Institut für Rundfunkökonomie
an der Universität zu Köln

Bastian Keller

Digital Media Content Provision without Copy Protection as an Alternative Business Model

**Working Papers of the
Institute for Broadcasting Economics
at the University of Cologne**

No. 245

Cologne, in May 2008

Arbeitspapiere des Instituts für Rundfunkökonomie

Working Papers of the Institute for Broadcasting Economics

ISSN der Arbeitspapiere: 0945-8999
ISSN of the Working Papers: 0945-8999

ISBN des vorliegenden Arbeitspapiers 245: 978-3-938933-49-7
ISBN of the Working Paper at hand: 978-3-938933-49-7

Schutzgebühr 15,- €
Price 15,- €

Die Arbeitspapiere können im Internet eingesehen und abgerufen werden unter der Adresse http://www.rundfunk-institut.uni-koeln.de

The Working Papers can be read and downloaded from the Internet URL http://www.rundfunk-institut.uni-koeln.de

Mitteilungen und Bestellungen richten Sie bitte per E-Mail an: rundfunk-institut@uni-koeln.de oder an die unten genannte Postanschrift

Messages and Orders to the Institute can be sent via Email to: rundfunk-institut@uni-koeln.de *or to the mailing address below.*

Institut für Rundfunkökonomie

an der Universität zu Köln

Hohenstaufenring 57a
50674 Köln
Germany
Phone: (0221) 23 35 36
Fax: (0221) 24 11 34

Bastian Keller

Digital Media Content Provision without Copy Protection as an Alternative Business Model*

* Slightly modified version of a thesis that was supervised at the Institute for Broadcasting Economics and accepted by the Faculty of Management, Economics and Social Sciences of the University of Cologne in winter term 2007/2008.

List of Figures

List of Abbreviations

AHRA	Audio Home Recording Act
ATRAC3	Adaptive Transform Acoustic Decoding 3
BMI	Broadcast Music Incorporated
BSA	Business Software Alliance
CD	Compact Disc
CERN	Conseil Européen pour la Recherche Nucléaire
CPM	Cost Per Mille
DMCA	Digital Millennium Copyright Act
DRM	Digital Rights Management
DRMS	Digital Rights Management System
DVD	Digital Versatile Disc
EDGE	Enhanced Data Rates for GSM Evolution
EUCD	European Union Copyright Directive
GSM	Global System for Mobile communications
IFPI	International Federation of the Phonographic Industry
IIPA	International Intellectual Property Alliance
IP	Internet Protocol
ISP	Internet Service Provider
IZV	Internet Zahlungssysteme aus der Sicht der Verbraucher
kbps	Kilobit per second
Mbps	Megabit per second
mp3	Moving Picture Experts Group -1 Audio Layer 3
MPAA	Motion Picture Association of America
MPEG	Motion Picture Experts Group
MPEG-4	Motion Picture Experts Group -4
OECD	Organisation for Economic Co-operation and Development
openMG	Open Magic Gate
PDA	Personal Digital Assistant
PDF	Portable Document Format
P2P	Peer-to-Peer
PSP	PlayStation Portable
PwC	PriceWaterhouseCoopers

Cont. List of Abbreviations

RIAA	Recording Industry Association of America
TCP/IP	Transport Protocol – Internet Protocol
TRIPS	Agreement on Trade Related Aspects of Intellectual Property Rights
UMTS	Universal Mobile Telecommunications System
VAS	Value Added Services
WCT	WIPO Copyright Treaty (WCT)
WIPO	World Intellectual Property Organization
W-LAN	Wireless Local Area Network
WMA	Windows Media Audio
WPTT	WIPO Performances and Phonograms Treaty
WTO	World Trade Organization
WTP	Willingness-To-Pay
WWW	World Wide Web

1. Introduction

Digital media content as opposed to physical content has no built-in copy protection. Every copy made has the same quality as the original. Moreover, digital copying is fast, unlimited and hardly causes costs. The result is a widespread habit of copying digital media content from friends or through file-sharing networks. As copies act as substitutes to the original content, they diminish revenues and harm the providers of digital media content. Content as intellectual property is protected by copyright law, but enforcement by litigation alone is not effective. In consequence, providers attach copy protection measures to their content. These are intended to technically exclude illegal consumers. However, copy protection techniques can be circumvented and regularly published statistics show that technical exclusion fails to solve the issue of digital copying.

