



A New Era for Content: Protection, Potential, and Profit in the Digital World

By Blake White

"Content is king." This oft-heard aphorism recognizes the central role that content plays in entertainment. But content's reign must produce a sumptuous flow of revenues if its creators, owners, and distributors are to be supported in high style.

In days past, the ability to limit distribution allowed for near total control over material. It conferred enormous power upon studios and distributors to dole out royal gifts of entertainment and escape to an eager public, much as they saw fit.

Those days are no more, for in the digital realm, absolute rule of the distribution process has been irretrievably lost. The ease of digital transport and copying and the proliferation of new delivery channels and reception devices have transformed control of content into something more closely resembling a constitutional monarchy. Now the power and control are shared with partners and even customers, who can choose from an infinite variety of media and entertainment in their desired formats and packages.

The rapid growth of the internet and online commerce has brought to the forefront—but not yet into clear focus—numerous issues surrounding intellectual property rights, piracy, security, and digital rights management (DRM). So far, protection of content has preoccupied the entertainment and media industry, but protection is only half the battle. To exploit the opportunities

and to gain new revenues, companies must also develop strategies that embrace digital distribution and that leverage it to generate profits.

The entertainment and media industry is struggling to create business models based on attractive, user-friendly customer propositions. Until such models have been established, there will continue to be a vacuum in the entertainment marketplace that undermines the traditional ways of doing business. That loud sucking sound executives and shareholders hear comes from the analog dollars of the previous era, disappearing into the digital vortex—most noticeably in the music industry.

The entertainment and media industry stands at a turning point. It must inevitably look to the future, taking into account the implacable demands of new business imperatives that include:

- Exploiting a new global infrastructure: new networks, new devices, and new formats.
- Managing the content life cycle, including security, commercial piracy, casual downloading, and digital rights management.
- Implementing DRM technologies that simultaneously protect content and provide the infrastructure to support commerce.
- Creating and deploying customer-accepted business models.

We believe that many companies could be more prof-

itable if they collected money left on the table through inefficiency and opportunities not taken and if they invested those funds in solutions, such as DRM, that prevent further revenue leakage via piracy. The purpose of this paper is to accelerate progress toward those solutions and to shift the discussion from the protection of content to profit from content (Table 1).

As we examine those contingencies in this paper, we will acknowledge the progress made to date and describe the courses of action upon which some companies have already embarked. Finally, based on our analyses of the content-producing industries and the marketplace, combined with the experiences of entertainment and media companies, we will provide a look into the future and offer practical guidance for moving forward with confidence.

Our guidance will include recommendations for steps that companies should take to adopt DRM solutions that will work for them.

Before getting to our recommendations for the way forward, we begin our analysis with a brief overview of the entertainment and media industry's current business environment.

Content in Context: The New Entertainment and Media Infrastructure

Infrastructure: who would have suspected that such a leaden term resonant of the 19th century would have thrown 21st-century communications industries into such turmoil? By contrast, today's infrastructure conjures up more-modern images of the speed and power associated with all of the technological underpinnings of communication, from networks to end-user devices.

The new digital means of production and distribution hold many advantages for content creators and owners.

Table 1

	Leaving Money	Losing Money
Process Improvement	Inefficiency	Internal piracy (by partners and employees)
Content Protection	Fear-driven failure to develop new business models	External piracy (commercial and casual)

Table 2

	The Good	Other News
New digital networks	Content owners can reach customers directly.	New problem: Everyone can reach customers directly—including pirates and other customers.
Ever-more-powerful desktop processing	Entertainment and media companies can produce and copy content for less money.	New problem: Everyone can produce and copy content for less money.
New devices and displays	New channels, products, and revenue streams.	Traditional problem: Undercut existing lines of business
New formats	Exciting new ways to tell stories.	Traditional problem: Substantial investment with potential for expensive flops

But there's a paradox because every exciting opportunity is linked with equally nerve-racking perils (Table 2).

Downwire: New Devices, Displays, and Formats

When a new delivery platform emerges, one prediction is sure: everything downwire will change as well. Experience shows that new networks and network capabilities give birth to new devices, which in turn beget new formats.

