Broadband technologies transforming business models and challenging regulatory frameworks – lessons from the music industry

MusicLessons - Deliverable 3

New embryonic business models and value chains

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New embryonic business models and value chains
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ANNEX: DRM – INTRUSION OR SOLUTION?  Report by Ulf Blomqvist, Michael Fritzell and Marcus Olofsson
New embryonic business models and value chains

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1. Introduction

The Internet has confirmed itself into the economy today. ICT technologies provides enormous opportunities to any business by removing two major obstacles – time and distance. Not only traditional business can be reinvented but also many new ways of doing business using the Internet have emerged – i.e. spelling out in a new way where in the value chain a company is positioned.

Content providers have realised the benefits of using new technology in delivering content to the market in new ways. The Internet in particular has offered lower costs, easier reproduction and distribution and attractive means for distribution of content on top of the obstacles time and distance. But new technologies have been developed that have upset traditional business models. In particular Peer-to-Peer (P2P) systems have been a determinant in the emergence of new successful business approaches within the music industry. This technology has proven even more successful in the IP-based telephony sector (SKYPE).

In this report we offer a short overview of basic business models on the net. These models are generally not at all related to or dependent on P2P systems but are included to demonstrate the diversity of existing models. We then present and describe a number of new emerging business models for P2P systems that are already visible or have been recently announced and outline some of their features.

In our user studies in WP 3 we can identify different user groups, each one with a set of characteristics that we believe are important for the future analysis. We outline these user groups here in this report since they will serve as a base for forthcoming workshops with experts from the field to provide input to identifying new business models as yet not defined. This is a user-oriented approach to business models. DRM or Digital Rights Management is a term frequently referred to, both in copyright legislation as well as by content owners seeking to control use of their intellectual property. Since there is a special study of DRM within the framework of eEurope we have conducted some research to test the validity of the use of DRM systems in a content owner approach to new business models. These two contrasting approaches - user oriented and producer oriented - will serve us in our forthcoming studies both on business models and recommendations on balancing the rights between rights holders (producers) and users and thereby providing a better comprehensive scientific base for pan-European policies.
New embryonic business models and value chains
2. Basic business models on the web

2.1 A new way of interacting

Distributed computing, examples of which include software such as P2P and Grid applications represent very powerful and widespread applications. The technology has been adopted by about 900,000 users around the world and these numbers are steadily increasing. Distributed computing represent a completely new for individuals and groups to interact with each other, thus changing established business models both in the real and the virtual world.

2.2 Basic business models

Basic business models on the web can be categorised as follows:

- Brokerage
- Advertising
- Information intermediary
- Merchant
- Direct sales (manufacturer)
- Pay per click
- Community
- Subscription
- On demand

These models are described below.

2.3 Brokerage

Brokers bring buyers and seller together and facilitate transactions. Brokers play a frequent role in business-to-business (B2B), business-to-consumer (B2C), or consumer-to-consumer (C2C) markets. Usually a broker charges a fee or commission for each transaction it enables. The formula for fees can of course vary. Some models include:

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1 This categorisation follows rather closely a categorisation done by Professor Michael Rappa at North Carolina State University. http://digitalenterprise.org/models/models.html
• Full range of services covering transaction processes from market assessment to negotiation and fulfilment.

• Conduct auctions for sellers (individuals or merchants). The broker charges the seller a listing fee and commission in relation to the value of the transaction. Auctions vary a lot in terms of bidding rules etc.

• A third party payment for buyers and sellers to settle the transaction.

• Prospective buyers make final binding bid for specified goods or a service and the broker arranges the settlement.

• Operating a catalogue that connects a lot of product manufacturers with retail buyers that have volume sales.

• Software agents that search the price and availability for goods or services specified by a buyer.

• Software agent that locate information that is hard to find.

• Virtual mall.

2.4 Advertising

A web site that provides content (usually for free) and services (mail, blogs, discussions) mixed with advertising messages. Advertising may be the major or the only source of revenue for the web site owner. The web site owner may be a content creator or a distributor of content created elsewhere. This model works best when the volume of viewers is large or highly specialised. Some examples are:

• Portals, usually with a search engine for specialised content or services.

• Content based sites that are free to access but require user to register and provide an email address or some personal or demographic data.

• Paid placement link positioning or advertising keyed to particular search terms in a user query.

• Advertising targeted to content. Identifying the meaning of a web page and automatically deliver relevant advertisements when a user visits that page.

2.5 Information intermediary

An actor that collects data about consumers and their consumption and habits and perhaps also carefully analyses the data and uses this in helping in marketing campaigns. Can also be an actor that collects data about producers and their products and make it available to consumers. Assists consumers and/or sellers to understand a certain market.
2.6 **Merchant**

Mainly a substituted virtual retailer for a traditional physical one. Relies considerably on existing firms to source and stock goods.

2.7 **Direct sales**

An actor that helps a manufacturer to reach buyers directly and thereby compress the distribution channel. Uses tools such as improved customer service and/or better understanding of consumer preferences.