The discussion about copying is mainly led by two opposing parties (Ohly 2008, p. 10). On the one side there are the content creators and providers and their umbrella organisations, e. g. the International Federation of the Phonographic Industry (IFPI), the Motion Picture Association of America (MPAA), and the Recording Industry Association of America (RIAA). They advocate copy protection techniques as one measure to fight digital copying, take legal actions, and try to make consumers aware of illegality and illegitimacy of copying. On the other side there are the consumers of digital media content and consumer rights organisations, e. g. the Electronic Frontier Foundation (EFF). Although copying digital media content, which is not for private use only, violates the providers' rights, many consumers do not accept the technical enforcement of these rights. The attachment of copy protection techniques often strongly restricts the usability of digital media content. From the consumption of physical products, consumers are used to have free availability over their purchases. Most consumers demand the same for digital media content.

Because business models ultimately depend on the consumers' wants and needs, an adoption seems to be inevitable. According to Picard (2002, p. 26), business models depend upon a variety of different factors. As an industry's environment changes over time, these factors might change as well (Picard 2002, p. 26). Thus, established and previously successful business models might not be viable any more, while new business models might become feasible.

On February 6, 2007, Steve Jobs, chairman of Apple Inc., published an open letter in favour of providing digital music without copy protection (Jobs 2007, February 6). With his paper he seeks to convince the four major music labels, Universal Music Group, Sony BMG Music Entertainment, EMI Group and Warner Music Group (as producers of digital music content) to act accordingly. By now, with the Universal Music Group and the EMI Group, two of the big four music labels already provide digital music content (partially) without copy protection (Grossman 2007, April 26; Schofield 2007, February 15). Likewise, software providers seem to tolerate a certain degree of (illegal) copying. Microsoft, for example, recently removed a technological protection measure, which previously hindered the browser installation on copied Windows versions (Microsoft 2007,

October 4). These examples indicate that, although provision with copy protection is intuitionally and conventionally seen as beneficial for providers, there is economic reasoning also for abandoning copy protections.

Accordingly, this paper understands the abandonment of copy protection techniques as a chance to establish alternative business models. It shows from a business perspective that copying does not have only negative impacts on providers of digital media content and explains positive effects of copying. The ultimate objective of this paper is to explain alternative business models for the provision of unprotected digital media content and to discuss whether these potential business models qualify to endow content providers with sustaining profits.

After providing the necessary fundamentals of digital media content in chapter 2, chapter 3 explains a typical business model of providing copy-protected digital media content. Chapter 4 then shows, how this business model is threatened and it presents the threatening factors as drivers towards alternative business models. Chapter 5 develops potential alternative business models without copy protection and chapter 6 discusses these models in detail and for different types of digital media content. Chapter 7 finally discusses consequences of these alternative business models for content providers, society and the legislator. Chapter 8 concludes this paper.

2. Fundamentals of Digital Media Content

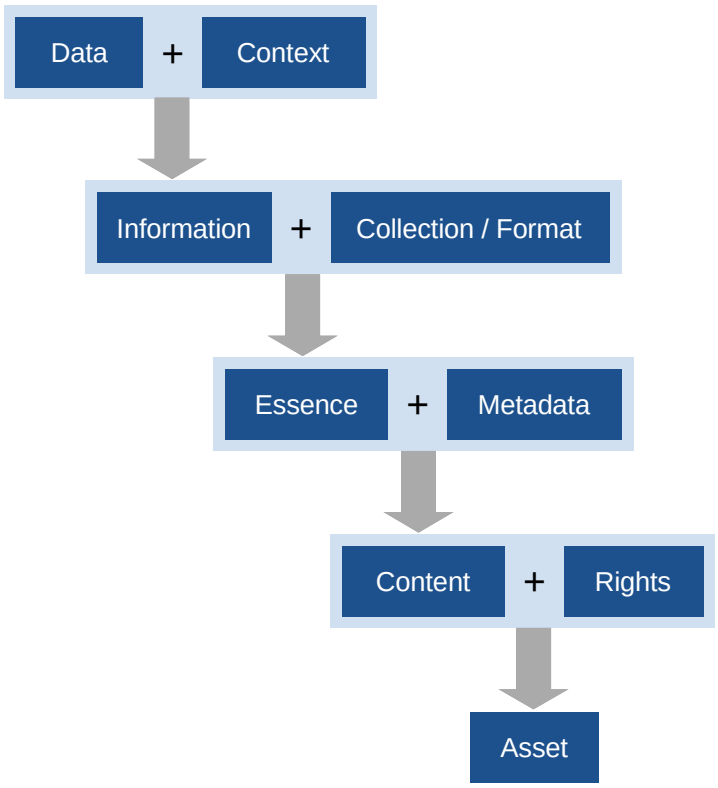
This chapter describes the fundamentals of digital media content. First, the term digital media content is defined and distinguished from similar and connected terms (section 2.1). Then, it will be shown how digital media content has been enabled and is further driven by technological developments (section 2.2.).

