could promise $3 billion in annual *profits* to the record labels in the U.S., which is more than they've ever made."

How to ensure that the file-sharers pay up? Von Lohmann suggests that those users "who today are under legal threat will have ample incentive to choose a simple $5 per month fee. There should be as many mechanisms for payment as the market will support," for example:

- "Some fans could buy music directly through a website…ISPs would bundle the fee into their price of their broadband services for customers who are interested in music downloading"; ISPs would be happy "to advertise a broadband package that includes 'downloads of all the music you want.'"

- "Universities could make [downloading online music] part of the cost of providing network services to students."
- "Peer-to-peer file-sharing software vendors could bundle the fee into a subscription model for their software, which would remove the cloud of legal uncertainty that has inhibited investment in the P2P software field."

"The money collected would then be divided between artists and rights-holders based on the relative popularity of their music." Deciding "what is popular can be accomplished through a mix of anonymously monitoring what people are sharing (something companies like BigChampagne and BayTSP are already doing) and recruiting volunteers to serve" as a sampling group. "In a digital environment, a mix of these approaches should strike the right balance between preserving privacy and accurately estimating popularity."

With this approach, von Lohmann believes, artists and rights-holders get paid, and "the more broadband grows, the more they get paid, which means that the entertainment industry's powerful lobby will be working *for* a big, open, and innovative Internet, instead of against it. Government intervention is kept to a minimum: copyright law need not be amended, and the collecting society sets its own prices" (the $5 per month figure is a suggestion, not a mandated rate). "At the same time, the market would keep the price reasonable – collecting societies make more money with a palatable price and a larger base of subscribers, than with a higher price and expensive enforcement efforts. Broadband deployment is boosted, as the "killer app" (i.e., music file sharing) is made legitimate. Investment dollars pour into the now-legitimate market for digital music file-sharing software and services. Rather than being limited to a handful of 'authorized services' like Apple's iTunes and Napster 2.0," the "marketplace will be filled with competing file-sharing applications and ancillary services. As long as the individual fans are licensed, technology companies can stop worrying about the impossible maze of licensing and instead focus on providing fans with the most attractive products and services in a competitive marketplace." In this scenario, music fans would have "completely legal access to the unlimited selection of music," and "with the cloud of litigation and 'spoofing' eliminated," the service provided by these networks would rapidly improve. "The distribution bottleneck that has limited the opportunities of independent artists [would] be eliminated." Artists could to use any marketing method they desire, including online distribution and not be limited to a major label contract. "As long as their songs are being shared amongst fans, [the artists] will be paid. Payment will come only from those who are interested in downloading music, as long as they are interested in downloading."

With this model, "artists [would] now be paid for file sharing that has become a fact of digital life. . . . Independent artists [would] no longer need a record deal with a major label to reach large numbers of potential fans. As long as there are fans who are sharing music online, others will be able to access major label content on equal footing. . . . In other words, digital distribution [would] be equally available to all artists." For promotion, any mechanism could be used by artists, "rather than having to rely on major labels to push radio play. There would still be a role for the recording industry: many

artists will still want help with promotion, talent development, and other supportive services. With more options for artists to choose from, the contracts will be more balanced than the one-sided deals offered to most artists today."

In terms of antitrust, because a collective licensing solution would depend on a single collecting society issuing blanket licenses covering all (or nearly all) music copyrights, "there will need to be some anti-trust regulation of the collecting society to ensure that it does not abuse its market power. Both ASCAP and BMI, for example, have been subject to a court-administered antitrust consent decree for many decades. The regulation need not be extensive, as the collecting society will essentially be selling only a single product at a single price to all comers. Regulators will keep a close eye on the collecting society to make sure that it deals fairly with artists and copyright holders, most of whom will rely on the collecting society for compensation for non-commercial file-sharing."

In terms of accurate division of the money, "transparency will be critical: the collecting society must hold its books open for artists, copyright holders, and the public to examine." Von Lohmann suggests that "the entity should be non-profit, and should strive to keep its administrative costs to a minimum. There are examples of similar collecting societies in the music industry, such as the way ASCAP uses SoundExchange. . . . Giving artists a bigger voice should help ensure that their concerns with the current collecting societies are addressed. When it comes to actually figuring out relative popularity, the desire for perfect 'census-like' accuracy need to be balanced with the need to preserve privacy. A system based on sampling strikes a good balance between these goals. On the one hand, in a public P2P network, it is relatively easy to find out what people are sharing. BigChampagne already does this, including compiling a 'Top 10' for the P2P networks. This type of monitoring does not compromise user privacy, since this monitoring does not tie songs shared to individually identifiable information. At the same time, this general network monitoring can be complemented by closer monitoring of volunteers who will serve in a similar way as the 'Nielsen families' of P2P. By combining these two methods, it should be possible to attain a high degree of accuracy, protect privacy, and prevent 'cheating.'"

"The music industry is still a long way from admitting that its existing business model is obsolete, but its current efforts to sue millions American music fans into submission is destined to fail. After a few more quarters of lackluster sales, with file-sharing networks still going strong, and 'authorized services' failing to make up for sliding revenues," von Lohmann feels that the music industry will start looking for a "Plan B.," and voluntary collective licensing may be the best way forward. If "they continue their war against the Internet," privacy, innovation and music fans, then it may be time for governments "to take steps to force their hand." Certainly a "compulsory license" is possible, but government involvement "should be a last resort: the music industry has the power to implement a sensible, more flexible solution now."

"Artists and rights-holders would have the choice to join the collecting society, and thereby collect their portion of the fees collected, or to remain outside the society and have no practical way to receive compensation for the file sharing that will inevitably

continue. Assuming a critical mass of major music copyright owners joins the collecting society, the vast majority of smaller copyright owners will have a strong incentive to join, just as virtually all professional songwriters opt to join" SOCAN, ASCAP or BMI. "The complexity of music industry contracts and history make it very difficult for record labels and music publishers to ensure what rights they control. Accordingly, by joining the collecting society, copyright owners will not be asked to itemize rights, but will instead simply promise not to sue those who pay the blanket license fee. This way, music fans and innovators are not held back by the internal contractual conflicts that plague the music industry" today.

In terms of file-sharers who won't pay, von Lohmann feels that the vast majority of them "are willing to pay a reasonable fee for the freedom to download whatever they like, using whatever software suits them. In addition to those who would opt to take a license if given the opportunity, many more will likely have their license fees paid by intermediaries, like ISPs, universities, and software vendors. As long as the fee is reasonable, effectively invisible to fans, and does not restrict their freedom, the vast majority of file sharers will opt to pay, rather than engage in complex evasion efforts. As long as 'free-riding' can be limited to a relatively small percentage of file sharers, there is no serious risk to a collective licensing system. Today artists and copyright owners are paid nothing for file sharing, so it should be easy to do much better than that with a collective licensing system. Copyright holders (and perhaps the collecting society itself) would continue to be entitled to enforce their rights against 'free-loaders.' Instead of threatening them with ruinous damages, however, the collecting society can offer stragglers the opportunity to settle by paying a fine and get legal," which is what collecting societies such as SOCAN do today.

The "authorized" music services like iTunes and Napster 2.0 would be free to compete against the P2P services, just as they do today. In addition, they could themselves adopt elements of P2P architectures, thereby dramatically expanding the music inventories they could offer music fans.

The enforcement costs faced by a collecting society for file sharing will keep prices in line. After all, if the society attempts to charge too much, intermediaries won't be able to bundle the fees into the cost of their products (for example, a $5 per month license on a $50 per month broadband account makes sense; trying to tack a $100 per month license, in contrast, won't work) and file sharers will likely rebel. Reasonable pricing makes the system work for everyone.

"ISPs as Digital Retailers"

In this model, proposed by Lionel Sobel, Professor of Law at Berkeley (Sobel, 2003), ISPs would license digital works from their copyright owners at wholesale prices set by the owners. ISPs would then sell the digital works to their subscribers at retail prices set by the ISPs. Many groups would benefit from this model. ISPs would embrace this model because of its potential for great profit. Consumers would embrace this model because it

gives them the choice and convenience they crave despite making them pay for digital works. Moreover, digital middlemen – website operators, peer-to-peer (P2P) networks, newsgroup and chat room hosts, Internet search engines, and online radio and television stations – could serve as promoters and distributors without fear of direct, contributory, or vicarious copyright liability. Computer and consumer electronics manufacturers and software companies would be able to invent and innovate to the best of their abilities without regulation of their products' designs. Although copyright owners would lose the right to prevent the unauthorized digital redistribution of their works, they would gain the ability to set their own wholesale prices in the form of royalties paid by ISPs.

This model is explored in more detail in the section of this report entitled "Non-TPM Models".

The Digital Retailer model is similar to Fisher's Tax and Royalty (ACS) System because both rely on ISPs to collect royalties from their subscribers, both use DRM to identify digital works accessed over the Internet, and both use DRM-enabled identifications to allocate collections among copyright owners entitled to receive royalties. In addition, because the Digital Retailer model does not require access, copy, or redistribution controls, it allows technology companies to innovate with new product designs, as under the ACS model.

The Digital Retailer model, however, may be preferable to the Alternative Compensation Scenario, which deprives copyright owners of the ability to determine the royalty value of their own works and to vary their prices over time. By contrast, the Digital Retailer model allows copyright owners to do both. The ability to vary prices over time – quite likely by reducing the royalties set for individual works as those works get older – is the way in which copyright owners will be able to price discriminate, even with uncontrolled copying and redistribution. The ACS also requires expensive and time-consuming legal proceedings, both to establish royalty rates and to distribute collected royalties; rate setting and royalty distribution proceedings will be infinitely more complex since digital works range from $600 computer programs to $1 recorded music tracks. Leaving software out of the plan altogether does not solve the problem: unlicensed MP3 files have been the most newsworthy, but the problem encompasses unlicensed redistribution of computer programs as well.

However, tracking copyrighted works would be less cumbersome under the ACS than under the Digital Retailer model. The ACS does not require ISPs to determine or track which users have accessed particular works. This system may be able to allocate collections using data obtained by digital file sampling in much the same way that SOCAN samples radio play of musical compositions before allocating public performance royalties. The Digital Retailer model, by contrast, requires complete file tracking and end-user billing.

Nonetheless, technology already exists (software from vendors like BigChampagne and Audile Magic, which have already been discussed) that can track individual watermarked and fingerprinted files. Even if existing technology cannot yet perform the tasks required

for the Digital Retailer model to work on the scale that would be required, the issue is indeed one of scale, rather than function. While existing technologies may have to be improved, it does not appear that any new technologies would have to be invented.

The Noncommercial Use Levy system has all the drawbacks of the ACS, plus one more: it would permit users to create derivative works using downloaded digital works without the copyright owner's consent.

The bottom line on these blanket licensing models is that because they would require amendments to the Copyright Act, none of them have yet been put into practice.

The following chart (Figure 2) recaps all the major business models. Those that protect copyright the most are at the top of the chart; those that protect copyright the least are at the bottom. The chart also reflects the technology required to implement each business model. Not coincidentally, the chart shows that providing more control over copyrighted works requires more control over technology.

Throughout 2004 (and later!), there will be many conferences and symposia held throughout the world which will investigate these two main models in detail. In order to stay current on these changing scenarios, the results of these conferences should be tracked.

Figure 2. Table showing summary of Proposed Business Models

Amount of Copyright Control	Business Model	Technology Requirements	Amount of Technology Control
More	**"Technology Defense" model:** Access plus copy *and* redistribution control over copyrighted materials (CSS for DVDs; SDMI (applicable in U.S.) for music CDs)	Requires special hardware equipment with voluntarily-installed features	**More**
	"Technology Defense" model: Access plus copy *or* redistribution control over copyrighted materials (e.g., Adobe ebook, RealMedia, Windows Media)	Requires only software provided by or on behalf of copyright owner	
	"Alternate Compensation Scenario": a Tax and Royalty System that requires *compulsory* licensing; does not contemplate the creation of new versions; simply authorizes copying and redistribution	No special technology required on users' equipment. Requires a government body to gather and ensure fair re-distribution of levies	
	"Noncommercial Use Levy": Blanket, non-compulsory licensing that permits users to create new versions of digital works in addition to making and redistributing copies	No special technology required on users' equipment	
	"Voluntary Collective Licensing": a *voluntary* fee-based system	No special technology required on users' equipment. Requires formation of collective society by music industry, offering file-sharing to users for a reasonable regular payment (suggested at $5/month). Fees collected are divided amongst rights-holders based on the popularity of their music.	
Less	**"ISPs as Digital Retailers"**	No special technology required on users' equipment; required technology to be implemented on ISPs' servers. ISPs collect a surcharge which is forwarded to a government body or collective; this agency is responsibility for distributing fees to artists and content holders.	**Less**

Source: Based on Sobel, 2003: "DRM as an Enabler of Business Models: ISPs as Digital Retailers", in 18 Berkeley Technology International Journal, p. 15.

Conclusion

Although it would be wonderful to be able to recommend one online business model over the other, it is simply not possible to do so at this point in time. More research and analysis of consumer behaviour is required; and more development work to strengthen technology protection measures, though underway, is needed.

What can be stated is the following:

- Today, there are legal "fee-based" download sites used by avid consumers (Apple's iTunes is a shining example). "Free" P2P music downloading sites also exist and are also extremely popular. Neither of these "worlds" shows signs of dissipation any time soon. The current situation we find ourselves in, on one hand, involves a growing use of "legal" sites by citizens who agree to pay for their music; but on the other hand, involves 60 million+ users who continue to enthusiastically download music for free from P2P sites and as a result, often see the long arm of the law stretching out, threatening litigation or real prosecution by CRIA or the RIAA. Recent judicial rulings in Canada have created an ambiguous environment. Will CRIA's appeals be successful? What then?

- Today, although several have been proposed, there are no blanket licensing schemes (either compulsory or voluntary) in place; no group or entity is collecting royalties, levies or taxes; there exist no regulatory bodies to legally monitor this activity. ISPs are reluctant to embark on a "digital retail model" and act as the clearing house in a blanket licensing model, due to the overwhelming cost and overhead that would be added to their operations. Furthermore, the Internet is not regulated by bodies like the CRTC, which, since 1999, has been reluctant in regulating new media services on the Internet. No other government body has stepped up to encourage adding a digital music (or broader "entertainment") levy that everyone must pay. Likewise, there are no non-profit "collecting societies" in place today that have the facility to distribute levies or royalties. The SOCANs, Soundscans and BigChampagnes of the world exist; but the music industry nor has yet to establish or propose a system that could handle the enormous clearing-house operation required for successful implementation of such a model.

- Today, the existing system of copyright law, as set out in the pre-digital world, remains in place, though it is in operational "disarray". Copyright reform has begun, but has not yet concluded, and has certainly not been enacted.

All of this leaves us exactly where we sit today: we're considering some interesting new proposed business models, but there's a certain inherent reluctance to move forward on any one of them; all the while we're seeing the music industry struggle to maintain its demeanor using somewhat outmoded laws to club anyone who dares to mess with its hegemonious position; and at the same time, we observe the accepted use of both free- and fee-based music download sites to satisfy the need to source online recorded music. And that is about all that we can conclude, at this point.

Legal Download Sites

Since mid-2003, some progress has been made to protect rights-holders and their works through the introduction of legal download sites which use DRM measures, allowing users to download the music they desire for a fee. This section of the report identifies these sites and comments on their features, pricing models, file formats, and, where possible, their success from a user adoption perspective.

- *Those which are "Made in Canada" (and/or available in Canada), e.g.,*
    - *PureTracks*
    - *Archambaultzik.ca*
    - *BearTraxx*
    - *Decibel*
    - *MusicMatch MX, and a new Sympatico service – June 2004*
- *Sites originating in other countries, e.g.,*
    - *Napster 2.0*
    - *Walmart*
    - *BuyMusic*
    - *Rhapsody*
    - *MusicMatch*
    - *eMusic*
    - *iTunes*
    - *MusicNet*
    - *MyCokeMusic.com*
    - *OD2 etc.*
- *Others to be launched in 2004*

It seems that "everyone" is getting into the online music business – not just the usual suspects like Napster (a re-launched, legal service, now owned by Roxio) and Apple's iTunes (driving demand for Apple's iPod music devices), and soon, in 2004, Sony, Virgin, HP, Amazon.com; but also at first glance, some more unusual companies like Coca-Cola and Wal-Mart. In the case of Coca-Cola, the purpose of offering music in this way is more about creating interest and excitement around its soft-drink brand, particularly with its core teenage consumers – typically, soft-drink companies are more creative and aggressive when it comes to advertising and marketing. This will likely be an emerging trend over the next few years, as other consumer-oriented companies begin to pursue partnerships and services in the online music business, to co-market and promote their own core brands and products.

Given the early stage of the legal digital online music market, it is not surprising that market size estimates vary widely. In eMarketer's "Spotlight Report: Digital Music", (January 2004, p. 4, www.emarketer.com/Report.aspx?music_jan04), estimates in 2003 ranged from $16.9 million by U.S. Bancorp Piper Jaffray to $800 million by Jupiter Research. By 2006, GartnerG2's revenue estimate is nearly triple that of Piper Jaffray's, and Jupiter's projection for 2008 is more than six times that of Piper Jaffray's.

MusicMatch (www.musicmatch.ca)

In partnership with Bell Canada, MUSICMATCH MX is a Canadian version of U.S.-based MUSICMATCH. MusicMatch introduced a music download service in the U.S. in Fall 2003 (see below) and was expected to partner with Bell to offer a similar downloading service in Canada. However, those plans are delayed while MusicMatch studies the Canadian market.

FILE FORMAT: At this time, streaming only is available.

PRICES: Platinum subscription is $7.95 per month, billed annually, for a total of approx $100 Cdn per year with tax. Gold subscription is $5.00 per month, billed annually. The "Artist on Demand" and "Composer on Demand" services are not available with the Gold subscription.

SUBSCRIPTION: Service is only available by subscription.

FEATURES: Unlimited access to over 8,000 major-label artists; features Canadian artists; can program custom radio stations; no advertisements. The licenses MUSICMATCH has secured for the "Artist on Demand" feature do not currently allow the selection of individual tracks. If the artist selected is licensed for "Artist on Demand", the user will hear the most popular music from that artist early in the playlist. Site is available in English or French.

Also available is MusicMatch Jukebox 7.5: Users can transfer music to portable devices using higher quality streaming with MP3PRO, organize and manage their digital music collection, produce Customized CD labels, add sound enhancements to tracks and create and play their own music CDs. One-time cost is $29.95.

Note: Bell Canada announced in early March 2004 that it will open a Sympatico music download store with technology and content provided by Canadian online music service Puretracks (see below). The download store is set to launch in Spring 2004 and will be co-branded with both the Sympatico and Puretracks names. The bilingual service will be available to all Internet users, although Sympatico customers will be offered exclusive offers not available to customers of other Internet providers. A monthly subscription plan that may include some free downloads is also being considered. Bell has chosen Puretracks because it is Canadian, offers English- and French-language content and has close relations with Canadian record labels. Bell Canada and Microsoft Corp. have also announced plans to close down their Sympatico.ca and MSN.ca websites and launch a joint Canadian Internet portal in June 2004 (Damsell, 2004). Bell will provide the content while Microsoft will offer an abundant list of tools and applications. The new site will incorporate the "Sympatico Music Store", a downloadable music service that will offer

users access to over 250,000 songs online. For this service, Bell may choose a different music download supplier then Puretracks.

Puretracks (www.puretracks.com)

Developed by Toronto-based Moontaxi Media Inc., introduced in the Fall 2003; made available through Telus' ISP service in December 2003. UMG and EMI are partners, though all of the "Big Five" labels provide content.

FILE FORMAT: Streaming and downloading are available; can download to the PC using Windows Media technology; can burn music to CDs or transfer to portable devices.

PRICES: 99 cents per song; entire albums $9.99 CDN (prices may vary slightly).