2.8 **Pay per click**

Sites that pay members for a user click-through by offering financial incentives to member sites by revenue sharing. This model is well suited for the web and not surprisingly has become a very popular business model.

2.9 **Community**

This model is based on user loyalty. Users participate with time, commitment or emotion. The revenue is based on sale and related products and services. Examples are:

- Open source software developed voluntarily by a global community of programmers who share code openly. Instead of licensing code for a fee, open source relies on revenue generated from the related services like system integration, product support, tutorials and user documentation.
- Public broadcasting where users contribute by non-profit radio and television broadcasting extended to the web. Voluntary donations pay an important role here.
- Knowledge networks. Discussion sites that provide information on the sharing of expertise among professionals.

2.10 **Subscription**

Users are charged a periodic (daily, monthly or annual) fee to subscribe to a service. Combines often free content with premium content. This business model of often combined with the advertising model. Examples are:

- Text, audio and video content.
- Internet Service providers (ISP) offer network access and related services.
- Hosting
2.11 On demand

The “on demand” model is based on metering usage. Metering services are based on actual usage rates. Examples are:

- Internet Service Providers that charge usage by the minute.
- Internet Service providers that charge by the bit.

2.12 Discussion

The business models presented here are existing on the web today and most of them have gone through several steps of development. Web solutions have lowered the barriers for new entrants in the marketplace and in particular it has been easier to find new customers worldwide. We will use this list of basic business models as a reference list and take note which ones will be bundled with P2P systems for distribution of content.

The present technical solutions are classic client-server based realisations. P2P systems have quite different characteristics that will lower the barriers even more than the web has done so far for artistic creation of content as well as lower the costs for finding it and for finding new talent. P2P systems are decentralised and very cost effective. Depending on how the systems are organised there is little or no requirement for a central server.

The requirements on infrastructure seen from the content owner/creator are very low and there are no scaling problems and practically no increase of cost when the system grows. P2P systems are also independent of ISPs business models and work on top of them as overlay systems. Many content owners/creators start to understand that such characteristics are very interesting and significantly can promote future business. An interesting example is the Internet telephony solution SKYPE\(^2\) where P2P technology has been issued in an area not related to content creation and distribution.

\(^2\) [www.skype.com](http://www.skype.com)
3. New embryonic business models in the P2P domain

So far there are not too many emerging business models that are clearly visible together with P2P systems. Here we present the ones we have found.

The models are not presented in any order of priority.

3.1 The “weed” model

This model can be best described in 5 steps.

<table>
<thead>
<tr>
<th>GET MUSIC</th>
<th>PLAY</th>
<th>WEED SOFTWARE</th>
<th>BUY MUSIC</th>
<th>SHARE MUSIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>By visiting other “weed” files</td>
<td>Listen 3 times for free and then buy</td>
<td>Install “weed” software for free to buy, find and organise music</td>
<td>Play, burn on CD</td>
<td>Using P2P systems to share music on web site or on CD. Earn money when others buy from you.</td>
</tr>
</tbody>
</table>

In our analysis in databases from earlier studies on users on the university network SUNET we found dedicated collectors of music. Such collectors could potentially be interested in this business model.

3.2 The advertising model

The advertising model is very suitable for the web and it is not surprising that this model also turns up in P2P systems. There are 2 examples:

**Grokster**

Provides a P2P environment where users share music and the Grokster site earns money on advertising.

**Evolved Bit Torrent**

The P2P system Bit Torrent is starting to enhance their P2P system and expects to add to it search result oriented advertising - i.e. understand the queries and the content the user asks...
for and draw intelligent conclusions on the type of advertising that could be of interest for that particular user.

### 3.3 A give away model

In this model the business owner provides “something” for free that users want or is interested in and earn money on supplementary services/information/goods. There are a few examples:

**SKYPE**

Here the business owner provides Internet telephony for free with a P2P system and earns money on supplementary services such as:

- links to the fixed telephone network
- links to the mobile telephone network
- fax
- voice mail
- videoconference

### 3.4 Web promotion model (no copyright)

In this model the creators offer music for free on the web with P2P technology and the consumers like and find it and go to concerts and buy signed CDs.
3.5 Direct sales

Sell content to consumers in the P2P marketplace - first by using DRM\(^3\), then through universal ISP-based billing.

Implement and build-out the new business model in three phases:

- Phase 1: Make the content of top-five major labels available for sale in the P2P marketplace with existing credit-card billing
- Phase 2: Expand payment options for consumers by adding the option of charging music track downloads to phone bills
- Phase 3: Implement ISP-based billing that will allow for universal payments for the majority of downloads of copyrighted content.

This model has been presented by DCIA\(^4\) in October 2003.

3.6 Subscription model

Sell content to consumers in the P2P marketplace - first by means of a universal basic subscription, then through tiered genre-and-theme channels, and ultimately per-track sales.