Devices and displays change how customers use content. Think TiVo, iPod, and Movieline. Those technologies are even more dynamic than networks, and their deployment occurs in ever-faster "buy-to-good-bye" cycles.

Despite a relatively shorter life span, devices can be just as disruptive as networks. A well-conceived device can keep entertainment and media industry executives tossing and turning at night. For instance, the potential threat to TV advertising revenues posed by personal video recorders has been the source of a waking nightmare for many broadcast industry executives, so far alleviated only by the relatively slow uptake of the devices.

Video game consoles, with dramatically varying features and capabilities, are being developed and commercialized rapidly. The latest multiplatform wonders come with DVD drives, hard drives, and internet connectivity. Device convergence is achieved through consoles that can now be used to play games, watch videos, listen to music, send e-mail, and copy anything digital.

A similar proliferation of content formats occurs following the introduction of new devices and displays. However, it's important to note that new formats may increase the number of content release windows, and each new window is another potential revenue stream. Content today has many lives: first, as an initial product and then as an asset that can be reincarnated—repackaged, reexpressed, and repurposed—and distributed, consumed, and experienced in multiple, coexisting forms in many venues and on a virtually unlimited number of displays and devices.

The New Content Life Cycle: Digital Immortality

The business implications of a longer life for content products are enormous. A hit isn't just a single product; it is a franchise that may spawn many more profitable offerings. One reason copy protection has dominated the discussion of digital distribution is that piracy not only impacts the first rendition of a hit. It also may threaten profits from the entire cascade of downstream releases.

When you marry digital content and high bandwidth to ubiquitous networks, displays, and devices, you have the makings of a communications revolution whose opportunities are clear:

- Efficient distribution to a bigger, more affluent global audience that will bring in vastly more revenues than anything we've seen to date.
- Direct customer relationships that can reduce the percentage of income that intermediaries now take.
- The ability to lead and control third-party marketing relationships that use the company's brands.
- A long and profitable life span for the many lives of content.

It sounds like a wonderful future. However, most of the established entertainment and media companies have been relatively slow to capitalize on those opportunities, because they believe they must first deal with the problem of piracy.

Welcome to the Darknet¹

The darknet, a term coined by a group of Microsoft Corp. employees, refers to special communities that run on the internet but are open only to those who belong to a private network. Darknet users frequently exchange popular, copyrighted material without authorization from the copyright holders. Users call it file swapping; content owners call it piracy.

There is no doubt that piracy causes substantial harm to copyright owners. For example:²

- In 2001, the U.S. recording industry lost \$4.2 billion to hard-goods piracy worldwide.
- In 2001, the U.S. movie industry lost \$3 billion to videocassette piracy.
- In April 2002, 1.1 billion files—the vast majority of them containing copyrighted works—were downloaded through the KaZaA peer-to-peer file-trading network.

Unauthorized duplication of copyrighted works has been a long-standing problem, but in the digital world it threatens the existing business models and underlying economics of the entire entertainment and media industry. Digital copying is something quite different from analog copying. Digital copies are not really copies at all; they are perfect re-creations.

As digital files, entertainment products can be compressed and recompressed into smaller files, split into multiple files, broadcast to servers around the world in a few minutes, and downloaded by broadband-enabled consumers in a few hours.

The path of piracy is well-known.

Motion pictures can be captured from post-production facilities and studios, from screeners, or from viewing materials that go to marketers, publicists, reviewers, and awards committees. They may be copied via high-quality equipment such as telecine and telesync. Cams can be reshot by a handheld camera in a theater from under a patron's coat. Rips may be copies from DVDs; the copies are made by special hardware or protection-breaking software.

Music becomes available to the universe of internet users on peer-to-peer services as soon as a copy has been ripped and stored on a hard drive. Movie files may take several paths before showing up on a peer-to-peer service. Because movie files are so much larger, they begin their bootleg life by being recompressed into video compact disc (VCD) format.

Once copies of movies are on home hard drives, they can be accessed by users of peer-to-peer services. More than a hundred such peer-to-peer software clients and services are available.