2.1. Definition and Disambiguation of Digital Media Content

While many authors talk about innovative products, enabled by the phenomenon digitisation, a wide range of different expressions exists to describe the goods exchanged in the so-called digital market, e. g. “information content” (Hayn 1995), “information goods” (Varian 1995; 1998), “information products” (Kotkamp 2000), “digital content” (Fetscherin 2005), “digital goods” (Quah 2002), “digital products” (Hui and Chau 2002), “online delivered content” (Loebbecke 1999; 2001), etc. By using expressions that already name a supposedly important characteristic of the respective good (“digital”, “online delivered”, “information”, “experience”), every author wants to include more or less in his or her definition. As therefore no unambiguous expression exists, the term used in this paper, “digital media content”, shall be defined.

Here, digital media content shall be understood in the broad sense of edited or processed information (compare Brack 2003, p. 13). Figure 1 shows this process.

Figure 1:
Composition of Assets Based on Digital Media Content

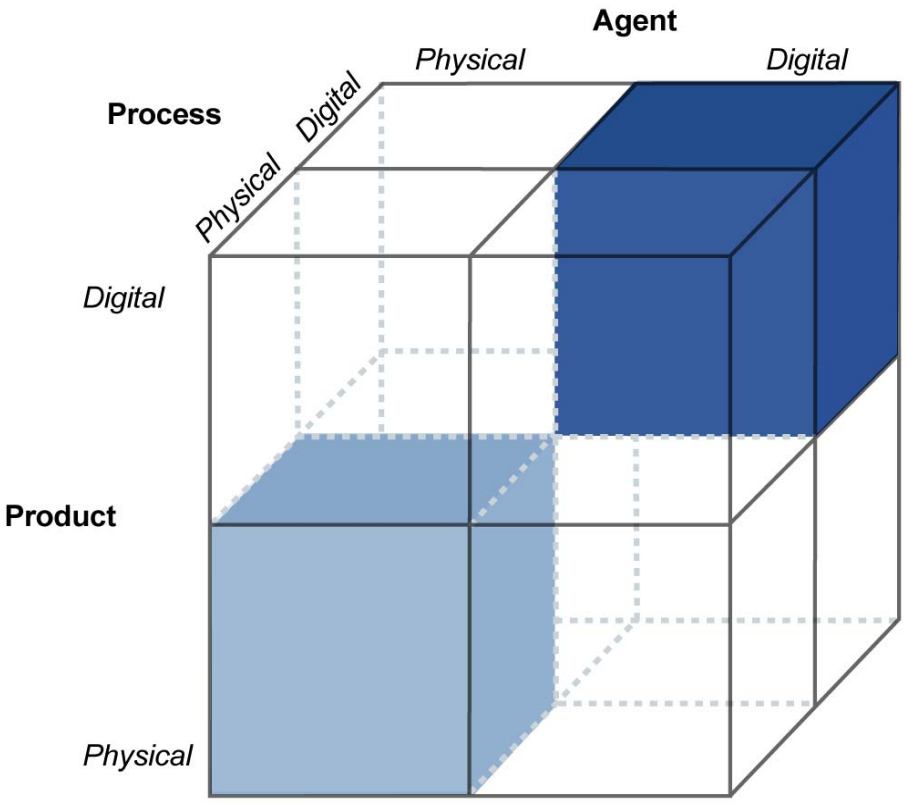


Source: own illustration based on Hass (2006, p. 379) and Rogge (2007, p. 13)

According to Hass (2006, p. 379), information consists of data, which is put into a specific context. Similarly, Bode (1993, pp. 12-13) understands information as parts of knowledge, which he defines as the symbolic representation of reality or fantasy on storage media. In contrast to content, information alone cannot be commercially used. To receive content, the information has to be edited in some way, put into a specific format as e. g. text, audio, video etc. (Anding 2004, p. 20; Hass 2006, p. 379) and the resulting essence has to be supplemented with content-related metadata such as title, author, etc. (Pagel 2003, as cited in Hass 2006). Figure 1 further shows that content supplemented with rights constitutes an asset for content providers. Subsection 3.1.1. will further explore and specify these rights.

According to Shapiro and Varian (1999), information includes “anything that can be digitized” (p. 3). In turn, this statement shows that information can also be put into a physical form. The inclusion of the word “digital” in the term digital media content emphasises that the content analysed in this paper is not physical. Figure 2 shows market areas depending on which market dimensions are digital (or intangible) as opposed to physical (or tangible).

Figure 2:
Market Areas Depending on Which Components are Physical or Digital



Source: own illustration based on Choi et al. (1997, p. 20) and Loebbecke (2001, p. 27)

Of the three market dimensions proposed by Choi, Stahl and Whinston (1997, p. 17), only one, two, or all three dimensions can be digital. While the meaning of the term ‘product’ is rather clear, ‘agent’ stands for all players engaged in a market transaction while ‘process’ refers to e. g. production, product search, product selection, ordering, payment, delivery, consumption, etc. (Choi et al. 1997, p. 18).