SUBSCRIPTION: None.

FEATURES: Over 175,000 titles legally licensed from the largest music labels as well as independents; can download individual songs or entire albums. Can preview 30 second samples of every song before purchase. Service available in English and will be available in French in early 2004.

Archambault (www.archambaultzik.ca)

Quebec's largest music retailer and distributor, Archambault Group, launched Canada's first bilingual music service in mid-January 2004. Archambaultzik.ca is a music download website aimed primarily at the Quebec market. Approximately 25 per cent of the site's collection features Quebec and francophone artists, reflecting the percentage sold in the province-wide chain's music stores. The company has also made agreements with the world's top five music labels – Universal, Sony, BMG, Warner and EMI.

FILE FORMAT: Streaming and downloading are available; can download to the PC using Windows Media technology; can burn music to CDs or transfer to portable devices.

PRICES: 99 cents per song.

SUBSCRIPTION: none

FEATURES: Features Quebec and francophone artists. Fully bilingual site. Plans to have 300,000 songs available on the site by the end of February 2004; legally licensed from the largest music labels as well as independents; can download individual songs (no albums). Can preview 30 second samples of every song before purchase. Downloading only available in Canada.

BearTraxx (www.beartrax.com)

Also launched in the Fall 2003, BearTraxx is a Winnipeg-based music download service dedicated to North American aboriginal music.

FILE FORMAT: Streaming and downloading are available; can download to the PC using Windows Media technology; can burn music to CDs or transfer to portable devices.

PRICES: 99 cents (CDN) per song.

SUBSCRIPTION: None.

FEATURES: Features aboriginal, Country Rock, Gospel, Fiddle, Old Time and Pow-Wow artists. Downloads allowed available from other countries; can pay in CDN$, USD or Euros.

Decibel (www.decibel.ca)

Decibel sells CDs and Windows Media Audio downloads from independent artists on consignment.

FILE FORMAT: Downloading is available to PCs using Windows Media technology; can burn music to CDs or transfer to portable devices.

PRICES: $1 (CDN) per track; $5.99 per album.

SUBSCRIPTION: None.

FEATURES: Highlights independent Canadian artists. Free resources available on the site for musicians and fans. For artists, CD postings and WMA file hosting are free. Decibel keeps a percentage of sales revenue and pays the rest to artists on a monthly basis. Artists set the selling price of the CD and/or WMA singles and album in Canadian dollars. On CD sales, Decibel keeps $4.00 from each CDs net selling price (or $3 if selling price is $10 or less). On WMA download sales, artists get 50% of the net selling price plus 12%* (rate subject to change) of that as the Mechanical Royalty. Mechanical Royalties on download sales will be paid to the Canadian Musical Reproduction Rights Association (CMRRA) on a quarterly basis and will then be distributed to the publisher. Decibel will pay these royalties directly to the artists in the case of independent artists whose songs are not listed with reproduction rights agencies.

Legal music download services available in the U.S. *(prices shown are in USD)*:

MusicMatch (www.musicmatch.com)

FILE FORMAT: Copy-protected Windows Media Audio (WMA) files.

PRICES: About 99 cents per track, or $10 per album (U.S. prices).

SUBSCRIPTION: Not required, but available for $5 per month for streaming and music-finding services.

FEATURES: Catalogue of 360,000 songs, which can be burned onto a CD and downloaded to many compatible Creative, Dell and Rio portable audio players. Three computers at a time can play the purchased tracks. Available for Windows 98 and later.

Napster 2.0 (www.napster.com)

FILE FORMAT: Copy-protected WMA files.

PRICES: Tracks are 99 cents each; albums are approx. $10.

SUBSCRIPTION: Not required, but offered as a streaming service for an extra $10 per month.

FEATURES: In May 2003, digital media software vendor Roxio acquired the online music service "Pressplay", and used it as the foundation for a new Internet-based music service under the Napster brand. Napster 2.0 was reborn as a legal service a few months later, with half a million songs which can be played on up to three PCs and burned to disc. Downloading to a portable player is easiest by using the Samsung Napster YP-910GS 20-gigabyte jukebox ($350 US); otherwise, require Windows Media Player software. Available for Windows 2000 and later.

Wal-Mart (musicdownloads.walmart.com)

FILE FORMAT: Copy-protected WMA files.

PRICES: 88 cents per song; about $9 for an album.

SUBSCRIPTION: None.

FEATURES: Relies on Windows Media Player version 9 to play the music once downloaded. Songs can be played on three computers, burned to CD and transferred to compatible audio players. As with CDs sold in Wal-Mart stores, edited versions (songs with explicit lyrics removed) are often available. Available for Windows 98 and later. Officially went online March 23, 2004.

BuyMusic (www.buymusic.com)

FILE FORMAT: Copy-protected WMA files.

PRICES: Songs begin at 79 cents, albums at $8.

SUBSCRIPTION: None.

FEATURES: Uses Windows Media Player version 9 as the jukebox program for managing the music. Thousands of major-label songs, but legal rights (e.g., whether you can burn songs to a CD or transfer them to a portable player) vary according to each record label, which is frustrating to many users. Available for Windows 98 and later.

Rhapsody (www.listen.com)

FILE FORMAT: No downloads; streaming music and CD burning only.

PRICES: 79 cents per song to burn onto a disc.

SUBSCRIPTION: Required; $10 a month, including unlimited streaming.

FEATURES: Rhapsody is now owned by Real Networks Inc., which bought Rhapsody and its parent company, Listen.com, in April 2003. Rhapsody is not so much an online store as a virtual concert hall, providing the ability to listen to the company's 400,000 songs as frequently as desired. Not all songs are available for CD burning. Available for Windows 98 and later.

iTunes Music Store (www.apple.com/itunes)

FILE FORMAT: Copy-protected Advanced Audio Coding (AAC) files.

PRICES: 99 cents per song; album prices start at $10.

SUBSCRIPTION: Not available.

FEATURES: The site, an integrated part of Apple's iTunes jukebox software, offers 400,000 tracks, 5,000 audio books from Audible.com and "allowance accounts" for those too young to use credit cards. Songs can be played on up to three computers, burned to a CD and downloaded to any portable player as long as it is an iPod. The latest figures from Apple say they have sold 50 million songs through iTunes since setting up the service in April 2003, with downloads running at 2.5 million per week, for an annualized total of about 130 million songs. Available for Macintosh OS X, Windows 2000 and later.

: An excellent report on iTunes has been recently published (March 29, 2004) by the Berkman Center for Internet and Society at Harvard Law School, entitled "iTunes: How Copyright, Contract, and Technology Shape the Business of Digital Media – A Case Study", authored by Urs Gasser et al. See details in Bibliography.

eMusic (www.emusic.com)

FILE FORMAT: To burn CDs from MP3s, decoder needed to convert files from MP3 to WAV or AIFF format; and a program to burn the WAV or AIFF files onto a CD as audio files. They recommend Roxio's Easy CD or iTunes.

PRICES: Download 50 free MP3 files within two weeks; then price per song depends on subscription plan selected; could be approx 22 cents per song based on Premium subscription.

SUBSCRIPTION: Three subscription plans: Basic = $9.99 per month for 40 song downloads; Plus = $14.99 per month for 65 song downloads; Premium = $19.99 per month for 90 song downloads.

FEATURES: Claims to be the first digital music service to sell individual songs and albums for download in the MP3 format, and the first company to launch a downloadable subscription service in 2000. Offers 275,000 songs in every genre from 900 independent music labels. Available for PC (Windows 98 or later) or Mac.

MusicNet (www.musicnet.com)

MusicNet, an AOL company, claims to have 250,000 subscribers and announced in late March 2004 that they now offer individual "a-la-carte" song purchase capability, an option available via a flat-rate membership fee.

FILE FORMAT: Streaming, downloading and burning to CDs.

PRICES: Individual songs 99 cents each. Only available though AOL subscription.

SUBSCRIPTION: One flat-rate membership fee of $8.95 allows users to download and stream on demand (or purchase / burn individual songs to CD at 99 cents each).

FEATURES: Only available to AOL users, and only available in the U.S.. MusicNet's shareholders include Bertelsmann AG, EMI Music, RealNetworks, Sony Music Entertainment and Time Warner. MusicNet offers 600,000 songs from BMG, EMI, Sony, Universal and Warner. RealNetworks, which acquired Rhapsody parent Listen.com, launched Rhapsody as a replacement for MusicNet, which it owns in conjunction with three major record labels. Confusing, isn't it?

Coca-Cola (www.MyCokeMusic.com)

In January 2004, Coca-Cola launched an online music store and is offering over 250,000 tracks from 8,500 artists. The service available to residents of Great Britain for 99p. Coca-Cola has also been working with Musicmatch to launch a similar service in the U.S. sometime in 2004. In the UK, the service is provided by OD2, the same company that Microsoft uses for its UK-based music download service. Naturally, Pepsi had to compete with Coke, and did so with the highest-profile ad campaign for digital music to date, launching an ad during the Super Bowl on February 1, 2004, promoting its partnership with Apple Computer Inc.'s iTunes Music Store. Pepsi offered 100 million "free" song downloads through iTunes, accessible via numerical codes printed in the bottle caps of Pepsi products. Coca-Cola followed suit shortly thereafter, announcing a promotion with MusicMatch to offer songs through Sprite products later in 2004. Perhaps with all this quaffing of sugary soft-drinks, the dental associations ought to band together and offer their own unique brand of online music – "musicwithoutcavities.com". The possibilities are endless …

OD2 (www.ondemanddistribution.com)

OD2 (On Demand Distribution), co-founded by Peter Gabriel (formerly of the group "Genesis") in 1999 in the UK, has been instrumental in the development of the online music market in Europe, along with its retail partners including MSN Music Club, mycokemusic in the UK, Virgin Downloads, Tiscali Music Club, HMV Digital Downloads, Fnac (France), TDC musik (Denmark), Karstadt and MTV (Holland, France, Italy and Germany). Aggregated data for European services provided by OD2 shows significant growth in the final three months of 2003, with 450,000 registered users, 275,000 tracks available and 300,000 tracks downloaded per month. Most services using the OD2 'engine' offer a combination of streaming and à-la-carte downloads to portable players offered at different prices, with flexible payment options (pay per song, subscriptions, discounts). Services differentiate themselves by a combination of exclusive content, special features with artists and benefits for "premium" service or broadband subscribers.

In March 2004, OD2 launched a new digital music service called "SonicSelector". The service will break from the one-price-only model of Apple's iTunes, selling tracks ranging from 99 Eurocents to up to two Euros each for "premium releases." The store, which will use Microsoft Windows Media Player 9 technology, will feature advanced filtering technology designed to help users search for the music they want, provide recommendations, and introduce them to new music.

Other online music launches planned in 2004:
Microsoft Corp., Virgin, Amazon.com, MTV, Hewlett-Packard and Sony have all indicated plans to launch competing services in the U.S. in 2004. In Canada, iTunes, NusicNet and Napster 2.0 plan to offer services in 2004.

Microsoft: In mid-March 2004 they offered "sneak previews" of their new music service at a music trade show in Texas and announced that plans to launch their online music store sometime during the second half of 2004. The virtual store will be promoted via the company's MSN.com web portal and promises a large catalogue of songs and albums. Users will be able to download tracks to their computers or to portable digital players that use Microsoft's Windows Media audio format.

Virgin Group, owner of Virgin Music retail stores, has plans to partner with MusicNet AOL to create Virgin Digital. The online store is expected to launch in the U.S. in August 2004 using Windows Media audio format, with a European service to follow in November 2004. Virgin Digital plans to offer 700,000 tracks but will increase their song selection to one million songs soon thereafter, and claims they will offer more blues, jazz and other musical genres than currently found on other services. Prices will be 99 cents (or pence) for each à-la-carte download; or, Virgin Music Club members can pay $8 to $10 for a monthly subscription. The service will be branded as a Virgin service (with a "Virgin" customer interface, billing data) but MusicNet/AOL will handle the "backroom" functions (fulfillment, database management and most licensing arrangements). The service will allow burning, ripping and encoding of songs onto CDs as well as access to Virgin's Radio Free Virgin Internet radio service. Customers will be able to access Virgin Digital over the Internet at Virgin retail stores, where music can be downloaded to portable digital players or burned to a CD at special kiosks. Customers will also be able to access Virgin Digital via mobile phones and other portable devices. Virgin Digital will have a link to Virgin's online physical goods store which is operated by Amazon.com.

Sony Corp. has announced a partnership with McDonald's in the U.S. to promote their new "Sony Connect" online music store which will launch in the spring of 2004 featuring 500,000 songs available for download at 99 cents each. McDonald's has apparently bought songs at a discount from Sony and is believed to have committed $30 million to promote Sony Connect including hiring Justin Timberlake to appear in commercials. The songs will be given out in the form of codes to customers after ordering specific items from the McDonald's menu. Customers then redeem the codes online at the Sony Connect store. The Sony Connect service will be compatible with Sony's own line of portable digital music players, with software upgrades planned for later in the year to make it compatible with devices from other manufacturers. Sony also announced a new, high-capacity version of its Mini Disc, capable of recording 45 hours of music on a one-gigabyte disc. The company plans to offer more products in the near future that combine entertainment functions, such as a home theater connected to its online music service. McDonald's may in the future promote other Sony products such as video games.

Sony has also made arrangements with United Airlines to permit travelers to trade in their frequent flier points for free songs.

Conclusion

Measured by market share, legitimate pre-iTunes online music services such as Pressplay and MusicNet have failed to succeed in the market. The reasons for this are manifold. From the consumer's perspective, one might argue that complicated user interfaces, the limited size of song catalogues, comparatively high up-front costs imposed by monthly subscription fees, and restrictive DRM schemes were, at least in part, responsible for the rather limited success of iTunes' precursors. As has been discussed earlier in this report, iTunes has changed the online music landscape by offering an easy-to-use online store with a broad song catalogue, a consistent, uniform, and cheap pay-per-download scheme rather than a subscription service, and a relatively liberal DRM system. Moreover, iTunes has added additional features to its service in order to attract consumers and compete with free music distributed over peer-to-peer networks. At a glance, all these characteristics benefit consumers, when compared to the offerings of older online music services.

Online music stores are likely to have several positive impacts on both major and independent labels. First, they are contributing to the construction of legitimate infrastructures for selling music in the digital environment in the aftermath of Napster and its successors. In order to compete with "free", they offer rich song catalogues, easy-to-use interfaces, permissive DRM schemes, relatively low prices, and special features such as recommendation data and information on live concerts, online music stores. Second, the distribution of songs and albums via online music stores, in contrast to traditional distribution channels, eliminates costs such as packing, shipping and breakage. Independent labels will also benefit from emerging online music services. The physical constraints of traditional music stores, which often result in less prominent in-store placement of works by independent artists, does not apply to online retailing. Due to easy-to-use search functionalities and informal recommendation systems, it is easier for consumers to locate lesser known recordings.

The potential impact of online music stores on artists is more difficult to evaluate since details about the financial arrangements between artists, labels and the online service provider are not made public. Moreover, since no blanket contracts exist, one cannot assume any uniformity in the allocation of revenues between labels and artists. It seems unlikely that the online music business model will significantly change revenue streams between the key players, despite the efficiencies created by online distribution. However, some categories of artists may benefit from emerging online music stores in other ways. First, legal download sites have widened their offers through deals with independently distributed labels. Based on contracts between independent music labels and online music stores, "indie" artists can place their music more easily in online stores rather than traditional retail music stores. Indeed, with distribution and manufacturing costs reduced, more artists can go directly to download sites to release their music, rather than working through a label. Second, online stores offer advanced search functionality and "recommendation systems", which help users find songs by lesser-known artists more easily than in traditional retail stores. Sales data from Apple show that iTunes has sold more than 95% of the songs in its catalogue at least once; this indicates that consumers are encouraging new entrants and also downloading songs from lesser-known artists.

Non-Technology Protection Measure Models

Non-Technology Protection Measure (TPM) models, discussed in the fourth section of the report, generally make use of a fee-based service, often referred to as "blanket licensing", where consumers are charged a fee based on their use of digital media, and creators are rewarded through the distribution of these fees (e.g., based on the popularity of their work). Creators would need to register their work, and then through collective licensing agreements, a levy or user service fee would be charged to generate funds. Alternatives include a government-run, or music industry-run collective. Another variation of this scenario, currently under consideration by the Supreme Court of Canada (SCC) and known as "Tariff 22", proposes that ISPs / IAPs (Internet Service/Access Providers) would be required to pay tariffs for Canadian music downloaded by the public. In December 2003, the SCC began hearing arguments over whether ISPs should start collecting royalties by placing a blanket fee on Internet caches to compensate the music industry for downloaded music. Tariff 22 faces an uncertain future – the Supreme Court will decide by mid-2004 whether to reverse a Federal Court of Appeal decision that SOCAN is entitled to collect fees on music downloaded from outside the country, and for music stored temporarily in caches that ISPs use to speed Internet surfing.

Every day, online music downloading becomes more widespread and the industry counter-measures become more odious. What if there was a compromise that paid artists while letting users obtain the music in whichever way they wanted? This is the idea behind "compulsory licensing" or ACS (alternative compensation systems), which we have already discussed in the "Business Models" section of this report.

The idea, simply described, goes like this: Users pay a small fee (a few dollars per month) to download whatever type and quantity of music they want, in whatever way they want to. Some sanctioned group tracks what is being downloaded and then distributes the money received, in fair proportion, to those responsible for creating the music. Everyone wins: the users get all the music they want, and artists and copyright holders get paid.

As we have seen in the "Business Models" section, several versions of this model have been proposed (an Alternative Compensation System or compulsory licensing; Noncommercial Use Levy; Voluntary Collective Licensing; and "ISPs as Digital Retailers").

ISPs have been a target of the RIAA in the U.S., and of CRIA and SOCAN in Canada, and research shows they may have benefited from illegal downloading. Strategy Analytics (in Rubin: eMarketer Spotlight Report on Digital Music, January 2004, p.5) has found that music downloads can be a powerful incentive to migrate to broadband. In fact, while most data shows that consumers are more actively exchanging digital photos than downloading music, 44% of those surveyed by Strategy Analytics cited music downloading as the most popular media-related reason for migrating to broadband.

The Collective or "Blanket" Licensing model through ISPs:

In the "ISPs as Digital Retailers" business model, proposed by Professor Lionel Sobel (2003), people would use the Internet much as they do now. They would connect to the Internet through dial-up or broadband accounts with ISPs. While online, they would visit websites, newsgroups, chat rooms, e-mail servers, and peer-to-peer networks. While visiting these destinations, they would download or stream digital content to their computers. However, for digital content containing copyrighted works, the owners of the copyrights would have the right to digitally identify each work, its owner, and the wholesale royalty price to be paid by ISPs for its transmission to users. As content identified in that fashion passed through ISPs' routers to their users, ISPs would log those transmissions and bill users' accounts monthly for the content they received, at retail royalty rates set by ISPs, using the same billing methods by which ISPs now charge users for Internet access.

To protect users from downloading unwanted works or incurring exorbitant charges, ISPs could send pop-up notices before the actual files were transmitted. These pop-up notices would inform users that files requiring payments were about to be sent and would display the cost of sending the file. These pop-up notices could look and work like virus warnings seen today, and users would respond to them by clicking "Yes" or "No" buttons. For ISPs to become digital retailers, they must be able to track each user's access to digital versions of copyrighted works, and record those users who download and purchase these digital versions. ISPs can monitor copyrighted file access using two types of existing DRM technologies which have been previous discussed: watermarking and fingerprinting.