While the music industry has been the most prominent victim of digital piracy, some have maintained that the effect on other content industries will be different. After all, the Hollywood film industry has established a number of release windows—such as box office, home video, cable, video-on-demand, and pay-per-view. The profitability of motion pictures is less dependent on a bundling strategy than music products. But those who assume that piracy “can’t happen here” do so at their own peril.

Pirates: Pros and Consumers

The professional pirate is a criminal who may be linked to organized crime. And there are plenty of them—individuals who make money from content they didn’t finance, create, or package. They are thieves—in it for the money.

Professionals acquire copies of motion pictures the same way amateurs do: through leakage during post-production or prerelease phases—by camming or ripping. But they do not upload the copies to servers or make them available over peer-to-peer services. There’s no money in that!

In most regions, they burn the movie to DVD. In Asia, they recompress it into a VCD. In all cases, they sell the physical goods in markets, sometimes even printing up their own branded labels!

The casual copier is a different breed. Casual copiers may be high school students living in a bucolic small town or suburban gamers who spend 16 hours a day in their black-wallpapered bedrooms. They probably see themselves as swashbuckling Robin Hoods, providing escape for content that wants to be free and escapism for their friends who want to be entertained.

In the digital environment and from the perspective of the content owner, the consequences of casual copying may be worse than the consequences of professional piracy. Entertainment and media companies are finding that peer-to-peer-enabled casual copying is a problem for them across every segment of their business regardless of how large or small the copied files may be.

As broadband penetration and compression algorithms improve, the swapping of ever-larger files

becomes easier and more convenient. Those considerations have prompted studios and content owners, through the Motion Picture Association of America, to call for increased enforcement of copyright laws and the prosecution of pirates. However, although both professional pirates and casual copiers may be violating copyright law, content owners’ responses must differentiate between those two categories of copyright infringers. The appropriate weapon to level against a professional pirate seeking financial gain is legal action.

Content owners who are smart marketers put limits on casual copiers as well. They use DRM to protect and project their content. They educate, request, persuade, cajole, entice, and even warn. They develop the slickest, most-irresistible business models the world has ever seen.

Surveys have shown that many people do not believe there is anything wrong with downloading copyrighted content without paying for it. To persuade the public that piracy is wrong, Motion Picture Association of America member studios launched a public education program. A series of 30-second public service announcements are planned to air daily on 35 network and cable outlets as well as in 5,000 theaters.³

DRM: The Digital Box Office Is Open for Business

Digital rights management is the generic name for a range of technologies that prevent access to content without authorization. DRM satisfies two crucial needs of entertainment and media companies: saving money by preventing revenue loss through piracy and making money by establishing a way for people to pay for content.

Job 1: Copy Protection

The first function of DRM—protection of content by preventing unauthorized access—is the element that receives most of the industry’s focus. Yet some technologies generally introduced as a means of protection can be used to enable business models.

Encryption

Encryption is the process of translating a message, called the plaintext, into an encoded message, called the ciphertext. Because digitized films and music are seen by computers only as bits, the stream of informa-

tion is also called a text, even though it represents sound and images. To decrypt the message, a user must have a key to decrypt the ciphertext.

Material can be preencrypted in advance, before it gets stored or placed on a server. This means that if pirates get the key, they can circulate the encrypted material with the key. One way to circumvent that threat is to reencrypt the material in realtime as it leaves the server, thereby allowing decryption only with the unique key generated at that time that works for only one playback.

Encryption is a purely protective measure, and it is an essential one. It protects material against both identified and unidentified threats. It works on a variety of different devices, and if flexibility gets built into the system, encryption algorithms can be changed as pirates and hackers break established schemes.

Watermarking

Watermarking is a technology that is useful in both protection and business model enablement. It makes content identifiable by embedding an invisible but computer-readable pattern into an image or document. Marks can be removed, but it takes some skill and effort.

Watermarks can be designed so that each instance of the content receives a unique mark, thereby allowing experts to trace the movement of that material and identify the source of copies. This technique is very useful for security purposes, because the universe of people who handle the content is relatively small. It allows for forensic traitor tracing to find the individual who leaked the content out of the trusted environment.