The lighter area in figure 2 shows the market of traditional goods in which the product, the processes and the agents are physical, e. g. a book (physical product) sold in a bookstore (physical agents and processes). The growing digitisation more and more enables components to be digital rather than physical. For example, a book sold via an online shop (as Amazon.com) has some digital components: the agents interact digitally through the website and with product searches, product selection, ordering and payment some of the related processes are digital. Still, in this example the product itself as well as some of the processes (production, delivery and consumption) are physical.

In contrast to this market of traditional goods, the darker area in figure 2 shows the market of digital goods, which is of interest here. This market is “fully-digital” (Choi et al. 1997, p. 17), as all three components are digital: the whole commercial cycle of these digital goods does not have any physical (or tangible) component; they are produced, delivered and consumed using digital infrastructure only (Loebbecke 2001; 2002).

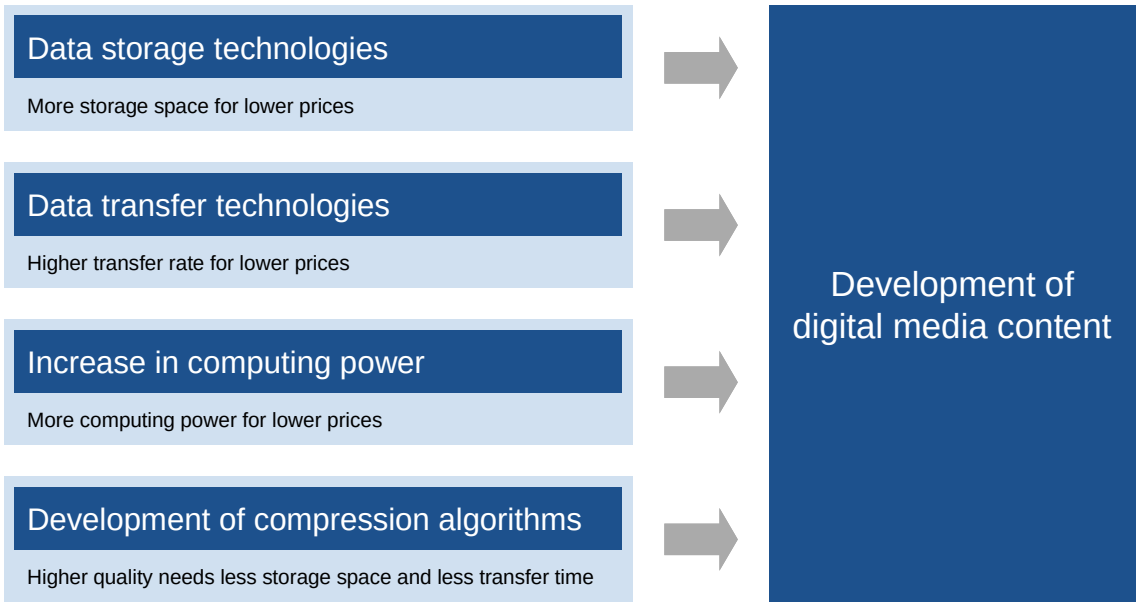
In conclusion, the expression “digital media content” refers to processed information, which is produced, distributed and consumed in a completely digital commercial cycle.

2.2. Development of Digital Media Content

According to Loebbecke (2002), digital media content is the core of the new digital economy. This section shows the driving technological developments leading to the ongoing establishment of digital media content, gives examples of various types of digital media content, and proves Loebbecke’s statement, showing the relevance of digital media content as of today.

New technologies, which Loebbecke (2006, pp. 360) merges to the expression Information-, Communication- and Media-Technologies (ICMT), enable production, manufacturing, transfer, and usage of innovative digital goods. Loebbecke (2006, pp. 360-361) explicitly names the performance increase in data storage technologies and data transfer technologies, the increase in computing power, and the development of compression algorithms (see figure 3) (also compare Fetscherin 2003, p. 301; Hill 2007, p. 10; Sandulli 2007, pp. 325-326).

Figure 3:
Technologies as Drivers for Digital Media Content



Source: own illustration

Data storage technologies

Nowadays, many possibilities exist to store data: mobile devices as mobile phones, organizers, personal digital assistants (PDAs), mp3-players, mobile data storage devices as e. g. Compact Discs (CDs) and Digital Versatile Discs (DVDs), and hard disks for personal computers and servers (Rogge 2007, p. 20). Over the years, storage space consistently increased immensely while prices decreased in the same time (Loebbecke 2006, pp. 360-361). This enables consumers to acquire, consume and archive high quantities of digital media content.