Implement and build-out the new business model in three phases:

- Phase 1: Impose a monthly music-access fee to be paid by all broadband ISP subscribers who have installed P2P file-sharing applications.
- Phase 2: Introduce optional premium channels of newer music and editorial content using broadcast encryption technology.
- Phase 3: Add DRM protected a la carte offerings of individual music tracks of newest releases with value-adding features.

This model has been presented by DCIA in December 2003.

3.7 User incentive model

Sell content to consumers in the P2P marketplace - first by digital watermarking and DRM, then through uploader incentives and user participation programs.

Implement and build-out the new business model in three phases:

---

\(^3\) DRM: Digital Rights Management

\(^4\) DCIA: Distributed Computing Industry Association
• Phase 1: Combine file-fingerprinting with DRM for label-seeded and consumer-originated copyrighted music in P2P.

• Phase 2: Provide incentives to high-volume file-sharers to convert legacy music collections and become licensed redistributors.

• Phase 3: Introduce user-friendly software system to permit consumers to register and monetize original musical works.

This model has been presented by DCIA in February 2004.

3.8 DRM business models

DRM has been heralded as THE solution to the content industry’s dilemma. There is a great interest from the industry in this subject which also manifests itself in the special study carried out within eEurope on this matter. We have carried out a special study (and workshops) on this. This study is annexed to this report and also submitted to the eChallenge 2005 conference.

The DRM models defined in this study are:

**B2C (business-to-consumer) DRM business models**

Classical supplier-recipient payment models, where the supplier (business) delivers all the products to all recipients (consumers), whose payment is then transferred back to the supplier.

**C2C (Consumer to Consumer) DRM business models**

The producer uses the consumers’ computers to distribute music, and a central server to validate the copyright status of the files to be distributed. Only approved files are distributed and sold through the network.

**ISP (Internet Service Provider) DRM business models**

The ISPs pay a certain fee per subscriber to the owners. This is based on the facts that a fast connection is required to easily download music, movies and games, and that the ISPs already charge the subscriber a monthly fee for unlimited use.

This model was used early in the web’s history and is reinvented.
3.9 DRM Business models for the future

Licensing models
Users buy a license to freely download and share files on the Internet, using whatever technological solution is best for the purpose. Copyright owners will in turn receive statutory license fees, fairly distributed amongst them. 3 different models are discussed.

Micro models
Collecting small fees for each copyrighted work accessed and totalling them into a monthly bill.

No copyright
Earning money on concerts and commercials by creating interest on the web with free music.
4. On value chains

The traditional value chain in the music industry is described in the figure below together with the location of different rights holders.

A lot of friction in this value chain is caused by the increasing roles of new emerging players particularly involved in digital music distribution. The new players are online portals, content encoding technology providers, P2P technology providers, hosting, DRM providers, encryption technology providers, providers of watermarking and fingerprinting technology of digital content etc. On top of that one has to take into account the characteristics of P2P systems discussed in chapter 2.12 lowering the barrier of entry for most of the players and in particular for content creators.

A simple new value chain or online content (not only music) could look as the figure below where P2P technology plays an important role in digital delivery.
New embryonic business models and value chains
5. User oriented approach to business models

5.1 A starting point for the discussion

In our future work we are going to analyse business models from different points of view. In order to carry out this analysis we need some reference points and requirements. We are of the opinion that such requirements are best found by studying the users. In-depth interviews with experienced file sharers from the user studies (Work package 3) will serve as starting point for the discussion of business models. From the interviews we can identify different user groups, each one with a set of characteristics that we believe are important for the analysis. That means that the reasoning at this stage of investigation should be considered as a hypothesis, with the main purpose to serve as a base for forthcoming workshops with experts from the field. Below we outline 3 different user categories to be used in the future:

- Free-riders
- Samplers
- Community members

5.2 Young people and adults

First we can divide the users into two groups: young people and adults. Young people do not work, they have limited income and thus very little money for consumption. On the other hand they have quite a lot of free time at their disposal. Most of them prefer spending their leisure time with friends and classmates, where a popular discussion topic is popular music, the artists and everything else surrounding it.

For the adults the situation is the reverse: Working means less free time but more money for personal consumption. With no family there is still time for a social life, often with music as an important ingredient.

5.3 Copying replaces money

By their friends or elder brothers and sisters, young people get introduced to the world of music, where they try to orient themselves. In the best cases they can afford to buy the CDs of their favourite artists, where the pictures, texts and biographies contained are sometimes as important for the fan as the songs.

The rest of their abundant music listening they have to get for free. In the past radio and TV offered this “free” source of music. What we have witnessed in the past 6-7 years is a shift to the Internet with its huge availability of diverse materials. Individuals use any technology available to copy the records of their friends or the top lists from the radio;
burning a CD or copying to the hard disk. One generation ago cassette tapes were used as copy medium.

The Internet made it possible to exchange songs in digital form on the net. In the early years they used BBS software passing the songs as attachment between each other, from 1999 and on by Napster and other file sharing services.

5.4 Quality deficiencies

It is important to keep in mind the quality deficiencies of copies compared to the original records. The missing CD cover is already mentioned and in many cases the sound quality of the copy is inferior. The storing and retrieval of the copies tend to be quite messy, specially when there are a lot of downloads, as each user makes a personal system that is often not very structured.