It's easy to see how watermarks can help protect content, but they're also invaluable as enablers of business models that address individual customers. Unique watermarks tell which products a person has and exactly what the person does with them, thereby enabling content owners to understand and manage direct relationships with their customers. The knowledge they gather from interactions gives marketers the ability to build profiles that can support new initiatives and offers.

Fingerprinting

Fingerprints are a digital representation of a content product. As a tool of enforcement, they enable an automated agent to look for and find copies on a network. By

graphing where copies are found, it is possible to identify the servers that are distributing a large volume of unauthorized copyrighted material over the network. Once identified, content owners can take appropriate legal action against individuals and organizations that are going well beyond any interpretation of swapping among friends or so-called fair use.

As a marketing tool, content owners can trace fingerprints to collect data about the communication patterns of their customers. For example, owners can give away a portion of material—like a movie trailer. Through the use of relatively inexpensive research methods that are entirely automated, the fingerprint enables them to gather a quantified picture of how many people have received the trailer. They could also use such techniques to measure the effective reach of alternate versions of marketing communications.

Job 2: Business Model Enablers

The second function of DRM—establishing the conditions for playing or displaying content—is the one we think deserves more time and thought. DRM can enable companies to:

- Establish direct relationships with their customers.
- Establish, track, control, and enforce the way customers use their content throughout its life cycle.
- Provide a mechanism for secure payment to all stakeholders.
- Validate the entire transaction to ensure nonrepudiation after the sale.

In just the past two years, DRM technologies have made great strides in addressing the legal, technical, and commercial concerns of entertainment and media companies that want to distribute digital content. They handle the legal issues by identifying the content and specifying information about the rights of copyright owners and customers. They use technology to secure the content and to guide the way to mechanisms of payment and authorization. And they facilitate commercial transactions by defining and enforcing the rules of engagement. Examples of DRM evolution include:

- The incorporation of trial usage models
- Improvements in the consumer interface that make DRM invisible when possible and visible when appropriate
- Operation across a variety of content types and devices

The information that DRM systems need for completion of those tasks can travel persistently with the content it protects and projects. Or it may reside in a database triggered by information that is forever embedded in the content. In this latter case, the content has an instruction set that “phones home” whenever the customer wants to view the material, transfer it to a new device, send it to another person, or slice and dice it. The message is actually a query to a DRM database, asking it to authorize or deny the requested action, according to the terms and conditions of the license.

Throughout this paper, we’ve been urging content owners to consider DRM as a business model enabler as well as a content protection technology. We now turn to what has been learned about creating new business models that will work in the digital environment.

Creating and Deploying Customer-Accepted Business Models

We call those who buy from us consumers. But that term masks the long-term transformation that is occurring, as buyers of entertainment change from passive consumers to active customers.

Of course, a market for passive entertainment will exist for a long time—a huge market, perhaps forever. But whether people seek entertainment actively or receive it passively, if you create the means for them to escape from their everyday world and inhabit another that is more exciting or comical or loving or colorful, you will be successful.

Establishing a Customer Proposition

DRM technologies can enable both old and new business models, but they will not stop piracy. Nor will DRM persuade customers to want or to buy content; indeed, it may well repel them. Making a sale requires an attractive customer proposition followed by easy and convenient ways of purchasing and receiving content—a thoughtful, thorough business model that well-conceived DRM techniques can protect and enable.

Any company that hopes to launch a successful marketing campaign must recognize that people lead complicated, busy lives. They expect marketers to listen to them, address their concerns, and meet their needs. One reason often advanced for the lukewarm reception to legitimate online music sites is that the restrictions the sites place on transferring data to alternative devices is

at odds with customer demands for convenience and flexibility.

Younger buyers are the most-active seekers of entertainment. The universe of information and entertainment they can rummage through to satisfy themselves has dramatically increased in just the past decade.