Data transfer technologies

Digital media content can be acquired on mobile data storage devices as carrier media, e. g. music albums on CDs, software on CDs, movies on DVDs, and books as hardcopies. For a longer time already, streamed media content can be consumed via radio electronics, e. g. radio and TV broadcasting. However, in recent time newer technologies have arisen, which have enabled the development of digital media content (Sandulli 2007, p. 326). First and foremost to be mentioned is the Internet. Originating in academics and military (Peter 2004b), the Internet was opened to everybody especially by the non-linear protocol World Wide Web (WWW). Developed in 1991 by Tim Berners-Lee, the WWW made it possible to display and exchange not only text, but also pictures and sounds (Peter 2004a). Many foundations of the WWW were already invented before, like packet switching (developed in 1969 by Arpanet), the 'Transport Control Protocol – Internet Protocol' (TCP/IP; publicly demonstrated by its group of developers in 1972) and Hypertext, which enables linking between different websites, using so-called hyperlinks (Peter 2004b; 2004a). It was the WWW that brought all of these together, so websites could be accessed using brow-

sers, being available from 1992 onwards (Peter 2004a). On April 30, 1993, the directors of the Conseil Européen pour la Recherche Nucléaire (CERN) declared the WWW technology to be accessibly by everyone and free-of-charge (Peter 2004a). Since then, data transfer speed was increased enormously (Loebbecke 2006, p. 361) by ever new digital data transfer technologies, also referred to as 'broadband internet access' or simply 'broadband'. Nowadays, companies as well as private households access the Internet with transfer rates sufficient to conveniently transfer digital audio as well as video content and even video streaming in an acceptable quality (OECD 2004, p. 8). According to the Organisation for Economic Co-operation and Development (OECD 2004, p. 8), however, data transfer rates of 10 to 100 Mbps are necessary to establish audiovisual services based on subscription. As of today, common ASDL or cable networks reach only the lower end of this range. For example, referring to research by National Statistics, the BBC (2007, November 21) states that only 4 % of questioned Britons used broadband access faster than 8 Mbps in September 2007. However, further increase in transfer rates can be expected in near future, which will further increase convenience and quality of provided content. Already in many OECD countries fibre-optic cable networks are build, which would fulfil above mentioned data transfer rate requirements (OECD 2004, p. 8). In the same time, wireless data transfer technologies already increase mobility and convenience. Computers and mobile devices can access the Internet wirelessly through so-called Wireless Local Area Networks (W-LANs) and telecommunication networks. According to Döring and Dietmar (2005, p. 551), as of today the fastest established W-LAN standard is the IIEE 802.11g with data transfer rates up to 54 Mbps, while the fastest established telecommunication network standards are the Enhanced Data Rates for GSM Evolution (EDGE) with up to 384 kbps and the Universal Mobile Telecommunication System (UMTS) with up to 2 Mbps.

Increase in computing power

A phenomenon, formerly known as Moore's Law, is the quadruplication of computing power every 30 months (Tapscott 1996, p. 126). This increase in computing power also drives the manufacturing, transfer, and usage of digital media content. For example, according to International Herald Tribune (Markoff 2007, November 12), Intel plans new microprocessor chips, based on a new technology that is intended to enable high-definition and full-screen video over the Internet.