Together, watermarking and fingerprinting can provide digital identifications for every digital work that copyright owners choose to have identified. ISPs can use these identifications to recognize works transmitted as digital files through networks connected to ISPs, which includes transmissions from websites, over P2P networks, and as attachments to e-mails or instant messages. Information about the copyright owner of each watermarked and fingerprinted work could be stored in a database along with the wholesale royalty price the copyright owner has decided to charge for the work's transmission to the ISP's customer. As these works pass through ISPs' routers, ISPs would identify the works and determine their wholesale royalties by checking their watermarks or fingerprints against the database. ISPs would then apply their retail markup and charge their customers' accounts for works they download.

With ISPs serving as digital retailers, several objectives are achieved:

- Copyright owners would receive payment for all uses of their works (downloads, streams, and attachments) at royalty rates they set themselves.

- Consumers would have ready, legal access to digital versions of copyrighted works, though they would have to pay for what they receive (just as is done in the physical world).

- Website operators, peer-to-peer networks and users, e-mailers, instant messengers, online indexes and search engines would all be able to legally play whatever role they want to in the distribution of digital works, without requiring further consent from copyright owners. Online indexes and search engines would still be free to charge fees for their use; or, they could sell advertising space on their display pages without sharing their revenues with copyright owners. Copyright owners would be paid by ISPs if and when works are accessed. Websites and other online services that already charge users for access (like online music stores, or text content providers such as the online version of *Ottawa Citizen*) would have to provide something of additional value to justify their fees, because users would be billed by their ISPs for access to copyrighted content itself. Subscribers of a pay-for-access online service may not feel they are being double-billed if the service is well-organized, comprehensive, easy to use, or offers additional features or services.

- Computer and consumer electronics manufacturers and software companies would be able to build and sell their products without any legal constraints on how they are designed, and without any legal requirement that they contain, or do not contain, certain features.

- ISPs would win by offering an incentive for potential customers to subscribe to broadband service – a significant additional revenue source and one that is likely to be equal in size to the revenues received by copyright owners from the online distribution of copyrighted works.

Several obstacles stand in the way of successfully implementing the Digital Retailer model. A discussion of these challenges, and some suggested remedies, follows:

1. Technological Measures taken by users to avoid being billed

The technology necessary to implement a Digital Retailer model would need to be installed at the ISP level, rather than on users' computers, to reduce the probability of user circumvention. Nonetheless, determined users can also circumvent the technology. For example, watermarks or fingerprints in royalty-bearing works can be hidden by encrypting those files before they are attached to e-mails or transmitted over P2P networks, thereby preventing ISPs from billing for those works. Users may also spoof their Internet Protocol (IP) addresses, hiding their identities from their own ISPs and avoiding payment for downloading royalty-bearing works. The question is whether these and similar circumvention techniques defeat the purpose of a Digital Retailer model. Many who have analyzed this model do not believe so. First, this sort of behaviour is, for all intents and purposes, illegal. Second, theft is a serious problem in the physical world

of retailing, but no one has suggested that retail stores should be eliminated for that reason. Third, unauthorized digital distribution of copyrighted works does occur, by people who think that it is legal. If users understood the illegality of encryption, IP spoofing and similar techniques to avoid paying for copyrighted works, they would likely discontinue these practices.

There are studies to prove this "user behaviour modification" angle. Comparing the changes in attitudes of consumers from 2002 to 2003, Edison Media Research (in Rubin: eMarketer Spotlight Report on Digital Music, January 2004, p. 14) found that far fewer consumers were ambivalent about downloading; some of the fence sitters, however, had decided not to download free music, with that percentage growing from 8% to 14%. While it is true that consumers' attitudes affect their behaviors, these attitudes and beliefs don't necessarily dictate behaviour. Many consumers continue to download, but more may be on the verge of quitting because they now know that what they are doing is illegal.

2. Spamming

Since virtually all works transmitted online are eligible for copyright protection and all copyright owners would be entitled to be paid at rates they set themselves, unscrupulous authors may attempt to fool the system by spamming end-users with unwanted material in order to get royalties. Technology could provide a solution to this problem; but if not, other non-technical solutions may be available. ISPs' routers would be alerted to the existence of copyrighted material stored in their caching files by watermarks or fingerprints before those files are transmitted to Internet users. To prevent spamming, ISPs could send pop-up notices informing users that files requiring payment are about to be sent for a certain cost, before the actual files are transmitted. Users would then be given an opportunity to click an on-screen button, indicating whether or not they actually wanted the files sent. To users, the process would resemble virus warnings seen today. Users would respond in the way they respond to virus warnings, with a simple click of the mouse. An alternate, non-technical solution may be drawn from the world of credit card fraud. In order to receive copyright royalties under the ISP Digital Retailer model, identification information for material sent by spammers would have to be placed in watermark and fingerprint databases along with the watermarks and fingerprints of other copyright owners. ISPs could be authorized to suspend royalty payments to those against whom spamming complaints are lodged, in the same way banks suspend or revoke the credit card Merchant accounts of retailers, if consumer complaints are lodged against them.

3. Intra-industry Conflicts

Implementing a Digital Retailer model also requires resolving two conflicts within the entertainment industry. The first intra-industry conflict is the result of an old but still troublesome fact: single works often involve several separately-owned copyrights. Music

recordings include at least two copyrights per track: a copyright in the musical composition, usually owned by a music publishing company (and if a song is co-written by more than one songwriter, the musical composition copyright is likely to be co-owned by more than one publisher); and a copyright in the recording itself, usually owned by a record label. As a result, royalties for the online performance or download of a single recording must be split between two or more copyright owners. In addition, music publishers grant licenses for performances and downloads through separate agencies: one for performances (i.e. via SOCAN); and another for downloads. So today, royalties for the online use of a single music recording may be claimed by three separate agencies on behalf of two or more separate copyright owners. Likewise, a movie may embody several separate copyrights: one for its visual elements and the sound effects in its soundtrack, and another for each song in the soundtrack. As a result, royalties for the online performance or download of a single movie may also have to be split among several copyright owners. Some copyright owners may demand too much, thus discouraging customers from making online use of works to which those copyright owners contributed. Other contributors to the same work may be pressured to decrease their royalty rates in order to lower the total royalty claimed for that work enough to increase sales volume. The presence of multiple owners may thus trigger strategic bargaining among copyright owners, each owner hoping to persuade the others to lower their royalty demands. This process may not succeed, however, in lowering the total royalty enough to actually increase sales. Under the Digital Retailer model, none of these kinds of conflicts is of concern to ISPs. However, before ISPs can know who to pay, conflicts like these will have to be resolved.

The second intra-industry conflict involves ISPs: some ISPs and some copyright owners are subsidiaries of the same corporate conglomerate. Given complete discretion, such a conglomerate may choose to implement a business plan that seeks to attract subscribers to its ISP subsidiary by offering them exclusive access to the conglomerate's copyrighted works, or access at lower rates than those charged to unaffiliated ISPs. The Digital Retailer model, however, would give all ISPs access to all copyrighted works. Also, to prevent copyright owners from substituting high prices for exclusivity, all ISPs would have to be charged the same wholesale royalty for each work. Copyright owners would have to be careful not to favour some ISPs with lower royalties than they charge other ISPs. This means, for example, that Warner Bros. and Time Inc. could not charge their sister company America Online lower royalties for digital recordings or online magazines than they charge other ISPs, let alone give America Online exclusive access. This could also possibly occur in Canada with BCE, which operates an ISP which also provides an online music service (MusicMatch, and soon Puretracks), and as well owns a portion of *The Globe and Mail* newspaper and the broadcaster, CTV. However, they don't, as yet, actually own or operate a music production company, so this is not an issue, for now.

4. Privacy

The Digital Retailer model requires copyright owners to make significant concessions of control over how, when, where, and to whom their works are distributed. It also requires

some concessions from users. For example, in order to enjoy the convenience of online access to copyrighted works, users will have to tolerate some loss of privacy. The Digital Retailer model requires ISPs to compile records of copyrighted works accessed by their subscribers for billing purposes. Some may view this as an unacceptable loss of privacy. On the other hand, this is a small and acceptable loss of privacy when compared with the other invasions of privacy people accept today. Credit card companies already know where people shop and how much they spend. When people shop in stores, or spend amounts that look unusual, credit card companies try to reach them by phone to confirm that their card has not been stolen. Likewise, phone companies, through their OSS (operational support systems) and network management systems already know who people call, when calls are placed and how long people talk. Even visiting brick-and-mortar retail stores is likely to be videotaped. In many North American cities, highway and toll bridge users and their passengers are likely to be videotaped as well. It seems that citizens' privacy is no longer an option today.

In summary, the Digital Retailer model is no more intrusive than credit card or telephone company billing schemes. Tracking copyrighted works that are accessed online, for billing purposes, diminishes the current levels of privacy only slightly.

5. Pay-per-use, Fair Dealing, and Non-infringing Uses

Some may object to the Digital Retailer model because it requires a pay-per-use royalty and makes no payment exceptions for non-infringing uses, including fair dealing. But this objection is only accurate in part and is not a reason to reject the model. The Digital Retailer model does not require payment for each *use* of a work. It requires payment each time a work passes through an ISP's router. Thus, rather than characterizing the model as a pay-per-use model, it should be thought of as a *pay-per-redistribution* model. Downloaded works may be used countless times on the computer to which they are downloaded without additional payment. Only the initial download triggers a royalty fee.

Those raising the "non-infringing use" objection imply that users should be able to get free access to copyrighted works they intend to use in ways that qualify as non-infringing. However, that has never been the case in the physical world. Teachers, for example, may be entitled to display or even photocopy newspaper articles for use in their classes, but they do not have the right to take copies of newspapers from the newsstands they pass on their way to school without paying for them. Likewise, movie critics have the right to include plot synopses and quote dialogue in their reviews, but they are not entitled to free admission to movie theaters showing the movies they intend to review.

6. Unregulated Royalty Rates

For some, lack of regulation of royalty rates may be troubling. One might argue that copyright owners may effectively eliminate the ability to legally reproduce copyrighted works and redistribute them online by charging high rates. While copyright owners may

charge high royalties for some works, especially when they are new, they have always had the ability to do so in the physical world. A recent report entitled "Digital Rights Management: Content Protection in the Networked Economy" has been priced by its publisher at $995, and newsletters published by the same company cost more than $1,000 a year, without apparent objection from anyone. There is no reason why things should be different in the digital world.

Nor is there any reason to suppose that copyright owners would set high rates to eliminate digital versions of their works altogether. Naturally, when motion pictures are first released to movie theaters, or television programs are broadcast for the first time, their owners will not be pleased by online distribution of unauthorized copies. Distributing unauthorized copies online shortly after a work has first been released interferes with the owner's ability to engage in sequential and separate releases of that work. Copyright owners may therefore set high royalty rates for newly released works to discourage the online distribution of unauthorized copies at that stage. However, by the time movies and television programs are made available on videos and DVDs, copyright owners have no reason to prefer distribution of the physical product through retail stores to online distribution through ISPs, as long as their online royalties net them the same amount per download as they net from the wholesale price of the DVD.

Conclusion

The concept of collective licensing is not new. The creation of collecting societies like SOCAN, or ASCAP and BMI in the U.S. was how songwriters dealt with similar issues caused by broadcast radio in the first half of the twentieth century. Songwriters originally viewed radio in exactly the way the music industry today views KaZaA users: as pirates. After trying to sue radio out of existence, the songwriters ultimately got together to form ASCAP (and later BMI and then in Canada, SOCAN). Radio stations interested in broadcasting music stepped up, paid a fee, and in return were allowed to play whatever music they liked, using whatever equipment worked best. Today, the performing-rights societies in North America, SOCAN, ASCAP and BMI, collect money and pay out millions annually to their artists. There's no question that the system that has evolved for radio is preferable to one based on trying to sue radio out of existence, one broadcaster at a time. In terms of dividing up the money collected, that has been done before as well: billions of advertising dollars are divided up today for television using sampling systems.

The music industry is the only industry that appears to be unable to adjust its business models to take file-sharing into account. The movie industry, in contrast, is having its most profitable years in history. The software and video game industries also continue to show strong growth and profitability. Each one of these industries has taken steps to adapt their business models to the realities of file sharing, and, if other industries wanted to form collecting societies and offer blanket licenses to file sharers, there would be nothing to stop them from doing so. Individuals would be free to purchase the license if they were interested in downloading these materials from the file-sharing networks.

Of all the blanket licensing models (ACS, compulsory licensing, blanket licensing, non-commercial use levy); the "ISP as Digital Retailer" model appears to make the most sense. With voluntary licensing, it is just that: it is impossible to guarantee that everyone using P2P networks will pay. Users would still be able to download, whether they paid or not. With compulsory licensing, the mechanism to collect would have to be through some sort of taxation, involving the government. Don't we already pay enough taxes? It's highly unlikely that the Canadian taxpayer would stand for this unless it was somehow buried in the taxation system and no one was really aware of it.

Let's face it: the heaviest users of file sharing services are students and consumers with high-speed Internet access. An Internet access fee could be included as part of annual tuition and student fees. Users who consume large amounts of bandwidth are probably engaged in file sharing, since e-mailing and web-surfing typically do not indicate high-bandwidth requirements. Given that these users may be willing to pay for the ability to file share by paying more for extra bandwidth, it seems that this is the group that ought to bear the cost of a file sharing licence. Many ISPs have indicated that they plan to move toward a tiered pricing model that would charge heavy users a higher amount for their bandwidth consumption. Combining the student fee and heavy broadband user compensation, it has been suggested that the yield could be $97 million annually, more than enough to provide the recording industry with full compensation for losses sustained due to file sharing (Geist, 2004).

The strongest opposition to this model will undoubtedly come from the ISPs, who will be concerned that this approach will reduce their revenues coming from the consumer broadband market, since part of the tiered pricing gains would have to be passed along to cover the cost of the license. Although the criticism is warranted, the benefit for users is access to content on file sharing services, and knowing that some of that value is being passed along to the content creators.

The recording industry would also likely be opposed to blanket licensing approach because it would require the industry to surrender key copyright rights (the rights of reproduction and communication) within the peer-to-peer framework and it could undermine new commercial online services such as Puretracks. However, given the potential upside of close to $100 million, the additional revenue for the labels and artists cannot be easily dismissed. In terms of the competition between file sharing and fee-based services, the concern may be unfounded. There is a huge difference between being able to download music quickly, free of spyware and computer viruses, and using free file sharing services. The industry may find that the fee and free services can co-exist as two separate revenue streams.

At any rate, with the advent of Mobile Music (more about that trend is discussed in the "Futures" section of this report), the industry may be forced to adopt this model. Next generation 3G, 4G and Wi-Fi wireless networks are being installed and the carriers and service providers are trying to figure out how to get consumers to use them. We are now seeing online photo services on offer; soon Internet radio, music downloading, video content streaming, and gaming to the cell phone (or a hybrid cell phone / iPod / MP3 /

PDA device) will follow – and voilà, the "Killer Apps" for wireless networks will have arrived. At that point (which will be soon – these features are being developed now), the only possible workable model is one where a pool of money is collected through flat-fees and then distributed accordingly.

What is needed is to work out a blanket license solution – right now, without hesitation – that legalizes peer-to-peer file sharing of music, and allows all the stakeholders to participate in the process, so that the record labels, creators, consumers and ISPs can benefit. Time is running out for the music industry, CRIA and the RIAA. The ISPs can afford to spend the time to analyze, re-price, study, re-analyze, litigate, disagree, stall … the music industry cannot. While time passes, file sharing will continue, and the disintegrating business model will not help the creators and content owners to solve the problem. The ISPs don't even need to win: all they need to do is wait, and the model will implode on its own.

This time – right now – should be used to constructively seek a solution. If the industry does not find a solution, the government may be forced to. This could take a very long time and no one may be happy with the outcome; while prolonging the agony for creators and content owners who still have to eat is not healthy.

The "Impact" Matrix

This section of the report discusses the major stakeholders' (*) responses to the areas most impacted (**) by the online music problem as it exists today; and, where possible, comments on some of the major changes anticipated in this area (for example, the solidification of Canadian copyright policy, the different technology issues, and the concretization of some of the more creative ideas that are only just now being considered):

* Stakeholders:
- *Creators/Artists: Musicians, Composers, Performers*
- *Content Owners: Record Labels, Producers*
- *Distributors: Retailers, Internet Service/Access Providers*
- *Technology & Consumer Electronic Vendors: Hardware manufacturers, software vendors*
- *Consumers: Users, audiences, downloaders*

** Impact issues:
- *Economic impact (i.e. financial and business aspects)*
- *Socio-cultural impact (i.e. social "norms", moral panics, evolution of "common practice", evolution of music creation and musical forms, convergence of artist forms)*

The information for this section is summarized in a table, which briefly reviews different types of impact created by online content downloading on each of the major stakeholder groups, and a suggested near-term outcome in each case (i.e. positive, negative, or something in-between).

Following the "Impact Matrix", each of the five major stakeholder groups is discussed in more detail, in terms of the different business models, different types of impact and, where applicable, potential effects on stakeholders of some of the emerging trends.

Direct quotes that have been made by individuals in various stakeholder groups are included.

Impact Matrix

Impacts ▶ Stakeholders ▼	Economic	Socio-cultural	Outcome
Creators/Artists	High negative impact on artists and creators if rights are disregarded in any business model; but high positive impact if model provides new methods of royalty collection and new ways of exposing artists to consumers and fans.	New technology allows artists to create in new ways; e.g., collaboration with their fans and audiences; other artists. New musical forms emerge due to Internet technology. Artists are careful about taking sides, but they do need to eat.	Most artists/creators are (sadly) used to facing economic challenges. Most feel that whatever model emerges, they will adapt to. New technology offers more control over the distribution of their works; those who adapt will emerge victorious!
Content Owners* **(Record Labels, Music Producers)** Content Owners may be creators & artists also, and/or may be both record label companies & music production studios)	Depending on the business model, this group will either curl up and die, or will evolve into slick Internet marketing machines and successfully spear-head fan culture technology.	Unfortunately, the record labels have suffered a bad rap due to their aggressive, litigious behaviour. They usually sing the "We're trying to protect the poor artists" song. That's very altruistic of them …	The message is clear: they must incorporate new technology into their *modus operandi*, or they will fail! There is not a lot of sympathy for this group. The Internet has changed everything, and litigation isn't a solution.
Distributors	Tower Records files for bankruptcy in 2004; but a new form of retailer emerges with Starbucks, Coca-Cola; and rumours of Amazon.com, HP and Microsoft (2004) opening "stores"; Virgin Records has online and physical locations. Online Music Stores are the new retailers, offer new ways to buy music; live video streaming available; Mobile Music soon.	Big paradigm shift in terms of socio-cultural interaction. Move from "Go to a retail store and buy your CD"; to "Download online music to your handheld, then go out with your friends". Community shopping centres replaced by digital community networks. Too bad about the retail stores; they need to diversify and sell other "stuff" to stay in business.	Brick-and-mortar stores must also change to survive. Their best plan is to add online music distribution to their existing services, à la Starbucks or Tower Records. There is no question that physical distributors will be impacted overtime because of the availability of Internet downloading.
TECVs (Technology & Consumer Electronic Vendors)	Companies like HP, Microsoft, Apple and RealNetworks will definitely benefit. ISPs will be concerned about the amount of overhead expenses added to their operations if they have to collect royalties.	There are very few IT vendors that actually take a position on the socio-cultural side. Exception is HP, which has taken the moral high ground with a strong stand against piracy. Potential to lead in many tech areas is high.	Technology Vendors are truly "calling the shots". Their innovations will lead the music industry to the solution, which will likely produce a world where a number of the various business models will be combined.
Consumers	The economic impact will always be positive for users, because they are in control of this situation! As long as "free" exists, no other model but P2P will do!	Fan culture takes on a new perspective with interactive sites; gadgets become cultural life-style symbols; users become creators (mash-ups, re-packaging). Streaming brings live performance to an iPod or MP3 player.	Consumers are KING! They will always win, because if the business model does not suit them, then other stakeholders will adapt. Even artists and creators will need to listen to consumers if they want exposure/success.