But while people have more choice, they have less time to choose. According to the Henley Centre, a London-based marketing consulting firm, time constraints are forcing customers to make more active choices about how they invest their time. Census Bureau data since 1950 show that leisure time is not just a question of more or less, but of who has it: in the past 40 years there was more than a 20% increase in the hours worked by people aged 25 to 54 years, while among those 65 to 74, the hours worked were cut in half.⁴

Even though people in the workforce have less disposable time, the penetration of some home entertainment technologies has been astonishingly rapid. For example, the growing popularity of home theaters with big screens, DVD, and surround sound shows that customers will embrace technologies that allow them to increase their enjoyment while maximizing their return on time invested. Similarly, although its penetration has been slower, TiVo adherents love the way it helps them simplify their bewildering array of programming options.

Developing DRM-Enabled Business Models

Entertainment goes back to the beginning of time: storytelling, singing, chanting, and dancing around the communal campfire. The mass audience is a new phenomenon that began only a few hundred years ago with the printing press and that culminated with the electronic broadcast media. In our lifetime, the mass audience has reversed course, fragmenting into a collection of niche audiences.

We now market to an audience of one, the individual viewer. The internet and DRM are powerful technologies that will help you gather information about each one of your customers: the individual in all his or her glory, replete with strengths, weaknesses, tastes, needs, interests, and passions.

Meet your new customer. Say hello. Get acquainted. Form a relationship. Make a sale—and then another and another.

More Windows, Smaller Openings

Business models describe what a company does after it says hello to a customer.

One model is so influential in the entertainment and media industry that it demands consideration from the outset: it's the windowing model, developed to market motion pictures. Release windows are contractually agreed-upon periods of time that permit the exhibition of films. Such release windows are based on revenue, and content moves from windows that draw higher revenue per viewer to those that draw lower revenue per viewer. The windows are:

- Domestic and some international exhibition
- Other international exhibition
- Home video sales
- Pay-per-view
- Home video rental
- Premium cable TV services
- Network TV
- Foreign TV
- Syndicated TV

PricewaterhouseCoopers' Entertainment and Media Outlook: 2003-2007 says the emergence of new windows such as those for home video and pay cable in addition to an expanding international market all have been responsible for the compression of release windows. It therefore makes sense for distributors to invest in producing and promoting films for initial release in order to capitalize on ancillary revenue streams. The threat of piracy puts further pressure on that trend by motivating studios to recoup their investment much more quickly, before pirates can steal market share from legitimate outlets.

Piracy has encouraged the compression of windows. In the past, Hollywood movies often opened overseas months after their U.S. bow. Now, worldwide day-and-date releases—in which a title opens simultaneously in as many markets as possible—are increasing, eliminating the period during which pirated copies are in high demand. For instance, in May 2003, Fox rolled out X-Men 2 in 58 countries. Its international opening-weekend tally: a record \$155.2 million.⁵

At the same time, the number of windows is growing as new networks and technologies appear. As entertainment and media companies find ways to reach their

customers directly—eliminating some intermediaries—they'll be able to increase their profit margins substantially. For example, people who download films or buy bootleg DVDs before the products are released may also be willing to pay a premium to see a film in their home before its theatrical release. Using DRM, studios could create a whole new window for in-home previewing: downloadable play-once products.

The Inside Job

Today's companies launch new enterprises and spin off business units. They roll up. They shrink. They acquire, merge, partner, coproduce, and codistribute.

Media organizations are now vastly more complex, involving hundreds of business units and a dense web of partnerships. Efficient operation requires new controls to manage all of these structures and to maximize their contribution and value. From facilities to projects, the development, management, security, distribution, and revenues of new content are under a microscope.

Security Matters

Discussions about protection of content often overlook the role that flawed internal security measures play in the unauthorized release of high-value content, such as music and motion pictures. From the outside, hackers and data thieves might gain access to material by breaching unsecured networks, servers, and digital storage. This possibility should lead companies to make enhanced security a priority.

The protection of content prior to its public release should be a priority because the production expenditures are sunk costs. Regardless of demand—and before the property brings in a penny—the investments in production and marketing are borne up front. Yet research confirms that security receives little attention or corporate investment. According to the 2002 *Information Week* Security Survey, 34% of entertainment and media respondents said security was poorly aligned or not at all aligned with current business objectives.⁶

Even more troubling than attacks by hackers and other outsiders are thefts by insiders. With so many different companies collaborating on a project, a heightened potential exists for employees of both the producing entity and the partner companies to copy the content and carry it outside the work environment. Many instances of film piracy are so-called inside jobs—con-

tentnapping by a studio employee or a vendor who may steal it or simply lend an advance DVD film copy to a friend. If that friend lends it to another friend, it can eventually end up in the hands of an individual involved in large-scale piracy.