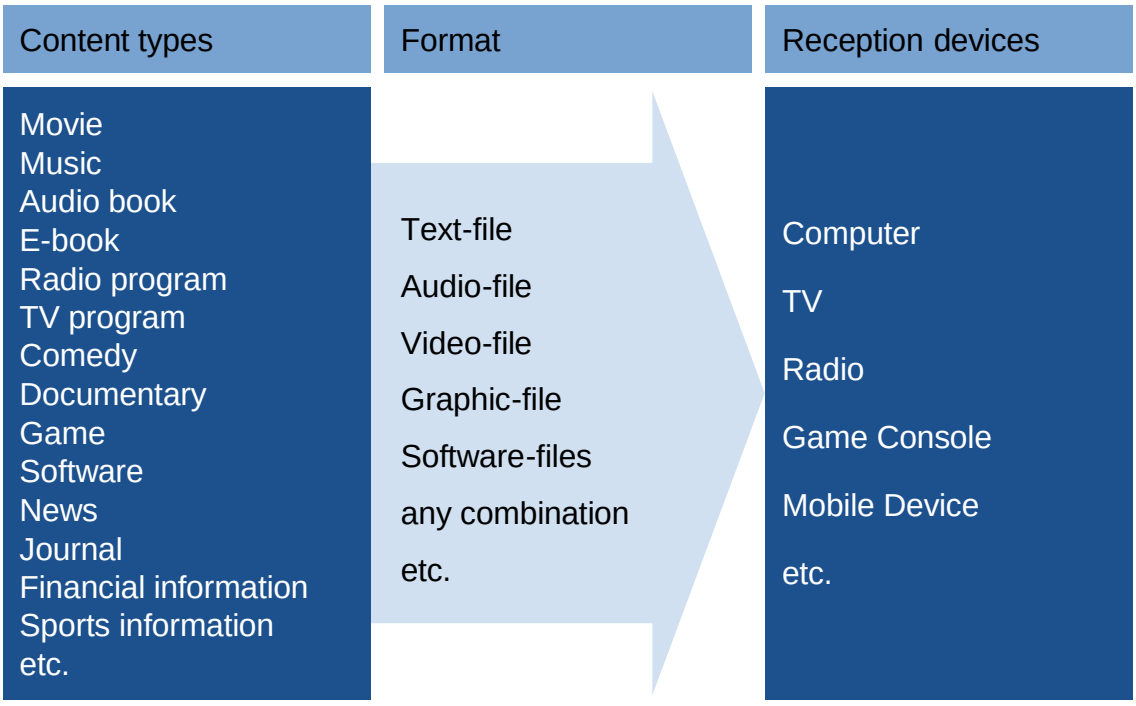
Development of compression algorithms

The development of compression algorithms, as the audio encoding format 'Moving Picture Experts Group -1 Audio Layer 3' (mp3) and the audiovisual encoding format 'Moving Picture Experts Group -4' (MPEG-4) has enabled the reduction of file sizes without big quality losses and, in this way, has driven the distribution of digital media content. (Loebbecke 2006, p. 361; Sandulli 2007, p. 326). Codecs such as DivX (based on MPEG-4) for audio-video files and mp3 for audio files, work as de-facto standards for digital media content (Reimer 2007, November 13).

Besides enabling production, manufacturing, transfer, and usage of innovative digital goods, these technological developments disintegrate content and medium, i. e. the content is uncoupled from the device (Hass 2006, p. 377). This leads to the convergence of media, communication, and information technology industries (Brack 2003, p. 2; Rosenbach and Schmundt 2007) and to the multiplication of formats and devices (Hass 2006, p. 377). So, manufacturers of computers, mobile phones, as well as providers of search engines, music, Internet access, and telecommunication, who formerly competed in separate markets, now compete in one converged market (Rosenbach and Schmundt 2007). The trend is to be able to view every kind of content on every kind of device and whenever the user wants (Rosenbach and Schmundt 2007).

Nowadays, many different types of digital media content as well as devices to play digital media content are available. Movies, music, audio books, e-books, radio and TV program, comedies, documentaries, games, software, and information (news, financial information, sports information, etc.) are offered as free or paid content in the form of audio-, video-, graphic-, text-, software-files, or combinations of these and can be consumed using computers, TVs, radios, game consoles, and mobile devices (Stahl, Siegel and Maass 2004, pp. 26-28; Theysohn, Prokopowicz and Skiera 2005, p. 172). Figure 4 illustrates that, as a result of convergence, almost each of the different types of digital media content can be used on almost each of the reception devices. While some of the examples are already more or less established, others are only appearing now, as it is the case e. g. with digital mobile content (Breunig 2006). Others again may be developed in the future.

Figure 4:
Types of Digital Media Content in the Eye of Convergence



Source: own illustration

In recent years, the distribution of digital media content has established itself (Stahl et al. 2004, p. 13). The so-called digital market is growing (Stahl et al. 2004, pp. 3, 171; Theysohn et al. 2005, p. 170) and digital products are becoming more and more important (Loebbecke 2001, 24). One survey in March 2006 on behalf of the University of Karlsruhe, the 'Internet Zahlungssysteme aus der Sicht der Verbraucher 8' (IZV8), showed that 64,9 % of consumers have already bought digital goods via Internet and 95.3 % think, they would buy digital goods in future (again). (Krüger, Leibold and Smasal 2006, pp. 12-12). Consumers have already bought the following types of digital media content via Internet: software 70 %, music 50.2 %, articles/news 36.8 %, non-fictional literature 29.7 %, e-books 23 %, games 27.1 %, and movies 10 % (Krüger et al. 2006, p. 13).

Still, the market will probably grow further. According to Stahl et al. (2004, p. 31-32), the digital market is not saturated yet, as would be shown by growth rates like the increase of offers by more than 72 % from July 2002 to July 2003. In interviews conducted among managers on two important trade fairs[1] in the year 2004, 65 % thought the market would grow constantly within the following five years, whilst 35 % even thought the market would grow very strongly (Theysohn et al. 2005, p. 173). According to ScreenDigest (OECD 2006, p. 17) the revenue of broadband content in 2005 amounted to US$ 186 million in Europe and to US$ 587 million in the USA. For the following five years the research company assumed a further market growth of 1,344 % (amounting to US$ 2.5 billion in 2010) in Europe and of 954 % (amounting to US$ 5.6 billion) in the USA (OECD 2006).