Further analysis of each Stakeholder group follows:
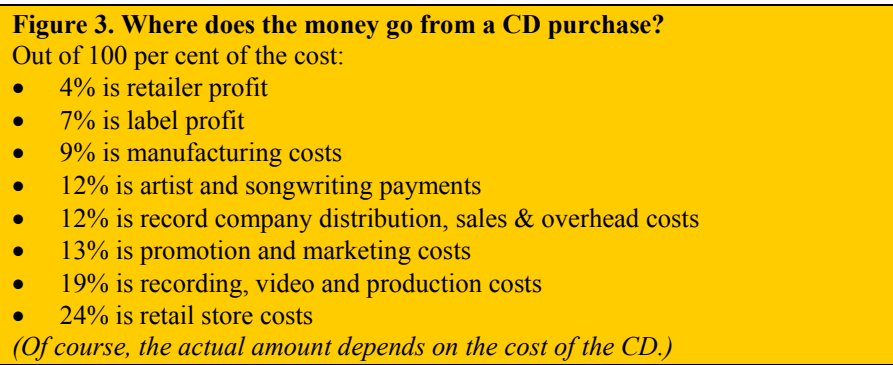
Creators/Artists :

In this tug-of-war between file-sharers and music companies, artists actually find themselves identifying with both sides. They are rights-owners after all, and are interested in encouraging respect for the rules. However they also worry about the health of the public domain, and are concerned about trends that seem to be making access to the cultural expressions of the past more difficult and ever more costly.

As Susan Crean, co-chair of the Creative Rights' Alliance puts it, "File-sharing may be piracy, but it is also a consumer revolt and an explicit demand for change. People want more choice and flexibility in the way they "consume" music, which is to say, for example, they want access to single songs and permission to compile their own CDs." (Crean, 2004).

Artists are intensely interested in seeing their work distributed, and do not wish to impede anyone's access to it. This desire has often been exploited by others, so much so that economists have coined a term "psychic income" to describe the gap between what would reasonably be expected as compensation for work done, and what creators accept for their work. It is an old dilemma, but one that is highlighted by the digital revolution. Creators command only a small percentage of the money flowing through the cultural industries (see Figure 3), and when no money changes hands (as with free downloads), there is no money flowing at all – unless the downloader is using file-sharing to "try before they buy", which is an absolute bona fide use from a marketing point of view. However, there are no guarantees that an actual purchase will take place. Moreover, the strange economic truth seems to be that the farther away one is from the act of creation, the more money there is to be made.

> **Figure 3. Where does the money go from a CD purchase?**
> Out of 100 per cent of the cost:
> - 4% is retailer profit
> - 7% is label profit
> - 9% is manufacturing costs
> - 12% is artist and songwriting payments
> - 12% is record company distribution, sales & overhead costs
> - 13% is promotion and marketing costs
> - 19% is recording, video and production costs
> - 24% is retail store costs
> *(Of course, the actual amount depends on the cost of the CD.)*

– Source: Allison, from CRIA data compiled in 2003.

Copyright is not just about money, it is also about morals. The moral rights that give artists the right to be credited and to protect the integrity of their creations, also give the

public the means to verify information. If moral rights are removed from the web, anyone can change whatever they like with virtual impunity.

There are many artists' alliances throughout the world who are attempting to re-educate the public about the need to pay for music and to respect copyright legislation. The Music Coalition (www.musicunited.org) is an RIAA-led group of artists, record labels and intellectual property owners who have launched a series of high-profile advertisements in major press and broadcasting outlets that attempt to equate downloading and burning with theft. "Who really cares about illegal downloading?" asks one ad, available for viewing on their site. "We do", answers an impressive group of stars including Stevie Wonder, Britney Spears, Shakira and Luciano Pavarotti. In the section of the website entitled "Why you shouldn't do it", the coalition insists that to "assert that music should be free is the same as saying it has no value – that music is worthless". This is absolutely contrary to the cultural values that underpin much peer-to-peer downloading; that music is a crucial communicative entitlement independent of its economic worth – in other words, that its "use value" supersedes the rather arbitrary "exchange value" which is allocated to it.

It is not news that copyright law financially benefits creators last and least, but most artists feel that it is now time that the cultural industries did something about it. The artist's position, then, is not one of abandoning copyright, but of restoring it to its original purpose: encouraging creative people to keep on creating.

"As a classical musician making CDs for a specialist market, I finance the production of my own records, and rely totally on royalties from the record company to repay the cost. Customers expect perfection, and rightly so, but this is only achieved by employing the best professional engineers and booking the best recording venues. The expense is considerable, but the results are worth it. Breaking even is the best I can expect in a small market, and if a proportion of customers steal my recital by copying it instead of buying it, there is nothing in the kitty to make the next one, quite apart from my own financial loss. The CD has made it possible for the discerning listener to enjoy so much out of the way music, and concepts such as airtime and the mass market have no relevance to us. Please realize that illegal copying is theft, just as much as if the CD was stolen from the shelf." (Colin Bradbury)

"Basically the bottom line is, we don't really care where people get our music from. It could be from the Internet or from stores, but I don't think they should be stealing it." (Deryck Whitbley, of Canadian Band "Sum 41")

"Artists and composers – particularly the younger ones – will not stand a chance of creating music in the future if their recordings are simply stolen in this way." (Luciano Pavarotti)

"Are you a shoplifter? Do you get your music 'for free' and without permission? Do you think there's a big difference? Don't be a hypocrite and say you don't shoplift, you only download, because it's really the same thing. Downloading without permission is stealing. People earn a living out of music, just like any other job, so please don't steal our livelihoods." (David Vorhaus)

– Quotes from "Pro Music" website (www.pro-music.org), February 2004

Content Owners (i.e. Record Labels, the "music industry", etc.)
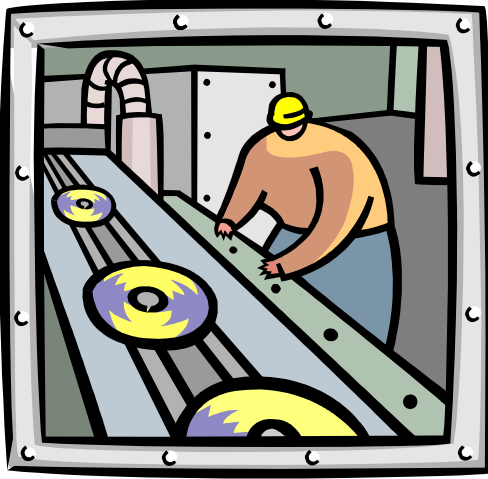
Faced with the challenge of an increasingly popular culture that has developed its own conception of property and its own distribution networks, the record industry has attempted to manage this threat through a "clampdown strategy", consisting of initiatives aimed at criminalizing illegal uses and attempting to re-assert control through the development of new business models and legal frameworks for distributing music. This strategy puts a very powerful but inflexible form of organizational culture up against a dispersed but highly dynamic mode of cultural distribution and consumption.

CRIA estimates losses to the Canadian industry at about $250 million in sales over the past three years (from 2003 and prior) – a 20 % drop in annual sales. This is despite the existence of the Canadian Private Copying Collective (CPCC), formed in 1999 to offset royalties lost to digital file sharing. The CPCC collects levies on media that can be used for digital recording, whether or not the media is actually used to record music. The CPCC then distributes the money to composers, performers, publishers and record labels. The CPCC collected $28 million in 2000-2001 (there is no similar program in the U.S.).

The assumption by the recording industry that demand for CDs is fundamentally strong and that Internet piracy is to blame for falling sales is a simplistic reaction to a complex problem. Demand for, and sales of music are shaped by a range of factors including the impact of the wider economy, levels of creativity, the scale of corporate innovation (or conservatism), the pace of technological development and the unpredictability of individual consumer taste. Throughout its history the music industry has been subject to cycles of boom and slump, none of which have been caused by a single identifiable factor (such as piracy). There have been periods of boom in the 1920s, 1940s, late 1950s, 1960s and 1990s – all of which have been followed by periods of slump in the 1930s, late 1940s and early 1950s, 1970s, and now today. Each 'fall' in the cycle has been followed by an environment in which discussions of musical creativity, technological innovation and corporate behaviour have been central. Simplistic narratives of technological succession – that Internet technologies will necessarily undermine concrete product sales – is as misplaced as former predictions that film would kill off photography, or that TV would kill off film.

There is no single explanation for the recent decline in global record sales. To place the burden wholly or partly on illegal downloads from the Internet is to ignore a host of other reasons, including:
- a slowing global economy, the maturing of the CD market and consumer perception of the high cost of CDs;
- the popularity of rival leisure activities, such as video games and DVDs;

- the ongoing "corporate concentration" of the music industry leading to a reliance on formulaic A&R (Artist and Repertoire) processes, and a reluctance to invest in new artists;
- a lack of major musical innovation.

A study just released by Harvard University and the University of North Carolina (Oberholzer and Strumpf, 2004) which tracked music downloads over a period of seventeen weeks in late 2002, found that "file sharing has no statistically significant effect on purchases of the average album in our sample. Moreover, the estimates are of rather modest size when compared to the drastic reduction in sales in the music industry. At most, file sharing can explain a tiny fraction of this decline." The eagerness of the industry as a whole to identify free downloading services like Napster, Gnutella, Morpheus or Grokster as the major cause for declining sales suggests that the record labels are reluctant to embrace their own responsibilities.

How are the record companies combating pirate culture?

The record labels are pursuing a range of strategies simultaneously to marginalize and emulate P2P culture. They have lobbied for sympathetic copyright legislation to criminalize P2P networks and their users, and developed copy protection systems to outwit potential pirates and protect old business models. They have also attempted to hack into unlicensed music files in what it calls "spoofing", and even bought up selected digital business ventures that would complement their existing digital portfolios. There are three other ways in which the major labels and their trade associations are confronting the threat of P2P: through education, litigation and the development of new online services.

Education: Educating the public about copyright issues is a key priority for an industry that is keen to tackle the growing perception, facilitated by P2P networking, that consumers do not necessarily have to pay for all their music. The notion that music can be free is, evidently, a serious problem for the industry and one that needs rebuttal. There is an urgent need to educate young people about the value of copyright and the need to respect private property in the creative industries. The Internet culture of "free" content sharing is clearly a potential disincentive to future investment in all copyright industries. There is considerable concern that a significant proportion of youth is growing up to believe that music is essentially a free commodity. Such an idea – that music should be shared and effectively de-commodified – is one that needs to be dismantled and examined. One way to do this is through public awareness. One such effort, Canada's "Keep Music Coming" campaign (www.keepmusiccoming.com), uses a national website along with advertisements, CD inserts and education tools to inform young Canadians that when people buy music, they help artists create more music and give new artists a chance to be heard. Another campaign, spearheaded by an alliance of music sector groups in mid-2003 (www.pro-music.org), is a website aimed at promoting legitimate online music services and confronting the myths surrounding online music piracy.

Education can occur in a variety of ways. Campaigns have ranged from public relations and advertising campaigns (a recent example of public awareness was the announcement at the 2004 Grammy Awards in February, of their public education website, www.whatsthedownload.com), university and school projects, to pop-up messages sent directly to people using unauthorized services. CRIA is also utilizing the Instant Messaging (IM) function of P2P networks to communicate a message to individuals who appear to be distributing copyrighted music without authorization from the rights owners. The message appears as:

> "Warning – It appears that you are offering copyrighted music to others from your computer. While we appreciate your love of music, please be aware that sharing copyrighted music on the Internet without permission from the copyright owner is illegal. When you do so, you hurt the artists, songwriters and musicians who create the music and the other talented individuals who are involved in bringing you the music.
>
> More than 40,000 Canadians work hard producing and supporting the music you appear to enjoy, including producers, engineers, retailers, music publishers, distributors, manufacturers, record companies, concert promoters and broadcasters.
>
> When you break the law, you risk legal penalties. There is a simple way to avoid that risk: Don't distribute music to others on a file-sharing system like this. For further information, please go to www.cria.ca"

CRIA maintains a full time anti-piracy unit under the direction of its in-house counsel and maintains close contact with its member companies. Amongst other enforcement activities, they conduct law enforcement education seminars, liaise with Customs officials and monitor the Internet for online infringements. Regional investigators monitor the availability of suspected infringing sound recordings in the marketplace and make test purchases for further investigation.

In March 2004, the FBI on behalf of the RIAA unveiled a voluntary, government-sanctioned anti-piracy warning seal and warning that can be included on various types of copyrighted music. Record companies can choose to include the seal on all copyrighted music they distribute to warn the public of the illegality of copying and distributing music without permission.

Litigation: This method has, thus far, been the most publicized strategy: to stamp the power of the current major players onto an evolving industry. First, the RIAA's lawsuit against Napster was settled in the industry's favour; later in 2001, MP3.com was forced to pay Universal Music $25,000 for each of the CDs it had illegally made available to downloaders, a settlement potentially worth up to $250 million. Since October 2001, the RIAA has filed further suits against a range of post-Napster services like MusicCity.com, KaZaA, Grokster and Audiogalaxy. Despite the introduction of more stringent copyright legislation and educational initiatives, P2P networking has increased since the decline of Napster.

To understand whether there is a correlation between lawsuit filing and the resultant effect on users, it is interesting to look at the data from research conducted in the U.S.

over separate time periods in the past several last years (no equivalent in-depth study data exists for the Canadian population). A study conducted by the Pew Internet Project from March 12-19 and on April 29-May 20, 2003 found that 35 million American adults downloaded music files, an increase of five million users in two years, while 67 per cent of downloaders stated that they did not care whether the music was copyrighted or not (Pew, 2003). However, according to a front-page article in *Billboard*, this is unlikely to curtail litigation because the industry "is as much concerned with the establishment of legal precedents as building as win-loss record against specific peer-to-peer services" (Garrity, 2002). The RIAA, CRIA and SOCAN have lately focused their attention on ISPs and individual Internet users. By the end of July 2003, the RIAA had issued approximately one thousand subpoenas to ISPs demanding that they reveal the names of individual users who could then be sued: under U.S. federal law, copyright holders can sue infringers for statutory damages ranging from $750 to $150,000 for each of their copyrighted works that have been illegally copied or distributed, although the court decides what kind of damages should be paid. RIAA general counsel Cary Sherman claims that "Litigation is an essential ingredient of a strategy – we need these court rulings that basically set limits on what peer-to-peer networks can do – but it can never be a strategy in and of itself. We obviously need to have complementary strategies" (as quoted in Garrity, 2002).

Then, according to a similar but more recent Pew Internet phone survey of 1,358 U.S. Internet users from November 18 - December 14, 2003 (Pew, 2004), the RIAA lawsuits against online music file sharers appear to have had the desired impact on the number of people engaging in P2P music sharing. The study indicated large drops in downloading activity by students and broadband users. The numbers who were downloading files on any given day have plunged (the percentage dropped by half, from 29% – about 35 million, to 14% – about 18 million users) since the RIAA began filing suits in September 2003 against those suspected of copyright infringement. Furthermore, a fifth of those who said they continued to download or share files online said they were doing so less often because of the suits.

On an average day during the Spring 2003 survey, 4% of Internet users said they downloaded files. In the November-December 2003 survey, just 1% said they were downloading files on any given day during the survey period. Data also showed significant declines in the number of people with P2P file sharing applications running on their computers. In fact, they found that usage of each of the four services sampled (KaZaa, WinMX, BearShare and Grokster) had dropped in November, versus one year ago.

And from the most recent statistics available, the RIAA reported in mid-March 2004 that the value of U.S. music shipments from record companies to retail outlets declined 4.3 % in 2003 (compared to a 6.8 % drop in 2002) and unit shipments declined 2.7 % (compared to a 7.8 % drop in 2002), a slower decline rate than in previous years, which indicates some stabilizing trends in the music industry.
In support of the Pew findings, E-Poll (in Rubin: eMarketer Spotlight Report on Digital Music, January 2004, p. 13) also found that more consumers believed it was wrong to

download files after the RIAA lawsuits. The impact was greatest on youth when it came to music, with 32.6% of those aged 13 to 17 believing that downloading without permission was wrong in October 2003, up from 20.2% in April 2003. The RIAA's actions may also have helped its motion picture counterpart, the MPAA. More teens and respondents at large felt it was wrong to download a feature film after the RIAA actions, although teens did not change their opinions quite as dramatically as they did for music.

While the RIAA consumer lawsuits may have been effective at shifting consumer attitudes regarding the legality or morality of file sharing, they have had a disproportionate impact on those who are at least responsible for illegal "volume" downloads. However, the lawsuits may have short-term benefits in terms of curtailing piracy among the next wave of broadband users, and long-term benefits in affecting the attitudes of the younger music downloaders. To maintain their effect on consumers' attitudes, the trade group will likely have to keep up the pressure and continue suing consumers – and so far this year, they have: from January to March 2004, they filed lawsuits against over 1,500 individuals.

This litigation has undoubtedly caused downloaders to have a more negative opinion of the music industry. While consumer lawsuits have generated considerable resentment toward the record labels themselves, the reaction is a non-issue when it comes to the consumption of music, i.e., consumers will not retaliate by purchasing less music. People buy music to enjoy the work of artists, who have by and large wisely stayed in the background of the copyright infringement controversy. Music fans would be reluctant to deprive themselves in protest; this position will outweigh any general ill will toward the recording industry, especially over time.

In Canada, unlike in the U.S., what is legal in terms of uploading vs. downloading is, or was, a little less clear, up until March 31, 2004. In a decision in December 2003, the Copyright Board ruled that uploading, or distributing copyrighted works online, was prohibited under current Canadian law. (i.e., posting a music file onto a shared music folder was a no-no). However, copyright law does allow making a copy for personal use, and does not address the source of that copy, or whether the original has to be an authorized version.

Under the law, certain media are designated as appropriate for making personal copies of music, and producers pay a per-unit fee into a pool designed to compensate musicians and songwriters. Therefore in Canada, most cassette tapes, CDs and MP3 players are included in that category. Other media, like DVDs, are not deemed appropriate for personal copying. Computer hard drives were never been reviewed under that provision, however. In the December decision, the Copyright Board decided to allow personal copies on a hard drive until a fee ruling was made specifically on that medium, or until the courts or legislature tell regulators to rule otherwise.

Therefore, the courts hadn't actually ruled on the downloading side of file-swapping issue – it hasn't been resolved, so downloading to a hard drive was "OK".

Then in February 2004, CRIA filed court requests for information to identify 29 subscribers through five Canadian ISPs, in anticipation of filing lawsuits against these people for making large amounts of music available for *upload* (i.e., they were "making a file available on a P2P network"). However on March 31, 2004, the Federal Court of Canada ruled that ISPs can't be forced to turn over identities of suspected file-swappers, and moreover the Federal Court found that neither downloading *nor uploading* of music amounted to distribution – i.e., where there is some positive action by the owner of a shared directory, such as sending out copies, or advertising that the files are there and available for copying. In effect, it meant that in Canada, it was OK to both download content, as well as upload. Oh, Canada!

This late-breaking news is now reverberating through the industry and we will undoubtedly see its consequences play out over the next few months. Not unexpectedly, CRIA's immediate comment on this ruling was that they would continue to fight file sharing, and would make plans to appeal the decision.

Development of new services: One win-win strategy by the major record labels in the last year was to begin to offer licensed downloading services. In an effort to meet the demand for the culture of downloading, the companies came together to launch Pressplay, a joint venture between Vivendi Universal and Sony Music International, and MusicNet, a partnership between the remaining three of the "Big Five" labels, Warner Music, BMG and EMI. However, both services have changed considerably in the past ten months. In May 2003, PressPlay was acquired by Roxio, formerly best known for its CD-burning software and re-branded Napster 2.0. Roxio is estimated to have paid about $5 million for the Napster name and another $39.5 million for PressPlay. MusicNet is now incorporated into AOL and is only available via that service.