*Kerry Gonzalez got a copy of a workprint of *The Hulk* that had been sent to a New York ad agency. An agency employee gave a copy to a friend, who passed it on to Gonzalez, prosecutors said. Using his home computer, Gonzalez made a digital copy of the work print and uploaded it to a website based in the Netherlands, prosecutors said. The site, which lawyers in the case would not identify, is used by movie enthusiasts to trade bootleg movies. The U.S. Federal Bureau of Investigation traced the internet copy to the ad agency through an encoded security tag on the print.⁷*

All content producers now need trusted workflow partners, supported by best practices in security such as dedicated communication lines, encryption, watermarking, passwords, and DRM tracking. Those precautions will become even more crucial as the industry gradually moves toward an end-to-end digital platform from content conception through payment and royalty distribution.

Many of the same technologies that are used in protecting content for release to consumers also are effective in strengthening security. Thus, some of the costs of DRM will apply to both internal and external environments. For example, using digital watermarking to embed a unique and invisible identifier into every copy of the content in the post-production phase would reveal which individual or unit had access to the particular copy that leaked out.

But there are limits to what technology can do. A good rule of thumb to remember is this: people are 90% of the security problem; technology is only 10%. Technology can help only when human beings have agreed to solve the problem. If a company hires untrustworthy people or works with partners who do, or if the work process controls are inadequate, then no amount of technology will help.

Work Process Controls

As we analyze the work and business processes of large enterprises, we observe many ways companies could save money. Just as important, we also see

missed opportunities and lost revenue. Certainly, some problems originate from external sources, such as overall economic conditions or piracy. But there is room for improvement in organizational design and work processes and in the controls that provide structure. DRM is no panacea for such internal problems. Even more critical, companies cannot benefit from DRM until and unless they undertake an operational makeover. Until they do so, they probably lack the controls to harness the power of DRM.

Some of the aforementioned organizational control issues are functions of past decisions and habits. Others stem from new, unfamiliar challenges that require novel approaches and ideas.

Geographically-Based Distribution

The controls in place to manage content distribution according to geography are no longer sufficient because of the impact of digitization and broadband access. Geographically-based distribution is an artifact of physically packaged products, such as videocassettes, DVDs, and CDs. For such products, controls that support spatial distribution are essential.

However, to the extent that distribution migrates to the network, new digital controls are needed. In the networked environment, markets are based on demographics, psychographics, lifestyle, interest, or revenue potential. Geography per se is increasingly irrelevant. But the need to identify, track, and account for revenues is just as important, and digital controls should address the new categories of markets and distribution channels as they evolve.

Technology Investment

The adoption of appropriate technologies is the key to establishing controls in the digital environment. In many cases, analog processes simply will not work. Entertainment and media giants require work processes and back-office technologies beyond the needs of other industries that have physically-based product manufacturing components and information-based management structures. In the content industries, both the products and the management structures are information based. And the digital environment is accelerating the move from physical products—CDs, DVDs, videocassettes—to electronic ones.

In many industries, capital investment in the manufac-

turing assembly line is relatively independent of investments in information technology. But in the entertainment and media sector, those two elements are fully intertwined. Digital tracking and accounting require digital rights management. DRM requires some kind of content management. Content management relies on digital processing and storage. The increasing digital origination of material in the production process facilitates an end-to-end digital assembly line and distribution system.

Prior to 2000, the use of digital technologies in content creation—such as special effects, sound and music, and video—outpaced the adoption of sophisticated management information systems. The deployment of enterprise resource-planning software in the major companies has modernized those systems.

Now distribution control technologies are due for a digital overhaul. In addition, a lot of money could be saved—and perhaps even more money could be earned—if companies integrated their information systems across their fragmented creation, management, and distribution silos. The appropriate level of support for efficient back-office operation-financial accounting and royalty calculation and disbursement, for example, cannot occur until the advent of seamless reporting of the costs and revenues associated with specific product offerings. Executives in other industries would be astonished that their counterparts in entertainment and media may not be able to put their hands on critical sales and revenue data for weeks, even months, after the release of products.