Often the process of downloading is not successful. The desired recording is not found, the transmissions is interrupted and has to be repeated, or more recently, “spoof files” introduced by the record industry have started to disturb the process. However, for most young people the alternative is not having access to the songs at all.

5.5 No moral doubts

Young people do not perceive any moral doubts about copying. There are at least three explanations: 1) All their friends are doing the same, 2) their parents do not mind as they did the same thing when they were in that age, and 3) a copy is not considered the same thing as the original record. Conversely most parents and children would feel uncomfortable with original records that have not been paid for.

5.6 Forms of payment

Other matters of importance are forms of payment that are available. Young people have no credit cards or Internet bank accounts. On the other hand they are often very skilled in managing the cash cards of their mobile phones and they know how to pay a subscription to a magazine.

5.7 Pay for convenience

The music consumption of adults differs from that of young people in many respects. In general there is less time to spend searching and downloading songs on the PC. This is particularly the case with families with children. Secondly, the tolerance towards the less than perfect quality associated with copied music tend to be less. Although a song may be available on the Internet for free, for quality reasons the adult consumers often prefer to get the
original CD, at least if there is a convenient way to purchase and the price is considered a fair one.

5.8 Avoid social embarrassment

The decision to choose original CDs is further strengthened by the fact that dealing with copies offers very little of prestige amongst peers. Many people would feel a bit ashamed to tell colleagues and neighbours about their darknet activities. The negative social aspect is likely to be reinforced when entering a stage of family responsibilities requiring people to identify themselves with respectable citizens.

5.9 Communities

There are cases where file-sharing activities are likely to be continued even among people with good financial and social resources. Sometimes the music listening develops into a very personal directions. This is taking place regardless of age; young people as well as grown ups may express deviations from mainstream taste. Then they often find that the market does not offer a satisfactory range of choice on the supply side. Instead the music consumers organise themselves in Internet communities, often with a high degree of personal involvement, where one important purpose is to share their records within the group.

From a social point of view the community members do not consider themselves as law-breakers or anything related to immorality, rather they look upon their activities as a hobby with certain degree of exclusiveness. There are examples of similar activities from other cultural areas: Hobby planters organising meetings for the exchange of plants, and reading circles where the participants circulate fiction. These enthusiasts would not for a moment imagine that their activities would harm the interests of the seed company or the publisher. Indeed many publishers would probably see this as a vital indirect way to market products.

5.10 Free-riders and samplers

In his article A Grand Unified Theory of File sharing, Edward Felten, Professor in Computer Science at Princeton University, suggests a breaking down of the users of file sharing into two subpopulations, Freeriders and Sampers.

Cromatronic, http://www.comatronic.net/index.php?option=content&task=view&id=36&Itemid=32. Cromatronic is a net label focused on distributing quality electronic music for free under a creative commons license. Besides being a publishing platform for musicians and offering music downloads, a purpose of Comatronic is to provide interesting articles, papers and books on media, netculture and related topics.
Free-riders are generally young. They have few if any moral qualms about file sharing, and they tend to assume that others feel the same way. They use file sharing to accumulate libraries of music, as an alternative to buying CDs.

Samplers are generally older and more risk-averse. They are highly engaged with cultural products of all sorts. They are aware of a moral conflicted regarding file sharing, and use it mostly to download songs that either aren’t for sale, or that they don’t value enough to pay for. They buy music that they really like, and file sharing causes them to find more music they like, so it tends to increase their CD purchases.

The observations are based on his synthesis of two econometric studies (Oberholzer & Strumpf 2004), Boorstin (2004) and various survey-based studies. This taxonomy adapts well to the characteristics of our user groups.

Young people are mostly free-riders. Their limited economic capacity restricts them from buy original CDs only with their very favourite artists. For the rest of their music consumption they are dependent of copies, and where the lack of quality and convenience is the price to be paid in order to get any access to the music at all.

Adults, with better purchasing power, have less available time to get access to the music. They tend to be samplers, using file sharing as a tool for music selection, but prefer to pay for quality and convenience if the conditions are fair.

Community members of all ages tend to develop exclusive demands that may be difficult for a mainstream distributor to satisfy. Besides, the exchange of comments, tips, recommendations and opinions related to the music or the artists may be as important an activity as the exchange of the music itself.

It comes therefore as no surprise that the established recording industry demonstrates an ambivalent approach. Whilst officially preaching a convincing message that file sharing is stealing and that P2P networks (and the technology) are illegal, the industry is engaging more and more in “sniffing”, i.e. listening to what is going on in these communities, in order to better judge that fickle quality, public taste, or in order to make their own marketing more efficient.
6. References


Boorstin, Eric S. Music Sales in the Age of File Sharing. Princeton University, April 2004

DRM – Intrusion or Solution?