These initial forays into online music proved to be a useful training ground for the record labels. For example, whereas P2P sites are undiscriminating in what content they make available, the "legal" services carry only songs that the record labels have agreed to license. In the case of independent labels, desperate to open up new revenue channels, this is not a problem. The major labels, home to the most popular artists, have stakes in competing digital music ventures and are thus reluctant to make their full catalogues available to potential rivals. Driven by corporate considerations rather than popular demand, the result was that none of the services they initiated are complete – rights-related issues means that only a selected portion of an artist's repertoire is likely to be available, even if the artist was released by the label.

With this sort of activity, it appears the industry has begun to accept that downloading is here to stay and that established players need to shape the growing market rather than instinctively opposing it, as many of their previous initiatives suggest. This has necessitated a strategic shift in two key areas: the licensing of artists and songs to rival services and the reluctant abandoning of a "rental only" policy for downloads. Record companies are now more open to licensing even their most popular tracks to competing distribution platforms and are starting to pursue a wide variety of partnerships to distribute their music in digital form. Previously the majors seemed concerned to stop

other companies making use of the Internet with their content, whether sought legally or pirated. Now they seem more open to work co-operatively with each other, the most successful example being the Apple's iTunes service, one which allows consumers to buy individual tracks from all the major companies. The labels are also pushing technology rivals, notably Microsoft Corp. and Apple Computer Inc., to shake hands and possibly share trade secrets in the interest of promoting digital downloads. Labels have set a goal of compatibility among competing digital music players by 2005; currently, music from Apple's iTunes Music Store cannot be directly transferred to a device other than an Apple iPod, while downloaded songs from every other legal download service (many of which use Microsoft WMA technology) are incompatible with the iPod. Realistically, it's debatable whether Apple and Microsoft would ever shake hands and agree to standardize, as this is all part of their highly competitive and clearly differentiated DNA.

It is unlikely that the major labels will be able to shut down peer-to-peer sites in the near future, so there is now a period of co-existence between the licensed and unlicensed sectors of online music distribution. Given that this is the case, the labels would do well to shift attention from litigation to issues of promotion and marketing, and to develop strategies which take advantage of the increased exposure that P2P sites provide for their artists, and even perhaps enter the P2P business themselves (i.e., seriously consider what Shaun Fanning is proposing to them with Snocap: working with the major labels to develop their own P2P-based offers). Despite their frequent complaints, the major record companies are not the "poor cousins" of the music industry, they are highly profitable divisions of wealthy entertainment conglomerates that own the most popular catalogues, dominate budgets for advertising and marketing and are best positioned to withstand short-term losses in search of long-term profits.

Digital downloading and P2P networking have transformed the listening habits of significant numbers of music fans. They have facilitated a grass-roots movement of musical exchange and education, and laid the basis for a new model of music distribution. In response, the established record industry has adopted strategies of opposition, adaptation and co-option that have so far failed to curb the enthusiasm for unofficial, unlicensed downloads. There is a unanimous belief by all groups who are not part of this stakeholder category that the labels would fare far better by placing a renewed focus on coming up with new ways to secure digital transactions and, in light of competing with "free" content from KaZaA and other P2P networks, create a more compelling alternative to decentralized file-sharing networks. The record labels have the resources and the legal precedents to dominate the future of recorded music but, more than ever, they lack the cultural capital best expressed by the credibility and flexibility of peer-to-peer networking.

They too can benefit from the Internet and new technologies, which have proved to be extremely effective marketing tools for music companies and musicians. For example, the use of websites in an entirely new world of fan culture technology (an emerging trend discussed in the "Futures" section of this report) can promote new releases, provide samples and near-instantaneous access to an artist's back catalogue, as well as to develop a closer (read "loyal and lucrative") relationship between an artist and his or her following.

The American Idol phenomenon is one such strategy that seems to be working well for the recording industry, and BMG in particular (American Idol judge Simon Cowell is a BMG executive). It's a very public version of "A&R" activity, where "we the people" get to vote on who will be the next big U.S. / Canadian / UK / Australian etc. Idol, and then, the newest "World Idol" each year as well. It also broadcasts a secondary message about how instrumental the record industry is to the development of a young person's career, in terms of promoting and marketing the new artists – provides instant recognition and consumer demand for the few top winners each year, as well as lucrative recording contracts, PR, and subliminal awareness around the music industry. Interestingly, there is no mention of the online music difficulties having to be endured "back at head office" on the program. The general public cannot vote on the web, only by phone or cell; and although there is a very active website for American Idol (www.idolonfox.com/), neither it, nor the Canadian Idol website (www.ctv.ca/idol/gen/Home.html) offer downloads of the winners' original or later-launch CDs for purchase.

> "The music industry has been spoiled. They have controlled the distribution of music by producing CDs, and thereby have also protected their profits. So they have resisted Internet distribution. The music industry has to reinvent itself. We can no longer control distribution the way we used to."

– Nobuyuki Idei, CEO, Sony
eMarketer Report, January 2004, page 3

> "These sites which make available MP3 music files of unauthorized copies of sound recordings are depriving the recording artists, composers, authors and record companies of the right to choose the value of their creative property in a free and open market. These MP3 sites are also depriving governments of income from sales and excise taxes which would otherwise be paid for the sale of sound recordings on physical carriers such as CD's and tapes, which are displaced by down loading unauthorized copies from the internet."

– Quote from CRIA website (www.cria.ca/internet.htm), February 2004

> "So we ought to cut the music industry a little slack. Though it's going to take a long while to nurture, the industry has come a long way in the licensing of music online. The idea of the paid digital download is only about one year old … we are finding ways to offer consumers all the music they want, in the formats they want, where they want it, when they want it, and at prices they can afford without any friction. To do this, we need to develop more viable business models for online retailing. And then we have to put those business models to work. But we are making progress. The legitimate downloading services are getting more traffic, and the illegal ones are getting less. And we're bringing prices way down." (Andrew Lack)

– Quote from Sony Music Chairman and CEO Keynote Speech at the Entertainment Law Initiative
Luncheon, February 6, 2004

> Digital piracy has brought us KaZaa's law. KaZaa's law states that our sense of right and wrong doesn't evolve as fast as our technology. Just because we can do something, doesn't mean it's the right thing to do. Just because we can steal music, doesn't mean we should. Just because we can take someone's intellectual property for free, doesn't mean we should. Just because you can do it and not get caught, doesn't mean it's right. It's illegal, it's wrong, and there are things we (HP) can do as a technology company to help.

– Quote from HP CEO, Carly Fiorina, at the Consumer Electronics Show, Las Vegas,
January 8, 2004

Distributors:

This is the segment of the music industry that will undoubtedly suffer the most consequences, as online music sites gain even more popularity. There is really only one strategy they can consider, and that is to diversify their business – which means, to jump on the online music bandwagon *now*, without hesitation, in some manner; otherwise, most of the "bricks-and-mortar" retailers will find themselves out of business in the next two to three years, unless they have other aspects to their business (e.g., selling audio systems or other music or entertainment accessories).

Unfortunately, the trend away from buying music only from physical retail stores has already negatively impacted some retailers: in early February 2004, the parent company of Tower Records, MTS Inc., filed for Chapter 11 bankruptcy protection in U.S. Bankruptcy Court, marking the final step in a debt restructuring program that actually began in May 2003. The plan for reorganization includes the sale of the 93-store chain, which has suffered rapid and enormous losses accredited mainly to the drastic changes in the music business. However, other physical retail music stores that have jumped onto the online music downloading bandwagon for positive gain have still managed to maintain their physical stores – though perhaps not as many of them. We have already discussed Richard Branson's newest company, Virgin Digital, as being in development stages of a new online music service to be launched later in 2004. However, there are no plans to close down Virgin retail outlet stores. Many bricks-and-more shops do have "clicks-and-mortar" capabilities to purchase CDs, so they do have a Web presence. However taking the next step to make the investment and "go digital" with their wares will be difficult for some.

On the bright side, online music has given way to some new and potentially exciting entrants. For example, Starbucks Corp. announced in mid-March 2004, that it will begin launching an in-store music service by the end of this month, adding to its current sales of music CDs. "Hear Music Café", created in partnership with Hewlett-Packard, will offer a digital music library from which customers can listen to music of their choice via headphones while sipping their lattés, then create, burn and pay for a personalized CD of music before leaving the store. The service will offer a selection of 250,000 songs and will expand over the next two years into 2,500 of Starbucks' cafés using Wi-Fi hotspot technology (more about the integration of online music and Wi-Fi communications is in the "Futures" section of this report). Prices will be comparable to the iTunes service: $6.99 for five songs, which is the minimum purchase; albums will cost $12.95, and eventually wireless downloads will be offered for users' laptops or portable players.

The new Starbucks concept is a unique example of taking transformative technology and incorporating it into an existing business. They have created a new way to target a specific buyer, bridging the gap between digital content and physical location. By adding

music service to their existing products, they're enhancing the customer experience by adding "culture" to their stores, all the while without having to worry about convincing their customers to return to their stores like record stores do now.

As well, Amazon.com has plans to offer online music. Can Canadian book store Chapters/Indigo be far behind? Some examples of other "New Entrants as Distributors" include soft drink beverage companies Coca-Cola and Pepsi, who we have already discussed as promoters of new online music marketing partnerships. Other companies planning similar co-marketing campaigns include Miller Brewing Co. and Roxio Corp.'s Napster; Heineken USA Inc. and RealNetwork's Rhapsody; and South Beach Beverage Co. and BuyMusic.com Inc.

In fact, the question becomes, Is there a consumer-oriented corporation that **doesn't** have plans to get into the legal music download business? And the next question is, Why do it? There is no proof that it is a profitable business (yet), and it's hard to compete with "free". It was recently reported that roughly 99 cents out of every dollar Apple makes off their iTunes music service heads back to the five largest labels. Apparently the companies that are in the now-crowded online music marketplace are simply staking their claim in an online market that may only someday be profitable – but they know they have to be there for presence now. For the time being, it seems like little more than digital brand advertising. However one of the trends that will emerge beginning this year, Mobile Music, has the potential to become the next "big thing" in digital media, and shows promise as a revenue generation tool for many different but related industries. This will be discussed in the "Futures" section of the report.

Some noteworthy quotes regarding Distributors:

"Coca-Cola should stick with Coca-Cola. They should have nothing to do with music since the company is all about beverage. They should spend more of their time finding new ingredients for the beverage to make it taste better. Music doesn't go better with Coca-Cola."

"Apple is leading a race of lemmings into the zero-profit business of closed music downloads. It seems kind of crazy to me, the economics don't make sense. Why are all these guys like Microsoft and Wal-Mart rushing into a business where the industry leader says 'we cannot make money with the contracts that we have'?"

– Source: from BBC News website, "Has the Internet changed the way you listen to music?" Available at news.bbc.co.uk/1/hi/talking_point/3495921.stm

ISPs, Technology Developers and Consumer Electronic Vendors:

Until collective licensing models become operational (if they ever do), revenues for this group of stakeholders should continue to grow moderately as digital distribution of media content proliferates. Digital media is still perceived to be free by a portion of the population, so large numbers of individuals will accumulate large collections of digital media including television, movies and music (though without having to purchase it). Consumers want flexibility in using media files and therefore will expect consumer electronic vendors to allow them to work on multiple playback devices; consumers will also require more storage for their media files, and are interested in new devices to facilitate digital media playback. For ISPs, revenues should grow as more digital media is made available and attracts new subscribers. Also, the desire for richer media content such as movies and TV programming will drive the desire for higher bandwidth connections. However, these gains will probably be offset by increasing legal costs as ISPs deal with on-again, off-again enforcement efforts by copyright holders.

If technology protection measures strengthen and both physical and digital distribution is secured, then decreased revenues in the short term may occur due to consumer confusion and displeasure with copy-protection. However, hardware and software companies providing copy-protection solutions may see some increase in revenues, but those could be offset by a constant cycle of research and product development. In this case, ISPs will try to secure a portion of the distribution revenues for the delivery of protected content. These revenues will rise in relation to the increases in distribution of digital content.

In a collective licensing scenario, technology and consumer electronics companies would incur minor cost increases, to ensure devices could track content usage. However, given the nearly seamless nature of purchase transactions and the possible decrease in piracy, device manufacturers and software developers will preserve the opportunity to increase revenues based on the quality of products, not their ability to prevent piracy. ISPs will try to secure a portion of rising electronic distribution revenues for distribution of the protected content, from the current, almost non-existent level, and, as above, these revenues would rise commensurate with the increases in distribution of digital content.

Of all the stakeholders, perhaps this group has the least to worry about. Because there is no emotional involvement, technology firms and ISPs can stick to being flexible and adaptive to whatever model plays out – whether it be status quo, strengthened technology defenses (the best outcome for this group) or blanket licensing. Even though the ISPs might complain about the latter, they're a smart bunch, have experience dealing with disruptive economic change and shifting paradigms, and they will figure out a way of ensuring profitability through multiple-tiered pricing plans. After all, it is their "pipes" that all this content is flowing through; they should be able to come up with a pricing model for themselves that will provide them with the ability for some profit-taking. Also,

many of the ISPs have their own online music stores, so they're already part of the "machine". Furthermore, many ISPs also have ties with or are related to wireless carriers. There will definitely be an upside for the wireless carrier market once Mobile Music comes into focus, no matter what model emerges. For them, online music will be the "Killer App".

Consumers: (OK, let's be fair: they're not *all* pirates!)

Record companies have spent much of their time over the last several years developing some means – either technical or legal – to define "music pirates", and have then attempted to stop them. However, defining piracy is not as straightforward as the industry claims it to be. Commercial "pirate" recordings today range from the traditional cassette to the manufactured CD, and from the CD-R disc replicated in someone's basement to the audio file distributed on the Internet. The point of lumping together the organized mass pressing of pirate copies (often undertaken in commercial plants and monitored by law enforcement officials) with either an individual "burning" a copy of a friend's CD, or peer-to-peer downloads with no commercial value, is to expand the definition of piracy, and who constitutes a pirate. Until now, it seems that one would have to define individual students on "wired" college campuses, office workers circulating a new CD for "burning" and organized gangs producing and distributing mass pirated copies on the streets of Mexico City or Manila all as pirates. Arrrrgh, Matey!

Perhaps the concept of piracy should be set aside for a moment and instead attempt to understand users' motivations for downloading: why an individual listens to music online; and, to the uses of the downloaded files: what happens to online music, once it is downloaded. Some research has been conducted in this area, though more recent analysis needs to be done. We have already discussed the Pew Research studies on media downloading (the Pew Internet & American Life Project, July 2003 and January 2004) … but unfortunately, no such in-depth research has been undertaken in Canada. In Europe, several useful studies were undertaken in 2002. In Germany, an academic team (Walsh et al, 2003) investigated and analyzed Internet-related consumer music procurement behavior and its effects on traditional music "procurement" (as opposed to "purchase", because some consumers' consumption resulted in procuring – but they did not pay for it) using a Web questionnaire with a sample of more than 4,000 Internet users. Four motive factors for the willingness to pay for online music were found, and subsequent cluster analysis identified three meaningful and distinct downloader groups who are willing to pay for online music: the researchers named them "demanding downloaders"; "general download approvers"; and "autonomous procurers". Consumer price sensitivity for two different commercial online-music distribution models was very similar, and the majority of users had similar ideas as to how much a commercial download service should cost. So that was useful information, as was the previously mentioned March 2004 Harvard study

which concluded that there was no correlation between online downloading of music and the decrease in CD sales seen in the past few years.

These studies are useful because they really do delve into the questions of use, belief, consumer logic and ethical/moral motivation. It is so easy just to say "consumers who download from P2P sites are pirates". But that is not entirely correct. The Walsh study was actually able to granularize user behaviour and give us a better understanding of why people do what they do when it comes to online music.

Why do users download?

The main reason given by most people who download music is convenience. The existence of the Internet and digital technology alters the process of music consumption, eliminating most aspects of conventional CD purchase, including having to choose a retail outlet and the ensuing logistics involved (opening hours, assortment). Downloading is also easy, a further motivation that stresses the process of listening to online music but specifically concerns the medium used. All one needs is an Internet-enabled PC and music files can easily be downloaded while being occupied with something else. Another feature of downloading is discovering new music, artists and different genres. In this case, the new possibilities offered stimulate the users' curiosity and the desire to discover and evaluate new music and artists at a lower cost (in terms of time and financial resources). Music enthusiasts are also attracted to listen to music online since they can have access to extensive digital music catalogues. It's not just about discovering new forms of music. The size of the catalogue available online provides access to a very broad portfolio of music files by a larger group of artists. A further reason why listening to music online has become so popular is cost: a large number of these files are free. Record labels' CD pricing policies have made consumers look for new ways to listen to music, even if it means violating copyright laws or accessing perfectly legal distribution channels which are completely different from conventional ones. Curiosity about the new phenomenon is another reason cited by those not particularly interested in music, but who consider downloading as another way of trying out and exploiting the potential of digital technologies. Another aspect has to do with the entertainment linked to downloading activities, a variable that considers listening as an experience related more to entertainment than to the real content offered.

What is done with music once it is downloaded?

The use of downloaded music files, first of all, is to listen to downloaded files, often in a different way from the conventional manner, i.e., not on a traditional CD player, from the radio, etc., but rather, from a PC, iPod or MP3 device. This use focuses on the dimension of mobility, or the possibility of listening to downloaded music on portable players while engaging in other activities (walking, jogging, working in a location other than a traditional office, commuting on public transportation, etc.). Second, many users record music on a CD after downloading MP3 files, using downloading as a tool to produce

conventional CDs from music obtained online. Then, there are more creative uses of the downloaded files, such as preparing compilations of files the user can listen to, again on portable MP3 devices or players other than a computer. In the "Futures" section of this report, I will address the concept of compilation, "re-packaging" and "mash-ups" as actually being new artistic uses that could only have occurred with advances in technology and the Internet.

Another extremely useful study has been completed in the form of research conducted at Boconni University in Italy (Luca Molteni and Andrea Ordanini, 2003) by using statistical analysis to build consumption profiles in a sample of 204 downloaders. The focus of this research was on the approaches different consumers have adopted towards online music. The study was presented in Italian, so bear with me as I try to translate and encapsulate their findings:

Molteni and Ordanini recognized that because consumption in the cultural industries is a complex phenomenon, rooted in an increasingly socio-cultural consumer environment, a large number of variables needed to be taken into account to describe different behaviours. In order to uncover online consumption profiles, the researchers attempted to identify characteristics of each consumer group. Another interesting conclusion they were able to make was that different types of marketing outreach and strategies need to be considered by record companies, based on the type of downloader described. Their analysis demonstrates that a deeper understanding of consumer profiles is a key requirement to supporting successful new strategies in online music downloading. Without understanding these profiles, the music industry will be unable to exploit the benefits of potential segmentation of consumer markets and understanding individual consumer tastes, forcing the record labels to continue to compete with their traditional musical offerings in an increasingly less-profitable market.

Based on their survey, Molteni and Ordanini found that 30% of users were "occasional" downloaders, with a minor interest in online music and thus having marginal impact on the industry; 24% of users were considered "explorers", who search and explore digital catalogues and use downloading to select further purchases; 21% were "mass listeners", interested in file sharing without duplication, with some interest in paying for downloading; 14% were "duplicators", who substitute downloading for traditional consumption, with no willingness to pay for downloading; and the remaining 11%, the "curious" group, who see downloading as such, for "fun" and nothing more. Their specific analysis is worth looking at in a little more detail.