[1] CeBit and Leipzig Book Fair

3. Business Model of Digital Media Content Provision with Copy Protection

Amit and Zott (2000) define a business model as the “architectural configuration of the components of transactions designed to exploit business opportunities” (p. 13). Similarly, Stähler (2001, p. 41-42) defines a business model as the concept of a company’s business, which consists of the three main elements value proposition, architecture of value creation (subsequently reduced to the architecture of the value chain) and revenue model. Like the business model itself, this separation is abstract and is made in order to enable and structure description as well as analysis (compare Stähler 2001, p. 42).

In this chapter, a typical business model of providing copy-protected digital media content is illustrated. This business model relies on the attachment of a copy protection to copyrighted digital media content. Consequently, this chapter starts with explaining the legal framework for protecting creators of content and its enforcement (section 3.1), before following Stähler’s concept to show value chains (section 3.2), revenue models (section 3.3), and value propositions (section 3.4) for providing digital media content with copy protection.

3.1. Copyright Protection as a Prerequisite

First, subsection 3.1.1 explains the general concept of copy protection. Then, a separate section shows, how the accompanying rights can be transferred or licensed (subsection 3.1.2), before the explanation of copyright laws is extended to digital media content (subsection 3.1.3). Finally, it is described, how different copy protection techniques are intended to enforce the copyright protection of digital media content (subsection 3.1.4).

3.1.1. General Concept of Copyright Protection

Fundamental to the creation of content is the existence of incentives (Ohly 2008, p. 3). As the creation of content causes costs to the individual or company creating content, nobody would decide to get active, if these costs would not be overcompensated by certain benefits (compare Besen and Raskind 1991, p. 5). Fundamentally different models to provide these benefits are possible. The existing legal mechanism for the provision of incentives is copyright protection. The focus of this paper is on testing alternative business models without copy protection that do not depend on changing existing copyright law. The legal framework for copyright protection is explained in the following.

The first governmental protection of creators of content was the Copyright Act in England, also known as Statute of Anne, which was passed as early as 1710 to protect authors of printed work (Detering 2001, p. 28; Varian 2005, p. 122). The statute explicitly explained its motivation to encourage the creation of content by

protecting authors from the commercialisation of their work by others.[2] Other countries followed and adopted this concept of copyright protection (compare Varian 2005, pp. 122-124), so nowadays governments protect works, or in other words content, to encourage their creation. Very general, creators of content are by law provided with rights that enable them to control the usage of their content and get compensated if desired (Loebbecke 2002, p. 639). Hence, creators are protected against any unwanted usage of copyrighted content (Fechner 2006, p. 257).

Ideas alone do not fall under copyright protection (e. g. US Copyright Act, Art. 17 U.S.C. §102b), they must be expressed in some way or put into a certain form (Varian 2005, p. 124). According to Brack (2003, p. 17), the creator of media content juristically creates two goods, a component carrying the idea or content in the strict sense and a format. Only the combination of both qualifies for copyright protection (Brack 2003, p. 17). Brack's statement is in line with figure 1 in section 2.1, which shows the composition of assets based on digital media content. Figure 1 in section 2.1 also shows that content is defined as being information supplemented by a format. In short: information that is put into a format and supplemented by metadata constitutes content and potentially falls under copyright law. To qualify for copyright protection, according to Brack (2003, pp. 151-152), it is sufficient if information is arranged individually in the way that collection or form or the combination of both base on the creator's individual idea and are brought to the awareness of others. It is also shown in figure 1 (section 2.1), that content, which is supplemented by rights, represents an asset. The respective set of rights is the copyright and the accompanying exclusive rights. These rights enable the creator of content to exploit and commercialise his or her creation and protect his or her work by excluding others from these rights.

Generally, every country has its own legal system. Likewise, copyright law is a national construct. However, along with globalisation, standards obligatory for more than one country have been applied, especially through the Berne Convention for the Protection of Literary and Artistic Works (subsequentially referred to as Berne Convention) from 1886 and the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) from 1986. The Berne Convention was the first international agreement on harmonised systems for copyright protection (Scotchmer 2004b, p. 419) (p. 419). The TRIPS installed minimum standards for enforcement and protection of intellectual property, obligating all members of the World Trade Organization (WTO) including the United States of America and the European Union (Bauchner 2002, as cited by Bates

[2] The original reads: "Whereas Printers, Booksellers, and other Persons, have of late frequently taken the Liberty of Printing, Reprinting, and Publishing, or causing to be Printed, Reprinted, and Published Books, and other Writings, without the Consent of the Authors or Proprietors of such Books and Writings, to their very great Detriment, and too often to the Ruin of them and their Families: For Preventing therefore such Practices for the Future, and for the Encouragement of Learned Men to Compose and Write useful Books" (Tallmo n. d.).