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Abstract: DRM could be the solution to the content industry’s P2P dilemma, but content owners’ desire to monitor and control the consumer’s use of content can be perceived as an intrusion of privacy. High control makes consumers less active and low control invites them to experiment and to gain experience. Digital music files can easily be spread. Therefore legal services prefer keeping control over the music. This study reveals that consumers are one step ahead of the content industry, finding ways to circumvent protection and laws, and that the music industry is awaiting the “right” DRM business model. Online Music sellers basically rely on B2C DRM business models, but attempts have been made with C2C models, using consumers as distributors, and ISP models, where ISPs pay to collecting societies for all file transfers of copyrighted material in their networks. Future models include licensing models, micro models, and no copyright at all.

1. Introduction

DRM or Digital Rights Management is a term frequently referred to, both in copyright legislation as well as by content owners seeking to control use of their intellectual property. However, the concept encompasses two very separate issues. DRM systems can have a monitoring function (observing what is transferred over the network), as well as a controlling function (affecting what consumers can/cannot do with content in the network or on their own computers), or a mixture of both.

Content owners desire as a rule, to both monitor and control the ways the consumer uses their content. It has become more and more difficult, however, to distinguish between monitoring and control aspects of DRM systems. Consumers may accept monitoring to a certain extent but not all forms of control. High control makes consumers less active and low control invites consumers to experiment and to gain experience. Low control generates traffic in the network and can allow for new and unexpected applications to emerge. On the other hand low control may facilitate for illegal activities to flourish.

DRM systems can also encompass different levels of intrusion. A highly intrusive system allows the copyright owner access to the equipment a consumer uses to play or store digitised materials, as well as the ability to control such usage. A highly non-intrusive system merely observes in general terms which materials are consumed, but not in detail by whom, where and when.

In the U.S. as well as in Sweden and other European countries, content owners and their representatives have started several legal processes to stop and prevent illegal distribution of copyrighted material. In March of 2005, the Swedish Branch of IFPI, the Swedish Performing Rights Society (STIM) and the Swedish Anti-Piracy Bureau (Antipiratbyrån) together with three content owners, applied for and were granted a court order for an “intrusive investigation” (the term intrusive investigation, or ‘intrångsundersökning’ in Swedish, was implemented in Swedish Copyright law a few years back) on the premises of a Swed-
ish ISP, claiming that they would find 12 named, copyright protected works owned by the content owners. [1] To be able to perform this investigation the ISP was not notified in advance to prevent the company from deleting the works in question from their server, and the server was to be confiscated awaiting technical investigation. This event merely shows the need for all parties to seriously addressing the DRM issue in a positive and solution-oriented manner.

2. Objectives

The objective of this study was to test the validity of a hypothesis that DRM systems must not be overly intrusive to enjoy long-term consumer acceptance and thereby be successful. Foremost the Online Music Industry was studied to verify or reject the hypothesis. Furthermore the objective was to refine solutions for balancing the demands of security/integrity and control and to suggest business models and design solutions for such DRM systems. The study would investigate, among other things, the possibilities to apply similar methods as are used for auctions and similar applications where the individual behaviour is confidential but the result for the whole group is open.

3. Methodology

The analysis is based on the following framework that considers the balance between control – monitoring, on the one hand, and intrusive – non-intrusive technologies on the other.

![Figure 1. DRM Security/Integrity Issues](image)

In the NW (i.e. highly intrusive/controlling segment) and NE segments in figure 1 above one can find examples of DRM activities which have not fully met with consumer acceptance, or have risked a severe consumer backlash. Highly intrusive DRM systems are those, for instance, which involve a supplier having direct access to a consumer's hard disk with the ability to reform or even erase different files remotely. An example from the NW area is the now defunct music service Pressplay. Here, on-line users could subscribe to a music service, but what they had bought became erased once the monthly subscription lapsed. In the NE segment we have the monitoring used by the Record industry in the USA to find "illegal" files on consumers' hard discs, trace their origin, and in some cases even sue some such consumers.

In the SW segment we find some current methods for hindering the copying of commercial CDs, most of which are not particularly foolproof; the control function is clear, but so are the rules of play for the consumer. Finally in the SE segment one can conceive a number of DRM systems which monitor actual usage of protected content openly for the consumer, the only purpose being to facilitate a fair distribution of potential revenues. Our
hypothesis is that DRM systems which will work and be acceptable to both users and suppliers must reside primarily in the SW and SE segments (the grey area in figure 1). Our focus was on studying how monitoring and controlling through DRM systems is used in the music industry. A number of different music services have been categorised based on the levels of intrusiveness and control in their embedded DRM systems. The lowest level of intrusiveness, as defined above, is characterized by interested parties merely collecting personal information about consumers use and habits, albeit often without their consent. The highest degree refers to companies having the ability to reform or even erase files remotely.