They found that the **occasional downloaders** group had little interest in searching and exploring peer-to-peer sites and only a moderate interest in visiting MP3 sites. These were users who do not generally consume music online and give only slight importance to file swapping; they are not interested in value-added services, or the size of online catalogues. For them, listening to music still largely means purchasing CDs. *This group was not particularly interested in online strategies, and even as music downloading continues to be popular, digital technology will likely have only marginal impact on the purchase process and hence on the marketing strategies of the record labels.*

By contrast, the second group (**mass listeners**,) had a high degree of dependence on peer-to-peer sites, but a low interest in recording music. For them, downloading means file sharing, but not duplication – simply downloading for enjoyment and listening to this music while involved in other activities, such as working, sports, relaxation, etc. Mass listeners do not appear to be interested in extending their knowledge about the range of music on offer, and appear to be passive consumers in the digital environment. *This group is not interested in paying for downloading, suggesting to the researchers that the business model that works best for these users is one of a subscription model – where digital content is sold through websites, thus providing the capability for online music to consumers who are simply "surfing".*

These considerations can also be applied to the "**curious**" group, i.e., those strongly influenced by the entertainment factor and who depend on P2P sites, but who have little interest in recording files on CDs or mobile listening. This group simply wishes to enjoy music; for them, the act of downloading is essentially a form of entertainment. *The researchers' conclusion is that today's recording industry will find it difficult to force these consumers to pay for music.*

The fourth group, the **explorers/pioneers** are "searching and discovering", often with the use of mobile gadgetry and by recording files onto CDs. Explorers/pioneers show interest in anticipating future developments and the evolution of technology. The study showed that explorers leveraged downloading to improve or increase their consumption of music — desiring extensive catalogues, and showing interest in complementary services on the web, such as detailed information about artists, or powerful search engines. *For online services to be of interest to "explorers", Molteni and Ordanini feel that record companies' promotion and selection strategies need to be modified. This group becomes, in effect, a core target for launching and assessing new, combined strategies, i.e. integrating traditional and new ways of consumption, since these consumers will often use downloading to consider future purchases of CDs. Moreover, the interest this group shows in future services suggests a new approach may be required for record labels; for example, a major artist's launch might be done in the mainstream market only* after *their music has been positively received by the explorer/pioneering consumers.*

The fifth and final group, "**duplicators**," represent users who specifically downloaded files from P2P sites and then record the music onto CDs and MP3s. In this case, downloading is done mainly to replace conventional forms of recorded music. Since these consumers are not inclined to pay for downloading, and tend to substitute this activity for the actual purchase of traditional CDs, they represent the most "dangerous" segment of the market to the record labels. *The researchers suggest that it is difficult to suggest any workable model for this type of user, other than a strategy (apart from legal action) which addresses lowering the price of CDs, promoting discounts for albums, or allowing only limited copying.*

This valuable analysis sheds new light on production and distribution strategies for the music industry. Their study also indicates that technological migration seems to be

gradual. The approaches which are suggested need to be considered with differentiated and carefully segmented strategies, taking into consideration the various reasons that people use digital media. This fragmentation of the consumer world affects the supply side in a variety of areas, including pricing policies, promotion strategies, time-to-market, and operational process decisions. Pricing policies, for instance, affect both online and traditional music offers: for example, some market segments (namely, the *explorers* and the *curious*) are inclined to pay for downloading, while others do not. Moreover, record labels may not see revenue from the final consumer directly, but could see benefit from selling music content to websites which make the music available.

In summary, the marketing lessons to be learned from this study point to the fact that if the *curious* or *mass listeners* represent a significant share of the market, record labels should seriously consider experimenting with co-branding strategies in order to promote online music along with other goods, which may be of interest to the same targets in a similar way. Interestingly, we are already seeing the beginning of this trend (i.e., with Starbucks, Coca-Cola and McDonalds, just to name a few). Moreover, record labels may increase the loyalty of the *explorers*, *curious* or *listeners* by providing services geared to those specific virtual communities of interest. Similarly, promoters could gain useful knowledge of the probable mass-market reaction to new potential releases from the *explorers*.

The analysis also suggests that online music services need to shift the focus of their marketing strategies from simple promotion of the music itself to a deeper focus on specific customer segments. This represents a huge shift in the framework around which the entire record label industry had been structured up until now: it is a structure that is gradually disintegrating, that is not useful and not appropriate for today's savvy and individualistic consumers – which is why the record labels are losing the battle to virtual digital peer-to-peer community networks. The essence of the P2P concept focuses on users as discrete consumer segments, respecting their needs for individual, customized, personalized requirements.

I believe this is an essential paradigm shift that the music industry must truly comprehend, and then act upon. Some parts of the industry "get it", but unfortunately, it appears that at this point in time, the largest players still don't!

Now back to the issue of pirates, and piracy, for a moment: is it really wrong ("pirate-like?") to download music for the purposes of sharing ideas about the art form – to discuss, debate, compare, or ponder? Especially when those who enjoy the art form in this way will eventually go out and spend money on CDs, concerts, live performances, and chargeable downloaded content? We need to remember that the elements of cultural are not limited only to creators. An environment that enables consumers to exchange recorded works in order to comment on, criticize or praise, to exchange ideas about the music, to discuss and to share viewpoints, provides a stimulating cultural environment for cultural life in general. Moreover, to be exposed to an increasingly sophisticated art form promotes cultural richness, not just simply passive acceptance of simplistic culture driven to some purely financial end.

Many have not yet grasped that the cultural dimension of a society is not limited only to its creators. This, I believe, is one of the reasons why we haven't yet been able to solve the online music dilemma.

Quotes from Consumers:

"Over half of my MP3 collection is music by bands I've never so much as heard of before, let alone been able to find in my local music store. In many cases I'd buy the CD if I could find it, but I can't. File sharing is the only way to locate a lot of these artists."

"I did a rough calculation on how long it will take the RIAA to sue the estimated 60 million Peer-to-Peer users in the US, and at there current rate its only going to take another 18,191.8 years to sue everyone else. (They've sued approximately 1,500 so far)."

"… music downloading is a great way to get music from other countries that one can't get anywhere else."

– Quotes from "Click the Vote" website (www.clickthevote.org/), February 2004

"The 800-pound gorilla is the fact that P2P networks and other networks have offered an alternative that is for better or for worse today, free."

"How many people would be willing to pay an additional $5.00 a month in their online service costs if they could quit arguing about this subject?"

"Too much focus has been paid on 'how do I stop the piracy', or 'how do I stop my losses', versus, 'how do I take advantage of the cost-benefits of electronic and digital distribution?' "

"Microsoft could buy all five of the majors [record labels] for cash if they wanted to …."

Quotes from audio recording of the Berkman Center's Digital Media Project conference to kick-off the Digital Media Project website:
(cyber.law.harvard.edu/media/home?wid=25&func=viewSubmission&sid=9), December 16, 2003

The Future of Music+Technology, and Online Music

What does the future hold? How will this complex puzzle be solved? Emerging technologies are already having an impact on the way music is created and consumed; how will technology change the way the issues are resolved? Although we are not fortunetellers, sociologists and anthropologists (including those who study technology) could say that the greatest predictor of the future behaviour is to examine the past ... or, will a whole new world of music access emerge? This section discusses:

- *Emerging technologies and trends that will impact the music industry:*
    - *How technology impacts new music creation; new genres emerge*
    - *Wireless, WiFi and Mobile Music*
    - *Retailers transform into "eTailers" (e.g., Starbucks)*
    - *Gadgets; portable streaming devices (e.g., Real Player and Qualcomm)*
    - *Fan Culture*
    - *The PC as home entertainment centre*
- *Dateline 2024:*
    - *Where will music come from in 2024? How and where will we listen to it?*
    - *How will it be created? Distributed? Accessed?*
    - *Who will pay, and how much?*
    - *What will the history books say then about the music issues we faced (and perhaps began to resolve) in 2004?*

Until now, this report has focused on online music models, specific relevant technologies and short-term future technologies to be aware of, what the impact of new technology has been on music, and what the current stakeholder issues are. This section of the report will now take on a more visionary tone in order to discuss some of the thought leadership around the effects of technology future on online music. There are probably more questions in this section than answers, but the discussion is meant to be thought provoking, rather than definitive. We have already touched on some of the effects of the shift in power from the large and established musical industry institutions to individual technology users; these have manifested themselves as shifts in cultural values: from a behavioural perspective, in terms of attitude, and even shifts in moral and ethical judgment. But there are other things to consider, such as actual changes to the creation of music itself. These, and other emerging trends to monitor, are discussed here:

New Artists, new creative processes

Entire generations of people are growing up today believing that the prime source of music is through downloading from the 'Net. Some of these young people will become musicians and create music of their own. Indeed, some established musicians are curious enough to experiment with new structures and processes used to create new sounds and formats of music. Can downloading actually affect how music will sound? How will music be assembled? Will the way people access music have an effect on its content?

I believe the answer to all these questions is "yes". There are many indications that the creative process is already affected. Once music becomes digitized, it becomes not only susceptible to modification but is open for manipulation and redistribution through audio software. The fact that a piece of music has become malleable – that it is no longer a discrete, single artifact – means that the door is open for an interested "user" (which could be a fan, listener, different artist or the original creator) to re-enter the cycle of musical creation at any point, as was once the case for all music in tribal societies. Custom playlists, loop sampling, re-mixing and audio editing software are now becoming tools which blur the distinction between the artist who created the music and the user who once passively consumed it. With (sample licensing) or without (ripping) the original recording artist's consent, digital music is increasingly being viewed as an open-source information resource, which invites further innovation and creative input.

The *Grey Album* is an early example of how new musical works might be created in the future. Originally launched as an object of protest on "Grey Tuesday" (February 24, 2004), it is known as a "mash-up": a recombinant of musical elements developed by a DJ known as "Danger Mouse" from two other recordings already in existence: the Beatles' *White Album,* and rapper artist Jay-Z's the *Black Album*. Jay-Z's record label, Roc-A-Fella, released an a capella version of his *Black Album* specifically to encourage remixes like the one heard on the *Grey Album*. Despite praise from music fans and major media commentators like *Rolling Stone Magazine* ("an ingenious hip-hop record that sounds oddly ahead of its time") and the *Boston Globe* (which called it the "most creatively captivating" album of the year), EMI sent cease-and-desist letters demanding that stores destroy their copies of the album and websites remove them immediately from their sites (EMI claims copyright control of the Beatles 1968 *White Album*).

Therefore, on February 24th (see www.greytuesday.org), a day of "coordinated civil disobedience" took place, organized by Downhill Battle (www.downhillbattle.org), a music activism project. Over 170 online music websites posted Danger Mouse's *Grey Album* on their site for 24 hours in protest of EMI's attempts to censor the work, in spite of the fact that many of the sites received cease-and-desist letters as well from EMI's lawyers. The attempt to censor the music is an example of the lack of clarity around sampling rules and a plea for common-sense changes to copyright law: good new music had been created that people want to buy, yet the major labels are so obsessed with maintaining their historic perspective of copyright that they literally turned customers away.

But back to the music itself: Danger Mouse's album is one of the most "respectful" and positive examples of sampling; it honours both the Beatles and Jay-Z. Although "mashing" two albums together would have been possible in pre-Internet days for a DJ equipped with the knowledge of, and access to, sophisticated technology, using the Internet to mix the musical elements and create a new work is a sound example of what can be achieved musically in less time with less effort, using common tools available to anyone who has access to the Internet. The concept of combining electro-acoustic and "normal" music is not new; but the "mash-up"technique could become an art form unto itself, leading to new and interesting sounds. As well, a new creative musical role has

emerged as a result of advanced technology: that of the club DJ, who radically re-contextualizes existing musical source material accessed from the Internet or other sources, thus creating a new musical work which bears his or her unique imprint.

Also because of the Internet, creators have a greater source of musical material and influence to draw from. As an example, I recently composed a piece of music based on sounds heard in Eastern Africa, from an area known inhabited by the Maasai people. While traveling there last summer, I recorded bird and animal sounds as well as traditional Maasai throat singing. However, some of my recordings were not clear and once back home, I needed to locate some similar-sounding music to check that what I was transcribing was accurate. I found what I needed by searching on the Internet. While surfing, I also downloaded some highly unusual bird-song samples from the area that I had not heard, which allowed me to add some complementary and authentic "accents" to what had already been collected. Access to this sort of obscure musical material would have been impossible even a few years ago; the options for an increasing number of unusual sounds are growing, and by using the Internet, the chances of discovering not only new sounds to incorporate or influence a musical work, but also new artists, groups and musical styles, is now so much greater.

Another unique use of the Internet by "e-literary" types, which may also inspire and influence musical creators, is the "blog". Web logging, or "blogging" has become a new form of literature that did not exist before the Internet. It has emerged as a distinct style and format of writing for diarizing one's thoughts and feelings, using principles that are quite different than conventional literary forms. Blogging is a clear example of technology influencing the way people communicate ideas and emotions to each other. While it is too soon to tell whether the Internet will have the same impact on music, what we are seeing is that musical subject matter, whether it is a pop song, a piece of jazz music, or a chamber music work, becoming more "topical". This is not a new concept: troubadours, or trouvères, who first emerged in the Middle Ages, commented on daily events as they occurred in "real time" by traveling around and singing to whoever cared to listen – in a sort of early musical blog format. Today a creator can bypass the traditional process of producing music: renting studio space, making a recording based on what the label thinks is appropriate and will sell, and distributing the music to radio stations for air-play. As a result, there is more music available now than ever which provides instant social commentary, and ever more frequently, these songs are not sold "commercially", but are only available by downloading them from the artist's website.

With software programs like Apple's "GarageBand", it is possible for someone with little or no musical training to assemble music tracks and pre-recorded loops into a piece of music. Although traditional compositional, orchestration or performance techniques cannot be taught overnight, relatively low-cost tools are available which provide a taste of what is involved in creating, performing and producing a musical work. Perhaps this software will provide consumers with a greater understanding of music and musical styles, and if nothing else, create increased respect for composers and performers.

The existence of these low-cost products for recording and producing music undermines the 20th-century distinction between Superstar artist and music consumer. When anyone who feels a creative musical spark can easily acquire the means to express and distribute their work, a fundamental shift has occurred. Technology has empowered users and as a consequence, new communities of creators are emerging. Another related trend that is emerging is the fragmentation of musical genres as defined by both creators and consumers in the digital community. Virtual communities of downloaders can invent or encourage narrow domains of musical style. For example, take a look at iTunes list of music choices: the same categories of music that one might encounter in any CD shop:

Top 40	Hip-Hop
Alternative	Jazz
Blues	Latin
Classical	Metal
Country	Pop/Rock
Easy Listening	Urban/Rhythm and Blues
Electronic	Folk

However in a CD store, there are often category types which are overlooked or downplayed, such as "Children's Music" or "World Music". However, the Internet has the ability to easily store, sub-divide, organize and present content which has allowed online music to appeal to a much finer division of tastes. Under the "Electronic" category alone on *iTunes* alone, one can find music that is characterized as:

Ambient	Experimental
Breakbeat/Breaks	Game Soundtracks
Dance	Garage
Down Tempo	House
Drum 'N Bass	Industrial Electronic
Electronic Cover Songs	Techno
Electronica	Trance

The "Techno" category is further subdivided into:

Acid	Happy Hardcore
Detroit	IDM
Electro	Intelligent Techno
Gabby	Rave/Old Skool

Who knew electronic music could be so complex?

These categories exist only because they have an audience: consumers who come to the distribution sites. This subdivision of musical niches, and the formation of virtual communities organized around them, somewhat corresponds to the notion of "fan clubs", rather than physical locations where music is experienced. More will be discussed on new forms of Fan Culture later in this section, but the point is that the Internet provides an

environment that fosters the creation of new categories of music that before now, never existed.

Music Packaging and other creative activity adopted by composers because of the Internet

We have already seen that downloaders can make use of the powerful tools at their disposal to pursue their own musical ends, independent of the goals and aims of the traditional music industry. Prominent among these uses is the desire to acquire music that is unavailable by any other means, particularly music which is still owned by major labels, but which is now out of print and not likely to be released again. Other people use downloading to listen to new types of music to which they had no easy or inexpensive access before; others trade files among their existing social networks of friends (this type of exchange first occurred in the cassette format, and caused some concern among the record labels in the 1970s); still others are looking for concert bootleg recordings that they might never hear otherwise.

This concept of remixing, re-packaging, and of making compilations of music customized to an individual users' taste, is also a creative process. It is possible to purchase a CD of an artist's greatest hits; or a compilation of a particular style of music. However, many users prefer to burn and download tracks in order to produce their own bespoke package of music. In fact, in an informal survey of my friends and acquaintances, this is the most frequent reason cited for taking advantage of readily-available digital forms of music. It is not unreason to see the role of the traditional record company evolve to one of helpful suggestion, or subtle influence: in future, you might encounter, "If you liked John Adams' *Symphony #1*, then you should also try Alexina Louie's *Songs of Paradise*; or George Crumb's *Ancient Voices of Children*" on a website.

We have already examined the ability to dismantle a track and re-mix or "mash it up" with another track, all due to the nature of digitization. It is also easy now to disassemble an entire album, or even more specifically, in the case of classical music with multi-movement works, an opportunity (or a threat) to disaggregate segments of a larger work. Composers and creators need to consider the effect that consumers, who can now take apart and recombine movements, songs or tracks, might have on the overall presentation of their work. Listening to different tracks on different albums at random is a common consumer practice today. However with digital technology, a listener can also manipulate audio variables that will affect the way specific tracks sound, not just the order that movements or tracks will be played in. This means that every time an album or a larger musical work is heard, the consumer has the ability to make it sound different than what the composer/creator or performer had originally intended. This illustrates how, through technology and creative design, music can be customized to a listener's individual tastes, in effect becoming "designer music" – i.e., music designed by the listener. The ability to personalize music in this way will cause some creators concern, and certainly re-packaging, re-compiling and re-assembling music implies respect for certain copyright principles, but generally, creators are flattered to know that their music is a living entity

that can evolve into something more than what was originally intended (as long as they receive credit for the initial idea). I believe that *passive listening will morph into creativity activity*: this is a trend that will evolve over time in other ways and means that we haven't even imagined yet.

Another emerging trend that bears some mention is the concept of interactive creation through the Internet, whereby an artist can encourage fans to contribute their input to a new project, or collaborate with other artists to explore new and interesting musical possibilities and increase their own exposure. If you think this sounds far-fetched, take a look at the artistShare website (www.artistshare.com). *artistShare* has already attracted the attention of some influential artists (Maria Schneider and her Jazz Orchestra; jazz guitar legend Jim Hall) and promises to provide a major service to both artists and their fans in the future of the entertainment industry. I will discuss other aspects of *artistShare's* contribution to the online music world later, but the idea here is that there is an interactive experience made possible through the Internet that allows both the creator and the fans to interact in a creative process.

Here is an excerpt of one participant's online experience during Maria Schneider's newest recording:

> "I love observing, and thinking about, the process of artistic creation as much as I love experiencing its products. To hear some of Maria's new compositions at the 2004 IAJE Convention was already a thrill; it's an added joy now to be a 'fly on the wall' artistShare participant while Maria puts together her latest recording. Prior to the sessions, I found the rehearsal sound bites and score clips all very fun and instructive, and I especially enjoyed reading Maria's occasional dispatches from the thick of it. I was amazed at how well she kept her cool (or at least seemed to!) while making last-minute revisions, managing her musicians, and pulling together the project logistics. (I never knew that strategic catering was such an important part of the record-making process…)
>
> But the best part came in mid-March during the ensemble's 4 days of recording. Bits of un-mastered takes, insightful interviews with several of the musicians, photos from the studio, and frequent updates from Maria or her assistant Ryan—with all this great stuff coming my way, I found myself obsessively checking the site every few hours to see what was new and find out how things were going … I was happy to have a chance to support this recording, but I never expected to feel so proud about it, and in such an oddly intimate and immediate way.
>
> Beyond the sheer joy of being a Composer Participant, there's a significant educational element for me. After spending my 20s and early 30s as a … journalist and… fiction writer …, I embarked on a second career as a pianist, singer, and composer/arranger in the Baltimore/Washington DC area. As a relative latecomer to the scene, I don't have the opportunity to start over and get the kind of formalized jazz education most ambitious young players seek out these days. Maria's artistShare project has become one part of my ongoing self-study effort. I very much appreciate Maria's generosity in opening this participatory 'window' to her beautiful, visceral, one-of-a-kind music."
>
> – *Sandy Asirvatham, March 14, 2004,* (from www.mariaschneider.com. See "This week's featured participant"):

Undoubtedly, more technology-enabled creative roles will emerge. Once the current innovative digital audio technologies become the accepted norm, a deeper and longer-range alteration to values associated with music can be expected. Audiophiles notwithstanding, music is experienced most of the time as background to some other primary activity; it is ubiquitous in public places, in addition to homes, cars, and privately

via portable tape, CD and MP3 or iPod players. What value will be assigned in the future to a resource which quickly becomes a commodity that gives near-instant and nearly costless access to more choices than one could experience in a lifetime? The only direction indicated by the trends observed today is, "less than is given now"! This is why the technology behind fan culture is taking on even greater importance than before.