Participant and Partnership Management

The last area of controls that entertainment and media companies need is participant and partnership management. Participants consist of entities and individuals that are contractually entitled to revenue-based royalty payments. Partnerships are third parties that are needed in today's horizontally diverse content creation and distribution environment. They may range from mini-major studios, large production companies, and post-production houses to special effects boutiques and individual craftspeople and artists.

Managing external profit participants and partners is no trivial matter, because royalty recipients can be extremely important to the future of a content owner's business plans. If the relationships among all of those who are entitled to some portion of revenues are not

clearly defined, DRM cannot work. DRM never will replace a well-drawn-up contract. And DRM systems must include or point to the contractual details of the rights held by participants, owners, and consumers.

Dealing with partners also can be difficult. Strong internal controls can be imposed upon employees. It is much more problematic to require a contractual partner to adhere to your requirements, especially when the partner has other sources of business. Despite the difficulties, it's important to make security one of the criteria for establishing such relationships. Partners may not think security is so important unless you insist upon it.

Many aspects of the marketplace are out of the hands of managers: fads and fashions, competitors' products and pricing, the overall economy. However, adopting controls that improve and maintain security does fall under the direct decisionmaking of a company's executives. In other words, to create controls, take control.

Barriers to DRM

While DRM can make copying more difficult, there is some fear that it also will frustrate customers and keep them from buying and enjoying content. To succeed, DRM technologies need to be transparent and user-friendly. After all, peer-to-peer systems are easy enough for almost anyone—a staggering 150 million to 200 million people use them—so DRM development must focus on what is practical and what customers will accept.

Public concerns place some constraints on DRM. Companies could face legislation if they fail to take heed of some of these issues, which include:

- **Privacy.** Companies must establish clear privacy policies, such as no sale or disclosure to third parties; customer control over privacy levels, including an opt-out option; and report procedures for sales and service uptake that do not identify individuals. However, it's important to recognize that people willingly give up a great deal of privacy when using peer-to-peer services and that P2P services spill the data they collect to anyone who will pay them for it—usually spam and pop-up artists.

- **Denial of fair use.** The term fair use refers to the right to examine material to learn what it contains and to use a small part of it. Fair use is an important element of the free flow of ideas, a key value of democratic society. The creative use of preview capabilities should address

many of those concerns, while academic uses might be permitted by registering material to a school or university and identifying the content via digital watermarking or some other technique.

- **Threats to the doctrine of first sale.** The principle here is that the intellectual property owner controls the conditions of a sale but loses that control forever once a sale has been executed. It is under the doctrine of first sale that libraries purchase and loan books. Librarians are concerned that DRM schemes that control postsale content access may prevent them from loaning electronic material.

- **Threats to consumer rights.** Public policy advocates fear that marketing-driven companies will fail to disclose limitations on use of consumer information.

Technology Barriers

There are technological difficulties that inhibit DRM use as well. The tracking of usage, an important element of DRM, requires support technologies. Apple's iTunes Music Store appears to have addressed that issue, but it so far accounts for only a fraction of downloading. As DRM use grows, so will the size of the supporting technology infrastructure.

The lack of common standards remains a problem and must be overcome if DRM is to serve the industry on a mass scale. Standards are increasingly important as DRM technologies mature and grow into end-to-end solutions, although even the most comprehensive DRM schemes will still allow for specialized functions and capabilities that are needed in particular verticals. Standardization is crucial so that different DRM systems can interoperate as part of a digital monetization chain for intellectual property products.

DRM schemes also must be compatible with other systemic elements, such as payment mechanisms and accounting structures that extend well beyond DRM and tie together all of the contractual stakeholders. Ultimately, larger systems will provide secure and predictable environments for financial clearing and settlement among multiple content owners and revenue participants, content aggregators and affiliates, advertisers, and network operators.

Beyond DRM

It's been argued that the genie is already out of the bottle—that the content industry has already lost the

battle to protect its intellectual property. Those naysayers maintain that there is no point in using DRM, because it's just too late.