4. Business Models

In most cases consumers have been one step ahead of the music and film industries. From yesterday’s sneaker-nets to today’s “illegal” Peer-to-Peer (P2P) networks, users have always been pioneering the quest to circumvent protection mechanisms as well as laws and regulations. [2] Users have tended to opt for the easiest approach in order to acquire music. A new and in many cases better way of distributing music arose with the advent of the MP3 format. Adjacent to the MP3 format, MPEG2 and MPEG4 formats have simplified and improved movie distribution. These inventions led users to come up with new, ingenious, yet often illegal ways of copying and distributing music and movies. In the music area this also led to new ways of marketing and making music available, especially for bands that were practically unknown, except for a local community. These bands could release their songs on the net and receive feedback from all over the world.

The introduction of MP3 also lead to a quick rise in popularity for P2P networks, which are far from being invented by any copyright infringers, and the popularity is still rising. With millions of music files available just a click away, and “free” of charge (i.e. no added charges), there is no reason for the networks not to increase in popularity and number of users. The simplicity and “low cost” are the main reasons for people to download copyright protected music from P2P networks, even if it means they are criminals, and aware of it. Why pay for something free? In comparison to purchasing music in a legal online music store, there are also other aspects to a P2P network that makes it far superior [4]:

<table>
<thead>
<tr>
<th></th>
<th>Producer</th>
<th>Wholesaler</th>
<th>Retailer</th>
<th>Consumer</th>
<th>Cost per Album</th>
<th>Percent Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Producer</td>
<td>Wholesaler</td>
<td>Retailer</td>
<td>Consumer</td>
<td>$20</td>
<td>0 %</td>
</tr>
<tr>
<td>2</td>
<td>Producer</td>
<td>Wholesaler</td>
<td>Retailer</td>
<td>Consumer</td>
<td>$17</td>
<td>15 %</td>
</tr>
<tr>
<td>3</td>
<td>Producer</td>
<td>Wholesaler</td>
<td>Retailer</td>
<td>Consumer</td>
<td>$7</td>
<td>65 %</td>
</tr>
</tbody>
</table>

1. Traditional Value chain
2. Producer acting as retailer e.g. web-based CD outlets
3. Producers selling digital content directly to the consumer

*Figure 2 - Different value chains for the music industry[3]*

- the recording industry has been very reluctant to embrace the new opportunities made possible with new technology
- the music industry is awaiting the right model enabling safe distribution and ensuring high revenues – many proposed new models have been opposed by the industry
- major labels have just recently started to accept the potential when combining traditional value chains with digital technology – several levels in the value chain can be eliminated resulting in reduced cost, and thus higher revenues. (see figure 2, above).
When extending the third value chain to include the following step, where the consumer looks for the physical experience (i.e. concerts, CDs, t-shirts and souvenirs, etc), only a fraction of the revenue stream comes from sales of recordings on physical carriers. [5] The changing prerequisites of the market have forced many record companies to try to reduce their reliance on mechanical revenues. [6]

Some of the advantages from a producer/consumer perspective with the third value chain, apart from fewer value adding steps, is a closer contact with the consumers, reduced selling time, lesser need of warehouses and, perhaps most importantly, more customers. There are also environmental advantages, assuming that the first value chain implies an overproduction of the physical carriers, and heavy environmental load due to physical transports. However, music services today are generally not profitable since most of the revenues goes to the music industry. [7] It can even be argued that offering music free over the net, where a vast audience can be reached using file-sharing technologies, in fact can be more profitable than producing physical products before reaching the market. [8]

Consumers and producers of digital content, as well as network and service providers, must make efforts to reach compromises and overcome cooperation issues in order for the digital-content services and market to evolve. [9] The three parties, including the network operators, are inter-dependant, thus, in a long-term perspective, lawsuits, piracy, and other malicious activities will be counter productive. Below, some essential issues are listed, which, in the relationship between the producer and consumer – which either directly or indirectly involves the network and service providers – will make digital music distribution truly accepted. [10]

Control over files – digitally distributed music tracks can easily be spread to other users; legal services tend to prefer keeping control over the music using a central server to keep track of all downloads and streams, central server facilitates payment regulation and access control. Control over revenues – the recording industry seeks to adopt a way of collecting and distributing royalties generated from digital music services; few online stores today have been able to gain the major record labels’ confidence. Satisfying consumer needs – attracting customers is crucial for business success, thus the service must satisfy real consumer needs.

4.1 – The virtual and the physical.

Many business initiatives that started in the virtual world with very high expectations have now incorporated physical attributes that are characteristic for traditional consumer-producer relationships. Evidence from the music industry suggests that the huge availability of music in the virtual market has triggered an equally impressive increase in consumer demand for physical experiences in form e.g. live concerts. The virtual cannot exist without some physical connection in the digital economy. However, assuming that the physical artefacts can have a variety of qualities, some prerequisites are essential for both customer and content-owner satisfaction:

1. a token for the customer that provides exclusive access or even status
2. an artefact that provides content owners “sufficient” possibilities to monitor and control the customer without placing unreasonable demands as regards e.g. privacy
3. a solution where limits to the consumer’s freedom to experiment and adapt are on an acceptable level

4.2 – B2C (business-to-consumer) DRM business models

The B2C models are classical supplier-recipient payment models, where the supplier (business) delivers all the products to all recipients (consumers), whose payment is then trans-
ferred back to the supplier, although advance payments to personal accounts and subscription solutions exists.