Fan culture

Of course, fan culture is not an "emerging" phenomenon in the music world. As long as there has been music and performing arts, there have been fans. However, reaching these fans in unique ways has become a socio-technological trend worth examining more closely.

The use of the Internet and related technologies has become the cutting-edge way for labels, artist's managers and technology representatives to market music. By studying the relationship between labels and artists with respect to artist websites and communications with fans, which often involve e-mail and SMS text messaging, we see an evolution from what was considered a commercial exercise to one that is now promotional, participatory and even artistically collaborative. Technology has created multiple communication channels which can be costly and time-consuming to fill on a consistent basis. Consumer expectations have become much greater: a few years ago, an ad in a newspaper or an article in a music magazine would satisfy most fans' interests about a particular artist. Now, some fans demand daily information via e-mail or SMS, and they want to receive very specific, detailed facts.

Fan websites (or, the once-simpler "Bio" pages, with lists of an artist's albums, work performed, live performance schedules and fan club contact information) make up part of the overhead costs borne by the marketing departments of the big labels. For example, BMG manages 35 artist websites, which require constant co-ordinated updating between the label and artists, for example, adding new content and promoting new releases and live shows. However, new Internet Marketing companies have emerged in the past 12-18 months which support smaller, independent artists who don't have the backing of the big record labels. These site "environments" utilize the latest developments in technology at a fraction of what it would cost an individual to build and maintain their own site without having to sign over control (and profits) to a record label.

artistShare (www.artistshare.com) is one such New York-based Internet company that has taken web marketing and fan culture to a new plateau. Established in February 2003, artistShare, founded by President Brian Camelio, offers a new concept in marketing and distribution for the arts and entertainment industry: an Internet-centric solution to music file-sharing, specifically targeted for artists and creators. Artists retain all copyright and ownership of their work; they can license their work for distribution while building a direct sales network; and they can maintain a loyal fan base by providing a unique and intimate experience for fans.

Custom information and products can be delivered directly to the artist's fans on a worldwide basis (via websites, PDA, e-mail, cell phone, etc.), including new tracks, samples, and information on current projects and activities. Streaming shows, presentations, live performances and lectures with restricted access to listening and viewing can be offered for one-time purchase or subscription series. As discussed previously, the artist can host interactive sessions where fans can contribute their input to a project; the artist can also collaborate with other artists to explore new art forms.

"*artistShare* is the only viable solution that I can see," says Camelio. "With the advent of the latest technology, it is becoming increasingly clear that there needs to be a fundamental shift in how artists do business. That shift involves the expansion of the product offered and a completely different payment schedule. *artistShare* will provide the platform."

Part of the *artistShare* offer includes "Artist-Track", a revolutionary way for artists to market their work. Fans that purchase an Artist-Track item (such as a musical work) through *artistShare* are automatically registered as the owner of that item. To ensure the authenticity and integrity of the item, ownership is tracked by a patent-pending process and is verified through the web interface. If the fan decides to sell their Artist-Track item, ownership can be transferred to the buyer for a nominal transaction fee based on the percentage of the sale price. The transaction fee is then paid back to the artist.

The artist benefits by collecting residual income on the resale of their art; the fan is guaranteed an original item; the item is much more difficult to pirate; and buyers can authenticate their merchandise before buying.

The first *artistShare* client to adopt the Artist-Track program for the sale of CDs was four-time Grammy nominee, jazz conductor and composer Maria Schneider (www.mariaschneider.com). Her CDs are available only via her website, and are no longer available in stores. By becoming an "Official Participant", her fans are given a personal account, and are then able to access streaming media, downloads, exclusive news and converse with her musicians, depending on the level chosen. In a way it's a modern-day version of the patronage system that was in place for hundreds of years from the Baroque through to the Romantic eras in western music – the concept of "staff musician". By sponsoring Maria, and paying the corresponding fee for a certain level of sponsorship (a "Platinum Participant"), she will give the sponsor an Executive Producer credit on her next album. This way, the fan becomes a genuinely supportive and integral part of the artist's creative process; this investment allows the creator to continue making great music.

Other artists with different types of "progressive" fan websites include the Dave Matthews Band (www.dmband.com); Jane Siberry (www.sheeba.ca); the Barenaked Ladies (www.barenaked.net); and Diana Krall (www.dianakrall.com). Incidentally, all of these musicians sell their music online, and in some cases this includes both (free!) downloads as well as CDs.

What about other technologies that will impact online music?

Wi-Fi and wireless networks and "Mobile Music"

Strong evidence emerged in 2003 that mobile networks and devices would become a key distribution platform for music over the next few years. The majority of activity in the sector so far has been partnerships between mobile operators and music companies for the purposes of selling goods and marketing their artists. This combination of technologies allow mobile subscribers to stream and sample new music as well as offering customized artist-related material via the handset. In addition, many major record companies create ring tones, "song snippets" that replace a phone's prepackaged ring. Ring tones and the mobile entertainment market first emerged in Japan and South Korea, where growth has been rapid because of a strong and ubiquitous wireless network infrastructure. Activity has spread throughout Asia and to Western Europe, and will likely reach Canada by mid-2004. As 3G (third generation) wireless technology and handset penetration develops, new services to be offered include music content, and more specifically music downloads. In the latter part of 2003, mobile operators, record labels and music-related companies such as MTV began to form partnerships that have led to the development of several new services. For example, a growing number of TV stations are beginning to sell 15- to 30-second downloadable videos streamed through wireless carriers, based on sports highlights or news broadcasts. In the UK, OD2 launched its download-to-mobile service in November 2003, allowing mobile users to download music and transfer files to a player device manufactured by Siemens. In the U.S., Warner Music is the third major record company to make material available for Sprint Music Tones, a ring tone service, following a Sony Music deal in July 2003 and a Universal deal in January 2004. AT&T Wireless is set to launch its "mMode" service in 2004 using the handset as a download channel for clips and full tracks to the PC. While it's too early to measure the revenues from watching television on a cell phone, the market for ring tones and downloadable music for cell phones was $4 billion worldwide last year (Charney, 2004).

The future of downloadable music to mobile devices will be advanced in 2004 by:
- Intensive activity by manufacturers and network operators in search of new business opportunities from entertainment content, coupled with the development of innovative products by music, film and game producers.
- Developments in 3G mobile technology, enabling delivery of video streaming to portable devices, and a proliferation of Wi-Fi hot-spots (discussed later) with broadband capacity.
- Emergence of media-capable handsets, such as the Nokia 7700.
- The development of wireless DRM-enabling distribution of content across mobile operator's networks, while protecting copyrighted content.

The concept of Mobile Music brings another dimension to content protection measures. Content owners have long been discussing the need to prevent similar scenarios occurring with content distribution over wireless networks. Although DRM has been cited as a

necessary pre-condition for content owners to buy-in to wireless, issues of cost, workable business models, disparate and proprietary approaches, and the embryonic nature of mobile content distribution itself have put wireless carrier deployments onto the back-burner. Some industry watchers (Griffin, 2004) believe that wireless networks such as 3G, 4G and Wi-Fi will in fact provide the tipping point at which the entertainment industries will come to the table to cut a deal – long before other political or legislative pressures force them to make a deal. The "deal" would likely involve the previously-discussed flat-fee model (collective licensing) to collect the pot of compensation money and then divide it up, permitting a free exchange of artistic goods, and abolishing the need for DRM as strictly a policing mechanism. With mobile content revenues estimated at almost $55 Billion in 2008 (as per Forrester Research), it is encouraging to see that the Open Mobile Alliance (OMA) standard for DRM appears to be generating some traction in the market, with solutions vendors from HP, Access Inc., Mobilitec and Beepscience integrating the standard within their platforms. In the near term, the low availability of DRM-enabled devices remains the most immediate problem faced by the industry. Wireless carrier strategies must therefore remain focused on ensuring the availability and usability of DRM-capable phones, while determining which content types need to be protected and how their rights can best be managed.

We have already discussed RealNetworks and QUALCOMMs' joint announcement on March 22, 2004 (i.e., the introduction of chipsets with video streaming capability for use in portable devices); as well as HP, and other cellular handset device manufacturers getting involved in the Open Mobile Alliance. All of this new disruptive technology to be introduced in the next 12-18 months, which combines entertainment content and convenience through hand-held portable devices, will need a network to run on.

That network is Wi-Fi (short for _wi_reless-_fi_delity), based on a technical standard (specifically, IEEE 802.11(b), (a), (g) and (e), each offering different speeds and services) for wireless LANs, delivering broadband Internet access without the need for physical connection between a computer and a network. The same technology can be used to send or receive music over a distance – though a finite one – without having to run cables through walls, between buildings or through metropolitan neighbourhood areas. Wi-Fi networking provides unwired entertainment capability, one in which music systems can be integrated into, and accessed from a home, office or public place (e.g., airports, trains, parks, malls, restaurants, even in Starbucks coffee shops) virtually transparently, with nothing more required than a laptop computer and a Wi-Fi card in order to log in. It is also possible to use Wi-Fi networks to link to a car audio system.

The technology works in two ways, depending on the application. In the home, office or public location, where a stereo system is usually fixed and so always "in range" of the wireless network, a receiver unit offers access to a PC and the digital music files stored on its hard disk drive. It also supports access to broadcasts streamed over the Internet. The automobile system works in a slightly different way because the receiver would soon be out of range of the wireless network when the car is driven away from the home. To counteract this problem, the car unit would be equipped with a hard disk drive (min 20GB) on which data can be stored. A control panel which fits in a standard in-car audio

slot in the dash-board is used to control the system. There are plans to link Wi-Fi "hotspots" to cellular and satellite networks in the future, providing seamless hand-off capability, not just for downloaded music but also for video broadcasts.

The regulatory issues and legality of downloading music via Wi-Fi remains troublesome. Internet carriers have not yet been granted all the legal permissions of being a "common carrier" like telephone companies; telcos have been immunized against prosecution for the content of phone calls, even if they're between villains planning a criminal act! To offer Wi-Fi music services, the recording industry would first have to get the courts to agree that Internet providers are not common carriers, and then would need to work out who would police content distribution activity on their networks. So far, governments considering the matter have been understandably reluctant to agree that while Internet providers should be held responsible for the data they carry, telcos and cable companies are exempt. Adding to the complexity is that some telcos own and operate Internet providers (for example, Bell Canada and its Sympatico service).

We have already seen Wi-Fi technology being used by Starbucks, where, in partnership with Hewlett-Packard Co., they have recently introduced an in-store music downloading and CD burning service called "Hear Music Café". Most major record labels and several independent labels have agreed to supply music to the service; HP is supplying the Tablet PCs, workstations, CD publishing and printing systems, printers, data storage and servers, software and user interface. Starbucks sees this customized CD service as an add-on to their current business. For several years they've sold a selection of CDs in their stores, and several years ago the company bought the small record-store chain "Hear Music". Customers frequently inquire about the music being played in Starbucks stores, so the download service now gives customers an opportunity to purchase the music they hear while enjoying their java. Many of Starbucks' customers are older consumers who do not go to record stores and who do not burn their own CDs; Starbucks wisely sees this as a unique opportunity to leverage and enhance their brand. A Starbucks store in Santa Monica, California, is the first location to offer the service, followed by ten stores in Seattle and plans to offer the service in 2,500 Starbucks stores across the U.S. by 2006, with expansion into outlets in other countries over the next four years (there are over 7,600 Starbucks locations worldwide). The company plans to develop its service so that customers can also download music to their laptops and portable players using Wi-Fi network technology, which is already installed in most Starbucks outlets in the U.S.

Video Streaming

As other online music companies scramble to match the success of Apple's iTunes, a different online-music economy is emerging around the sale of recordings of live performances, often with no restrictions on how they can be played or shared. Since starting up in 2002, Live Phish Downloads (www.livephish.com), which offers audio files for about 50 of the concerts for the rock group Phish, has generated more than $2.25 million USD in sales. Combined with companies like *artistShare*, and the potential

instant worldwide marketing provided by online music stores, Live Phish's success has helped creators see the potential to become their own distributors online.

By the morning of January 2, 2004, Phish fans worldwide could pay $11.95 to download the prior New Year's Eve concert from Live Phish Downloads, which posts live recordings of every Phish concert for sale within 48 hours. A related company, www.Nugs.net, has posted recordings of other concerts on a site run by LiveDownloads (www.livedownloads.com). The Dave Matthews Band has also agreed to set up a downloading site with Nugs.net. While other bands following a similar model have focused on selling concert recordings, the Dave Matthews Band is now selling its albums and concert recordings through an online downloading catalogue.

As discussed, the concept behind fan culture is to let performing artists become more involved with their fans. Video streaming of concerts through fan sites is one more way of achieving that. It gives fans access to officially sanctioned recordings and also conditions them to not expect to get something for free (many "fans" are, of course, also downloaders). These video services help bring revenue to the creators by selling valuable content and at the same time, nurturing the relationship with their fans in a positive way.

Most of the budding concert download sites (including Live Phish Downloads) sell unrestricted files, meaning there are no limitations on where or how many times the file can be copied. The idea is to make downloading music products easy, convenient and flexible to use on a variety of devices. The fan site hosting companies realize that there will always be people who are intent on accessing the content for free; all they are trying to do is make it easier for the vast majority of users who want to "do the right thing". Some artists do want copy-protection or restricted use; others don't care. For example, Phish recently gave would-be pirates a new incentive to do the right thing, announcing that it was donating its profits from Live Phish Downloads to a non-profit group supporting music education for children (Schiesel, 2004).

Other similar services are entering the live-concert download store market: two are BackOfficeMusic and DigitalSoundboard (www.digitalsoundboard.net). "Nugs.net" is also a successful fan site in addition to offering high-quality online shows. In addition to the pay sites, Nugs.net offers dozens of free concerts, in both streaming and downloadable formats. They have recently formed a partnership with "Musictoday", a company that provides Internet services to over 250 bands including Metallica and the Rolling Stones. Musictoday already offers services like Web music stores, ticketing and fan club support to its artist clients and now also offer musicians a downloading service powered by the Nugs.net operation.

Until now, bands that sell concert recordings are best known for their improvisational live performances, so it is these groups that the technology is well-suited for. However it could also be extremely useful for the classical music industry, which has not yet embraced video streaming like their pop music relatives have done. Opera, symphony and jazz performances are all excellent candidates that would benefit from the increased exposure and marketing to remote but appreciative audiences, though the distribution

model might not appeal to these musical art forms until there is more evidence of potential profits.

Emerging Home Entertainment and Portable Devices

It is because of these new and interesting ways of accessing and enjoying content (like video streaming) that consumers are embracing both the new portable and fixed entertainment platforms. What we are beginning to see is an increased complexity of listening behaviours on multiple platforms in the home and "on the person". Seamless networking and content management will be key features for compelling audio and video products and services. Consider today that to listen to music while "untethered", we have a choice of car CD players, personal CD players, portable MP3 players and iPods; and once in the home, we use our PCs as "jukeboxes", as CD players, as portable CD players (in the case of laptops), and or course we also have our traditional fixed stereo systems – in some cases, several – in the home. Not to mention the fact that we use cell phones to speak on and PDAs and laptops to keep ourselves organized and do our work on. It's no wonder that all of this "gadgetry" can seem intimidating to us, as users.

Device manufacturers are also intimidated: not only are entertainment dynamics changing, but because today's consumers can choose from a multitude of distribution, device and content options – and because all of these are somewhat inter-related – content providers (i.e. the record labels), device manufacturers (i.e. the MP3 vendors) and service providers (i.e. ISPs, wireless carriers), are all challenged too, as they ponder varying consumer consideration and purchase cycles because of these options. The key drivers are undeniably interoperability and ease of transition from one device to another. Consumers want the ability to listen to their music anywhere, and they want it *now*.

The next two areas of emerging technology discuss both portable and "fixed" systems.

From iPods and other portable gadgets to streaming hand-held devices, and beyond

Digital audio technology has initiated an increase in device competition and also a requirement for device integration. Gadgets have moved from being a cheap piece of consumer electronics to a combination of technology and sociology, just as the cell phone has become. Wearable devices make it easy and convenient to enjoy background music, making iPods and other MP3 players disruptive, or "transformative", technology.

The iPod is not a fad – it has liberated the digital music discussion. Consumers armed with this technology have been able to enjoy the benefits of online music in interesting ways. The iPod has set new standards, brought about new attitudes and behaviours and these changes help to show other users the possibilities of what can be done with digital music and portable storage.

Consumers are now aware of the legitimate alternatives to free downloading because of the iPod and iTunes. This awareness has become part of popular culture and has brought a renewed interest in music. In fact, at no other time in the history of the music industry have so many people indicated that they cared enough about music to pursue it in the way that they do. Although we're finding it rather difficult to monetize the concept, I believe that by analyzing the models and studying user behaviour, the solution to calming all the turmoil will emerge – and it's certainly been given a kick-start with the iPod.

Realistically, no user is going to fill an iPod with $20,000 worth of music. To date there are only about one million iPod users, and the amount of money that the iPod has made for the music industry is still very small. However, the device is a concept gadget for a "digital lifestyle choice", becoming a symbol of freedom, fun, mobility and individual expression. Users are now expecting a combination of features: content, software and hardware … and soon, networking.

The iPod and other MP3 players are not the only gadget-centric businesses round. We have already mentioned the plans that HP has announced earlier this year, and Sony has plans to launch technology that goes beyond their original MiniDisc device this year. Perhaps more than any other high-tech company discussed in this report, Sony understands the power that integrating technologies like Wi-Fi, inexpensive storage and personal gadgets gives to consumers in order to access and manage their digital entertainment requirements. Sony has already established itself in the consumer electronics, computing and mobile device markets; and Sony Music is a major player in the music content business. Although it claims to have been negatively impacted by online music file sharing, Sony has also decided to enter the competitive online music business, planning to introduce a service in mid- 2004, first in Japan and then in North America and Europe, to deliver digital files to the variety of electronics and mobile devices that it manufactures.

Record labels like Sony are slowly beginning to understand that they must create new media services through channels that consumers will pay for, so although they are already well behind both Microsoft, HP and Apple in their announcement, when they do make one, it will undoubtedly be some type of consolidated entertainment package, bringing an integrated Mobile device + content service to market for the first time by a single vendor. My suggestion: buy shares now.

The PC as Home Entertainment Centre

In most businesses, the PC forms part of an Information Technology system. In the back office of a business, there is a massive data centre that oversees the storage, management and distribution of content, and delivers it to PCs, printers, and many other devices; all of that technology is connected over a local and/or wide area network (LAN or WAN).

In a home, the evolution of the PC in coming years will involve building a "data centre" for the consumer, similar in concept to what has been assembled for businesses. This

technology will allow users to customize their entertainment by enabling them to access, manage, distribute, edit and store any content from anywhere at an affordable price, in a simple and enjoyable way. This is not a far-fetched concept: many high-tech companies (IBM, Dell, and the two thought-leaders in this area, Apple and HP), are building prototypes of this technology now.