We say that perception is erroneous. We believe commercial and casual piracy will continue, as they have always existed at some level. Our view is that piracy will become a manageable problem, but one requiring persistent monitoring and diligent attention.

The DRM systems that can be so helpful in protection are also important parts of the future of marketing and distributing content—as a business model enabler. The next section gives recommendations for companies with the vision to implement such DRM-enabled business models.

Recommendations

The music industry's recent experiences amply demonstrate the disastrous consequences of ignoring new distribution channels. Willful avoidance in today's dynamic environment leaves a gaping opportunity in the market, into which alternative services leap, enticing a vast throng of potential customers to jump along with them. When opportunity knocks, someone always answers.

Here are the steps we believe companies should take to adopt DRM solutions that will work for them.

- **Security.** Create a trusted virtual workflow environment both within the organization and between the company and its partners.

- **Copy protection.** Make decisions about the trade-offs between profits and protection. We mean the hard decisions. First, understand that there are trade-offs and that you'll have to make them. In short, force yourself to think about the parameters of the problem and then make conscious decisions about them. Ultimately, the decisions could be as simple as: We will let these titles out but not those. We will release these titles for this amount of time but not those. These titles will be encrypted with copy protection but cannot be uploaded. And so forth.

- **Business model enablement.** Make a decision about your business model, including content formats, product pricing, and distribution channels. Define all rights (yours, royalty participants', partners', syndicators', affiliates', advertisers', and consumers') that go along with the business model, products, and price points.

- **Specify DRM needs.** Develop a framework for speci-

fying and selecting DRM technologies.

- *Select DRM technologies.* Select appropriate security and enablement DRM technologies.
- *Select payment mechanisms.* The methods must be secure, and privacy policies must be enforced and validated. This means stating in simple and understandable terms how you plan to use the information about the transaction itself and how you'll use any personal information gathered in the course of the transaction. These are important concerns for consumers, and in the long run, it will be important for companies to extend the trusted environment to their customers.

- *Implement ongoing security and business model enablement programs.* Make sure you have an ongoing security and business model enablement program that mirrors the content life cycle. You'll need ongoing assessments of your controls to consider threats and vulnerabilities to your systems. The company should have mechanisms in place to deal with security breaches. Mechanisms should utilize cyberforensic capabilities to discover the source of a breach, locate leaked media, find out where it went, and document the facts of the problem.

Conclusion

This paper began by heralding a new era for content. That new era entails a new global business environment, new infrastructure, and new ways to protect and market content. We've laid out the issues as we understand them and tried to show how companies are responding to the new business environment. We also have provided some practical advice for companies seeking to benefit from the power of DRM in the digital age of content and global infrastructure.

This excerpt from PricewaterhouseCoopers' *Entertainment and Media Outlook: 2003-2007* demonstrates that the perennial hardiness of the industry in difficult times continues to hold up:

The global entertainment and media industry has begun to recover from the 2001 downturn, but growth prospects remain muted. Near-term economic malaise, international instability, and the shift of resources from the private to the public sector will adversely affect the industry. Nevertheless, economic conditions will improve and growth will be stronger in 2006-07.

Meanwhile, a number of segments are growing

rapidly, spurred by new technology. Digital distribution of entertainment and media content has been introduced, and new business models are being developed to make it appealing to consumers. For example, we expect that licensed digital distribution will help turn around the recorded music industry in 2006-07.

Box office receipts have shown surprising strength, DVD sales are propelling the home video market, and spending on video games will grow at double-digit rates. TV and radio advertising will fare better than print, and new audience measures will boost both internet and out-of-home advertising.⁸

While the immediate future may not be the best of times, it is far from the worst of times. Entertainment and media companies are in a relatively stable period, which will allow them to experiment and think through their plans for a strong and profitable future. Strategies for protecting their content in the digital realm will undoubtedly play an important role in those plans. Yet, beyond protection, entertainment and media leaders should look aggressively toward DRM's potential to help create attractive, customer-friendly digital models that will generate new revenues and help their businesses flourish for years to come.

Endnotes

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