Online Music sellers basically rely in the main on B2C models. iTunes and Napster 2.0 are two different examples, with the former relying on unit sales via downloads, and the latter offering a subscription model. Music downloaded via the subscription model usually results in all purchases being un-accessible once the subscription is cancelled. iTunes and Wal-Mart offer the possibility to purchase single tracks that can be copied to physical carriers (CDs or DVDs) for unlimited use. Other B2C models are:

- **Advertising models**: content providers (mainly small and unsigned acts) can upload music for free distribution and rely only on revenue from ad sales or promotions
- **Value-added models**: adding a case and a book with lyrics to the CD, or a membership to a fan-site where extra tracks and videos can be downloaded

The advantage of the B2C models is the fact that content is stored on a central server, making DRM much easier to control. The negative impact of the B2C model is that when starting an online business, the outlay for buying a server, maintaining it plus the cost of purchasing adequate software, may result in the initial costs being too significant for an entrepreneur to regard the model as viable. Another drawback is the sensitivity of the system. If the server goes down, everything stops and customers may opt to visit another store instead and the business loses predicted revenue. [11]

4.3 – C2C (Consumer to Consumer) DRM business models

There have also been attempts to introduce C2C models, where the producer uses the consumers’ computers to distribute music, and a central server to validate the copyright status of the files to be distributed. Only approved files are distributed and sold through the network. Weedshare and Altnet are two examples. Altnet even uses the P2P client KaZaA as an infrastructure for distribution, thus creating an overlay network on top of the Internet [6]. The drawback of the Altnet solution is that once the DRM protection is removed the copyright owner loses the ability to profit on his or her creative work.

In the C2C models the supplier makes the recipients act both as distributors and customers, and as a consequence the supplier is able to reduce its cost for distribution. It is fair to say that this way of distributing legal music online has its origin in the rise and fall of P2P networks such as Gnutella.

The subscription C2C model also exists, which is almost identical to the B2C case, except for the use of consumers in a P2P service for distribution, however, traffic is monitored and only approved tracks can be distributed.

4.4 – ISP (Internet Service Provider) DRM business models

A third group of business model where the problem of digital rights owners’ revenues could be solved are the ISP models, where the ISPs pay a certain fee per subscriber to the owners. This is based on the facts that a fast connection is required to easily download music, movies and games, and that the ISPs already charge the subscriber a monthly fee for unlimited use. This is the model used in another service, PlaylouderMSP, which was launched commercially in early 2004 [12]. Playlouder MSP is a partnership between the music site playloud.com and the broadband service provider Bulldog, and offers fast broadband access to the internet, guaranteed quality, legal music – no additional charges for music service, files are guaranteed quality with full information, no spoofs, no viruses, no lawyers, and one inclusive price.

By using fingerprinting technology the downloading can be monitored, facilitating the fair distribution of royalties to the rights owners. Playlouder MSP works as a “walled gar-
den” where users can share music with each other inside but not outside the network. Only tracks from recording companies that have a deal with Playlouder MSP are swapped and it also allows high-speed transfers between the users.

Similar to the above is the model where ISPs are treated as digital retailers with some content responsibility. In this model the ISPs would control all file distribution over the Internet. This would involve watermarking and fingerprinting technology to monitor all files transferred from websites and P2P networks.

5. DRM Business models for the future

The future business models that the study included can be grouped into one out of three different categories; licensing models, micro models, and no copyright. The models attempt in different ways to compensate creators for usage of copyrighted works.

Licensing models can, in its turn, be grouped into three different categories; “Voluntary Collective Licensing” (VCL), “Individual Licenses”, or “Statutory Licensing”, each having its pros and cons. VCL is based on the model used by radio for more than 70 years, where major labels join forces and offers licenses that allow stations to play their music. In the online-music case this would eliminate the basis for a majority of all lawsuits, and no need to change the copyright law. [13] Individual Licenses is a scheme where the individual consumer (voluntarily) buys a license to freely download and share files on the Internet, using whatever technological solution is best for the purpose, i.e. not only P2P. Copyright owners will in turn receive statutory license fees, fairly distributed amongst them. Companies offering content for these licensees could make different offers, e.g. monthly license fees or per downloaded file, allowing the consumer to choose according to their preference. Statutory Licensing is a more controversial scheme. Government would here force the copyright owners to make all their works available and in turn they would receive some kind of compensation. These licenses have been used earlier in history with pianolas, cable TV, etc.

There are mainly two different kinds of micro models; “Micro-Refunds” and “Micro-Payments”. The micro-refund scheme involves collecting small fees for each copyrighted work accessed and totalling them into a monthly bill. This has been seen as problematic in earlier studies, due to two different reasons; collecting all bills into one bill that is paid by the consumer could result in the consumer experiencing it is expensive and is reluctant to continue using the service, or the consumer receives too many bills and experience problems to see “the whole picture”. Both reasons are recognised by the content providers as well as the network operators. [9] The micro-payment scheme is also called voluntary tipping as it is based on voluntary payments for content that is free to download. Freeware programs are proof that the scheme works, but not all agree. Content owners argue that consumers’ voluntariness can not be trusted, and consumers think micro-payments makes it hard to understand the total cost of the content accessed.