The concept starts with a "Media Centre" PC, which allows the user to manage and enjoy all their personal digital content from one place. As it evolves (HP claims their version will be ready to ship in 18 months), the PC will emerge as the hub of a "Digital Entertainment System". It is already possible to purchase competitively-priced entertainment displays from several vendors, including both large LCD and plasma screens; these digital displays are used as high-end TVs, offering superior audio and visual capabilities, with an imaging engine that displays high definition resolution. In time, these displays will become more than TVs, but rather digital displays, allowing a user to view any content from any source of any kind, which TVs and PCs on their own don't do very well today. Next-generation digital projectors would also be integrated into these Digital Entertainment Systems for a home theatre component.

HP's version of these entertainment centre products also support Microsoft's Media Center technology, announced in March 2004. This combination of hardware and software will provide high-end processing devices that allow consumers to access digital entertainment residing on any Media Center PC in the home, even if it is being used at the same time in another room. Starting in Fall 2004, the first generation of HP's entertainment centre product will be available. With it, a user can not only watch and pause live TV and record TV shows from any source (cable, satellite or HDTV), but the centre will also become a repository and distribution storage point for a user's entire digital entertainment collection, including music, photos, games, videos and movies throughout the home. It will have the processing power to access entertainment content including new releases of music and video on demand. It will also allow users to access online services with telephone, broadband, cable and satellite connections via the newest communications technologies such as VoIP and other soft-switch technologies.

Although HP is the first technology vendor to make announcements around these "Super Entertainment Centres", others are on the way. The emergence of these integrated, interoperable systems, coupled with digital TV recording services like TiVO, Internet radio, video streaming of live concerts and an abundance of online music services, serve as a signal for what we can expect to look forward to in terms of consumer musical entertainment over the next several years.

The concept of "Bundled Entertainment"

One other emerging trend that ties together much of what we have just discussed involves "bundled entertainment". The companies that are most likely to offer service bundles are ISPs. Downloaded music, movies and games, online photo services, Internet radio, security applications (with incorporated DRM), web storage, online banking, even pop-

up blockers and Spam filters will drive solid interest in consumers over the next few years. Consumers' willingness to pay for packages of applications from a single Service Provider will drive ISPs to combine all elements for offer under "one roof". From here, it doesn't seem unreasonable to suggest that ISPs might also then add a small monthly royalty fee that they could collect and then distribute to creators and content owners.

Voilà! A logical online music model will naturally emerge, not through complex legal contortions and wrangling, but because the availability of content packaging delivered via new technologies becomes highly desirable to consumers, thus requiring a workable business model to emerge that makes simple economic sense: collective licensing.

Follow the Emerging Trends

The pressures created by the technological developments discussed in this report have created an environment in which the economic and societal norms that once governed the roles of music in society are being challenged, and in some cases, dramatically altered. Figure 5 summarizes the resulting dichotomy of practices in conflict. The left column represents the status quo prior to the availability of music downloading, while the right column represents the impact of digital and networking technologies on music, and a glimpse of what is to come in the future.

Figure 5: Transformations in Music Culture

Yesterday and Today	Emerging Trends/Tomorrow
Centralized Markets – five major record labels seek millions of buyers for relatively homogeneous products; media market concentration; economies of scale	**Niche Markets** – thousands of music producers cater to highly specific tastes of smaller groups of users; market fragmentation; economies of specialization
Planned, Rational Marketing - decisions are based on competitive strategies	**Self-organizing, emergent Marketing** – based on the collaborative and collective actions of millions of network users (digital community networks)
Discrete objects – CDs, Super Audio CDs, Audio DVDs	**Music embodied in information-based format:** MP3, WAV, RealAudio
Economics of scarcity – supply regulated by record labels, physical production and distribution	**Economics of abundance** – P2P networks use demand to create self-reproducing supply: the more popular a file is, the more available it becomes
Mass Distribution – traditional retail distribution channels, B2C (online shopping already exists)	**P2P Distribution** – direct user-to-user distribution via file-sharing networks (virtual marketing)
Centralized content control – product content based on the judgment of industry experts (A&R divisions of record labels)	**Distributed content availability** – determined by collective judgment of users; any content can be made available
Scarce, expensive production resources – use of traditional recording studios, CD presses	**Ubiquitous, low-cost production resources** – Digital audio workstations, MP3 storage media, other IT storage media allows "anyone" to create
Product-based revenues – Economic success measured by retail sales of packaged CDs	**Service-based revenues** – subscription services; creation of secondary markets in underlying IT production and playback via hardware and software
Proprietary music – fixed, static, copyrighted	**Open-source musical information** – musical

musical product	information as resource for further manipulation (remixing, sampling, mash-ups)
Creator/consumer dichotomy – The "industry" (Stars, Labels) creates music; buyer is a passive consumer of finished product	**Creator/consumer convergence** – user has power to participate in musical process via Digital Audio Workstations and networks

Conclusion

Besides the esoteric artistic and realistic technology trends, there is a commanding counterforce at work in the online music world. This is, of course, the powerful record label industry, which has been increasingly successful in concentrating power and wealth within a few conglomerates that simultaneously compete and collaborate. Using their extraordinary lobbying power, they have been able to influence institutional decisions and public opinion. The industry's relentless attempts to protect content through a combination of legal and technical measures is based on the position that the concept of copyright as it applied in the industrial age should be extended into the digital age, with no significant changes. While the war on piracy cannot be won by its annihilation, the music industry is striving to force compliancy from the majority of consumers, and in doing so, this would allow the industry to maintain market control (or so it might think). In that case, a limited, if vibrant, underground market of file swappers and non-paying customers could be tolerated (Biddle et al, 2002). Certainly the record labels have both enormous technological resources and superior expertise at their disposal, which they are attempting to use to justify the prices they wish to charge for access to intellectual property. But there is no agreement, even among the decision-makers of the major industry players themselves, about how to deploy such resources in defense of their markets. And, despite all the legal "might" they have mustered to enforce their "rights", their efforts are seen as derisory by most of the other stakeholder groups.

My belief, and that of many others who are attempting to take a more esoteric and holistic view of the online music situation, is that it will be Culture, that is, the collective construction of values and beliefs that shape behavior, that ultimately shapes the outcome of the debate on what should be allowed or disallowed in the context of distributing digital content, and leads us to the "best" (most workable) business model. If cultural values concerning the exchange of information and intellectual property really change at a deep level (and this might be simply a generational question), and as people develop new patterns of social interaction in digital space, then no effort, whether legal, technical, or economic, will prevent people from freely trading content in digital space.

I believe this is the real purpose of the Internet, if we apply media theorist Marshall McLuhan's famous and provocative statement that "the medium is the message" (McLuhan, 1962). Peer-to-peer file-sharing is, in a sense, the natural descendant of the design of the Internet, in that it *must* be accepted – precisely because it takes full advantage of the inherent power of the network. Digital community networks have emerged from P2P networks as the new forms of social and economic organization, and are capable of creating tremendous value to societies and economies. How to monetize, and then to operationalize the "winning" model remains, for now, a Holy Grail of sorts.

Back to the Future: Dateline 2024

If you think of Moore's Law which states that the processing power of a computer doubles every 18 months … then, twenty years from now is a *looooong* way ahead in terms of technological advancement. Cultural practices tend to change at a slower pace, although no one could have predicted the profound and rapid changes in music creation and consumption that have taken place over the past three to five years; although they are easily explained as changes "caused" by the Internet and other technologies. Here are a few of my predictions for the year 2024 that pertain to the online music situation:

- ISPs/telcos will be collecting a flat-fee royalty through a communication subscription services. However, telcos and ISPs will be government-run utilities which also include providing services like power and other municipal infrastructure elements, to consumers.
- Government-run ISPs will become aggregators of content, and all entertainment services will be offered by ISPs, and offered as bundled packages. The more content a consumer signs up for, the greater the savings. Music will be one element to choose from in the entertainment bundle. All-you-can-eat music, 24 hours a day!
- Everyone (who wants one) will have their own personal music consultant. It may be an avatar, but it will be a very hip and knowledgeable avatar, just for you.
- Many consumers will actually own creators' works because a system of music patronage (first pioneered by Canada's Department of Canadian Heritage) will be operating in full force. Some musicians' entire body of musical works, and their incredible website environments, will be publicly traded companies.
- We will finish work for the day and then watch our favorite artist's live concerts on our huge wall-sized HDTV entertainment centre screen—or screens, which are now installed in every room in the home.
- All homes will use wireless connections to link all entertainment, communications and computing requirements. Besides screens mounted in every room in every home, there will also be small, high-grade wireless speakers and small wireless entertainment console panels available so that any type of content anywhere in the home can be accessed.
- Virtual concerts will take place frequently, where artists from all over the world will take part in multi-media performances even though they are in physically dispersed locations. Concert-goers have the choice of watching from home or going to their favorite pub, concert hall or arena to take in the show.
- All radio, TV and live or time-shift performance programming will be based on the TiVO system, which was bought by Microsoft in 2010.
- Our personalized, virtual digital media content "bubble network access" will move with us from the home, to the car, to the office, on the plane, to the restaurant, golf course or country retreat. All voice communications, digital entertainment content, and personal communications will be accessible through the bubble, which will also act as a personal security device.
- There will only be one recording "label" still in existence in 2024. It will be strictly a clearing house for all royalty distribution payments, and will house virtual copies of all music ever recorded. It will be run by a co-operative of artists, former music industry execs, former copyright lawyers and the son of Bill Gates.

Choose Your Battles Wisely: Next steps for Canadian Heritage

What actions might the Government of Canada consider taking as a result of some of the findings and discussion in this report? Suggestions include:

- *Studying and Analyzing Creator and Consumer Trends*
- *Monitoring Technology Vendors and Online sites*
- *Hosting Debate and Discussion*
- *Suggested (new) Programs and/or Initiatives*

Message to all Copyright Lawyers and Policy-makers: Take the time (but not too much time) to study user behaviour.

While it seems that everyone is in a panic to "just solve the problem", it is important to understand the environment, the technology and the user behaviour in the online music world before making sweeping changes to copyright policy. Remember that the Internet now makes it possible to capture an enormous quantity of information on consumer activity (anonymously) through log files from different sites. By analyzing the files of sites which supply cultural goods, it is possible to obtain interesting and useful data on user behaviour in order to verify the "winning" business model, one that is based on the way cultural goods are realistically consumed. In addition, surveys, questionnaires, focus groups and round table discussions are also useful to gain a truly accurate perspective of consumer attitudes. This needs to be done from a Canadian-only perspective. There's plenty of data out there, but not based on Canadians' perceptions. Now that we have heard what the Federal Court of Canada thinks (March 31, 2004 ruling), we need these studies even more. The rest of the world is watching us: even more closely, now.

I believe it is of paramount importance to understand the practical / realistic side of the situation first before trying to set out some sort of legislative direction or industry policy. The analysis of what actions are actually in practice has to come first; the policy and legal implications follow – not the other way around!

A recent report on the dilemma of digital content distribution (Maxwell, March 2004), published by the Committee for Economic Development, a policy group based in Washington, DC, echoes these thoughts. "We are sympathetic to the problems confronting the content distribution industry," states the report, "But these problems – perfect copies of high-value digital works being transmitted instantly around the world at almost no cost – require clear, concentrated thinking, rather than quick legislative or regulatory action." Up until recently, those who opposed strong copyright protection had been characterized by the entertainment industry as leftist, rebellious militants with no respect for the value of intellectual property. Lately, a more liberal regime of copyright is receiving wider support, but on the basis of a more mainstream idea: that a different kind of copyright regime to support the wide range of activities in cyberspace is required. This does not mean that the copyright system should be thrown out any time soon: what is

needed is a balance between intellectual property rights and the incentives for long-term economic and social growth in the digital age.

That being said, a middle ground is difficult to pinpoint with the many conflicts and stakeholder positions over intellectual property. Indeed, today the record labels are speculating on where the investment dollars will come from if digital property continues to be free. The CED report addresses that point by calling on the entertainment industry to conceive new ways of doing business that can accommodate and even profit from digital distribution. It cites the success of Apple's iTunes Music Store as one online business which offers consumers an easy-to-use alternative to free music services (though it fails to comment on how profitable iTunes may or may not be).

The CED report suggests a two-year moratorium on changes to copyright laws and regulations – not to sit back and wait for the implosion (or explosion) to occur, but to get engaged in more user behavioural research, and allow for more stakeholder debate. In the list of next steps, the report simply states, "The first concern should be to 'do no harm.'".

I couldn't agree more. Even Cary Sherman, President of the Recording Industry Association of America, has stated that "I certainly agree that there shouldn't be any rush to judgment where new technologies and intellectual property issues are in conflict – but one should also not assume that one could wait forever."

In closing, the following recommendations for the Government are offered:

1. The Government, in partnership with the music industry, needs to commission a Canadian study to analyze the consumption of online music, ensuring there is a large sample of "non-pirate" users, i.e., those who are simply curious (not intentionally wanting to deprive artists of their fees; those who make decisions to purchase music based on first listening to samples). Also ensure that there is some focus placed on non-pop music: classical, jazz, world music, etc.
2. The Government should consider providing a website that considers all angles / facets of this very complicated music + copyright subject. It should be an impartial and informative web-based information centre for all Canadians to refer to.
3. Consider how blanket/collective licensing would be executed, specifically focusing on the "ISPs as Digital Retailers" model. I believe this is the model with the most hope of satisfying the greatest number of stakeholders. Unfortunately, there is no real empirical data to base this recommendation on (see Recommendation #1).
4. Begin dialogue with the major ISPs/telcos and find out what they are thinking … or even *whether* they are thinking about some of these impending issues.
5. Get the CRTC involved in discussions. They may become the agency that regulates the collection of royalties, and they need to understand this topic thoroughly. Other Gov't departments might include the Canada Council and Industry Canada.
6. Follow the Mobile Music and Consumer Entertainment trends very closely for clues about which online music model will ultimately emerge as the one that works.
7. Follow the Fan Culture trend, to study artists', and fans' behaviour for clues about socio-cultural shifts that will happen over the next three to five years.

Definition of Selected Terms and Acronyms

"Big Five"
The five "major" recording labels are: BMG Entertainment, EMI Recorded Music, Sony Music Entertainment, Universal Music Group, and Warner Music Group. Often referred to as the "Majors".

CRTC
Canadian Radio-television and Telecommunications Commission

CRIA
The Canadian Recording Industry Association

DRM
Digital Rights Management. The major components of a DRM "system" are:

Component	Description
Access and usage control	• Controls who has access to the content and how this content is used. • Technologies used are encryption, passwords and copy protection systems.
Protection of authenticity and integrity	• Protects the authenticity and integrity of an object. Integrity: confirming that the object has not been changed or altered. Authenticity: confirming that the object is what it claims to be. • Different types of objects exist e.g., digital content, rights owner, user. • Technologies used include watermarks and digital signature or fingerprinting.
Identification by metadata	• Identifies an object in order to automate the distribution of digital content. • Different identification mechanisms are used. Metadata can be a part of the digital content or can be added to the digital content. • Metadata may include information about the digital content, rights owner or user.
Specific hardware and software for end-devices	• DRM also needs to protect end-user devices or portions of devices (e.g., PC, PDA, DVD player). They need to be resistant to attacks. • For hardware this could be smartcards or dongles. • For software this might be the Windows Media Player or Real One Player
Copy detection system	• Search engines scan the network for illegal copies of digital content, integrity of digital content, or user registration. • Search engines look for watermarks or digital fingerprints
Billing systems	• Billing systems need to handle different pricing models such as pay per use, monthly subscription. • Different types of billing systems exist, e.g., monthly billing, credit card systems (Secure Electronic Transaction Systems), electronic payment systems, micro-payment systems.
Integrated e-commerce systems	• DRM must include systems to support contract negotiation, accounting information and other business information that is exchanged. • Different standards exist including Electronic Data Interchange (EDI) or extensible Markup Language (XML)-based systems.

Fair dealing (known as "fair use" in the U.S.)
"Fair dealing" of a copyrighted work is one that does not require the creator's permission and as such, includes criticism, review, news reporting, teaching, private study, research and certain personal uses. However, the Copyright Act does not specify which dealings are fair. Those issues are adjudicated case-by-case, based on various factors including: (i) the purpose of the dealing; (ii) the character of the dealing; (iii) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; (iv) alternatives to the dealing; (v) the nature of the work; and (vi) the effect of the dealing on the potential market for, or value of, the copyrighted work. This last distinction is important in an era of rapidly evolving technology. Consumers may consider certain uses of copyrighted digital media as fair, such as making back-up copies of a DVD. In many instances, the law is not definitive. Legislation has added to the confusion by attempting to protect the rights of copyright holders while also respecting the traditional limitations of copyright.

IAP
Internet Access Provider – A company that simply provides access to the Internet.

IP
Internet Protocol (a technology term); or, Intellectual Property (a legal term).

ISP
Internet Service Provider – A telecommunications company that provides subscriber access to the Internet through a physical telephone circuit connection between the subscriber and the nearest Internet access node. May also provide web-hosting and domain-name services.

P2P
"**Peer-to-peer**", as in "P2P networks" (sometimes written "p2p"), meaning sharing files and content between computers via direct interaction between users on the edge of the network, facilitated by a virtual name space (VNS). A VNS associates user-created names with the "physical" IP address of whatever Internet connected device they happen to be using when they log on. P2P networks remove the need for users and their machines to know about addresses and locations of other users. By using a VNS, the anonymity of community members is preserved. A P2P system can link users based on availability or "presence", indicating when a user is, or isn't, connected to the Internet at a given time.

Peer-to-peer architecture was built into the structure of the Internet via the TCP/IP framework, in order to give it robust survivability. In effect, TCP/IP allows Internet messages to be automatically routed around any portions of the net that may be damaged. An unforeseen consequence of this capability is that peer-to-peer also allows messages to be routed around censorship, or proprietary control. No organizing and controlling body

intervenes in the peer-to-peer information exchange process. Instead of files being kept on a single server, the virtual community accesses a virtual "distributed server", in which the actual location of any specific file is unknown at the time of the request. The concept of "place" for such a virtual community thus becomes conceptual rather than geographic or physical; although for the user, the sense of place, at the software interface of the system being used, is just as real as it is for other virtual communities, such as those centered on a particular website. In the case of MP3 users, the virtual distributed server allows for the rapid dissemination of music files among interested users. This distribution of information across the Internet means that the virtual community in question will have the same fail-safe features and robustness which characterizes the Internet as a whole; i.e. redundancy of storage and pathways; no single failure, or "cyber-raid", however massive, can wipe out the information resources prized by any particular virtual community participating in a peer-to-peer system.

Understanding the true dynamics of peer-to-peer information exchanges in general is only just beginning, but P2P differs significantly from that of the client-host model, and it has fundamental implications for both consumers and businesses.

RIAA

The Recording Industry Association of America is the trade group that represents the U.S. recording industry. Its mission is to foster a business and legal climate that supports and promotes their members' creative and financial vitality. Its members are record companies that create, manufacture and/or distribute approximately 90% of all legitimate sound recordings produced and sold in the United States. The RIAA works to protect intellectual property rights worldwide and the First Amendment rights of artists; conduct consumer industry and technical research; and monitor and review state and federal laws, regulations and policies. The RIAA also certifies Gold, Platinum, Multi-Platinum, and Diamond sales awards.

Membership includes the "Big Five" (BMG, EMI, Sony Music, Universal Music Group and Warner), plus approximately 900 other recording companies.

TPM

Technology Protection Measure – a technology format that allows authorized use of a digital work by controlling access or various uses of the work, including copying, distribution, performance, and display. A TPM acts as a safeguard for digitized content, whether or not the content is under legal copyright protection. The two most common types of TPMs are passwords and cryptography technologies. TPMs allow copyright owners to control the use of digitized property in a way that is not possible with works that are available in discrete forms, such as CDs, DVDs, books, photographs and physical art work.

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