A No-Copyright scheme is foreseen by some for the music industry. Concerts and commercials are important sources of revenue for artists today, and it is even argued that only the top-10 percent of the artists make money selling records. Because of this some people, including David Bowie [14], believe that copyright is an old relic that will not be part of the future. Another person who agrees with this is Wilfred Dolfisma, assistant professor at Delft University of Technology, who affirms that copyright for the music industry has served its purpose [15]. Bain & Company presented a report in 1999 [16] which analysed the revenues and the profit of the record industry. According to their findings the retail sale of music generates only 10 percent of the total profit. The main profit share resulted from advertising revenues and concerts.
6. Likely effects or results

The content industry can position itself between two extreme ends of a spectrum when considering implementing a DRM system. The first option is to stay with the traditional solution of seeking a maximum of control over consumer usage. This is characterized by restricting the content that is sold such as limiting the number of times content can be burned, copied and transferred. Since basically all systems can be circumvented it is imperative, in order to protect both rights owner and the content available, to have some sort of law enforcing body. This is the current model used in the U.S. where the RIAA is filing lawsuits against copyright infringers, and is being picked up in many European countries, e.g. Sweden. The problem with these highly intrusive and controlling DRM systems is that they can lead to consumer resistance as there is a clash with the traditional interpretation of ownership from the physical world. People are used to the physical ownership interpretation – in which you can do practically anything within reason with your bought CDs, such as making a copy at convenience, lending the CD to a friend, etc. – and they expect similar rules to apply for “legally” downloaded songs. Another, rather controversial, method that could be used to prevent “illegal” P2P file sharing is to infect the system with malignant “anti-piracy” viruses, which has just started to appear in P2P networks [17]. Some even argue that the music industry is responsible for these occurrences, though there is no evidence to back such an accusation. Furthermore, actions like this could easily backfire, resulting in evermore troublesome bad-will and bad business.

In the wake of the “intrusive investigation” mentioned in the introduction, lawsuits against the initial plaintiffs have been coming thick and fast. One reason is that the Swedish Anti Piracy Bureau had used a mole inside the ISP organisation to secure evidence in advance, or to “plant evidence” according to some critics. Another reason is that the listed works, in fact, were not found. This is, by some, proof that the investigation was illegal, based on guesses or defiance, or that the problem is not as big as the music industry implies. The Swedish Data Inspection Board stated in early June [18] that the actions taken by the Swedish Anti Piracy Bureau where in fact violating the Personal Information Act (personuppgiftslagen). It is only legal for public bodies to register information on criminal activities. Public manifestations against intrusiveness and control mechanisms have been organised by “pirates” in various places of the world, and at some occasions anti-piracy organisations have tried to intervene, both legally and illegally [19].

The second option will be viewed by content owners as somewhat controversial. This would require that the whole online music distribution must be redesigned in order to function. The idea is inspired by the non-intrusive model used by collecting societies all over. The approach is to monitor all transfers of music files through P2P networks, web pages etc. and by doing so gaining an overview of how collected money is to be distributed. How the money should be collected is debatable, but there are several alternatives that can be used, e.g. included in the subscription fee for the broadband service. This strategy is not intrusive since only the traffic is monitored, and not by whom a file is downloaded.

7. Conclusions

Our research has shown that the media industry has always been very reluctant in implementing new technology. This phenomenon can be enlightened with several examples, one being the introduction of the radio. However, once demand from the public has reached a critical level, the industry has been forced to accept a change. These changes have then proved to benefit both parties resulting in higher earnings for the industry. The same resistance to adopting new solutions can be clearly observed in the digital music industry.

Since P2P services enable lower costs, more power and more efficient utilisation of resources, they can be of crucial importance for businesses in the future. Although there are
many advantages with P2P services there are still several areas that need to be investigated or improved, in particular how property rights should be managed in such environments.

Even though an entirely new distribution channel has been revealed with the advent of Internet, music services, for instance, have not yet been able to fully exploit its potential. As a consequence, the public has not embraced en masse available “legal” services even though one can see the huge popularity of the so-called “illegal” P2P-networks.

Internationally, voices have been heard stating that the music industry will win the fight to get the legislation they want, but they will loose the battle against technology development, and always have. The music industry, though, will eventually, in its turn, overcome this obstacle and regain control.

There is a need to investigate further the qualities of the physical/virtual relationships in these contexts, and to verify with tests that suitable combinations of physical/virtual products and services can provide both consumers and content owners with greater possibilities to experiment with new applications

References

[8] “Ser pengar i gratismusiken” (Money to make in free music, in Swedish), Dagens Industri, March 31, 2004, ISSN: 0346-640X