2004, p. 238). In result, there are many differences, especially in details, but the concept of copyright protection is essentially the same worldwide. Therefore, this paper explains the concept of copyright law in general terms. However, where necessary and applicable, details are explained according to US and/or EU jurisdiction.[3]

If content qualifies for copyright protection, it is protected automatically in the moment of its completion (Picot 2003, p. 5; Varian 2005, p. 124). In US law as in German law, intellectual property is protected for the length of its creator's lifetime plus 70 years (Detering 2001, p. 29; Fechner 2006, p. 257). After this time, the respective work enters the so-called public domain, where everybody can use it the way he or she wants to (Fechner 2006, pp. 257-258).

The copyright owner holds a number of exclusive rights. US law, for example, grants the exclusive rights to reproduce, distribute, perform and display the original as well as to prepare works derivate from the original (US Copyright Act, Art. 17 U.S.C. §106). 'Exclusive' means that no other is allowed to do any of these without the explicit permission of the copyright holder (Deak 2004, p. 99).

In addition to protecting copyright holders, copyright law is intended to protect consumers as well (Harper and Row 1985, as cited by Lackman 2003, p. 1199). They shall be enabled to appropriately use content they legally received. In the EU, exceptions are called private use and generally accepted are "private use, parody, quotation, use for teaching or scientific purposes and other exceptions for archives and libraries" (Lucchi 2006, p. 4). In US law, exceptions are called fair use (Lucchi 2006, p. 4). Here, the US Copyright Act (Art. 17 U.S.C., §107) allows usage of copyrighted content for properly attributed quotes, book reviews, teaching scholarships, and research (compare Deak 2004, p. 99; Lucchi 2006, p. 4). However, it is the courts that ultimately have to decide by balancing copyright protection on one side and consumer protection on the other side, if certain usage of copyrighted content falls under personal usage or is copyright infringement (Bates 2004, p. 233).

The Statute of Anne and following copyright laws started with protecting books from infringements (see above). Nowadays, a broad range of content is protected (compare Deak 2004, p. 99; Fechner 2006, p. 257). US law, for example, lists literary, musical, dramatic, choreographic, pictorial, graphic, sculptural, audiovisual, and architectural works as well as motion pictures, pantomime, and sound recordings (US Copyright Act, Art. 17 U.S.C., §102a). Content created may contain more than one work; so more than one creator might be engaged and protected (Bates 2004, pp. 232-233). For example, a movie certainly contains sound recordings.

---

[3] Even if only the EU perspective was of interest, one would have to understand US legislation because it shaped legislation in the EU as being preceding in the adoption of copyright law to the threats of digital copying (Bates 2004, p. 238).

3.1.2. Licensing and Transfer of Copyright

It has been seen so far that the content creator is able to commercialise his own creation through licensing. As being the copyright holder, the creator of content is entitled to transfer all or some, or even only a subdivision, of the exclusive rights to others (US Copyright Act, Art. 17 U.S.C., §201d). US copyright law distinguishes between a transfer of all exclusive rights, the so-called 'outright assignment', and a limited transfer, which is referred to as 'licensing' (Tysver 1996-2007). Generally, as a compensation for the transfer of rights, the (original) copyright holder receives royalties, also called license fees (Besen and Raskind 1991, p. 13).

In licensing, the copyright holder transfers (on a non-exclusive basis) one or more exclusive rights to a third party while maintaining their ownership (Tysver 1996-2007). For example, a musician can transfer the right to reproduce and to distribute to a music label. This comprises also the case where content is licensed directly to the consumer. Software providers, for example, license their software to users. The consumer does not purchase the content but only its license. Consequently, the consumer is restricted in its usage. He or she may only be allowed to use the software for a restricted time frame. He or she is probably also denied to create derivative works. The same applies to a consumer purchasing a CD. He or she is the owner of the CD itself, however not of the content on the CD. While the purchaser is allowed to whatever he or she wants to do with the data carrier, he or she is not allowed to reproduce its content.

Through an outright assignment, not only all the exclusive rights are transferred to a third party, but also their ownership (Tysver 1996-2007). In consequence, the original creator is no longer the copyright holder (Tysver 1996-2007). In this way, the exclusive rights accompanying the copyright can be transferred to companies like publishers, labels, etc., who can exploit the respective content (Besen and Raskind 1991, p. 13). The conditions of these licensing contracts can be arranged individually and are therefore subject to contractual bargaining (Besen and Raskind 1991, p. 13). For, example, the musician from above can alternatively transfer all exclusive rights to the music label. The music label can then e. g. choose to derivate works from the original or license its performance.

A special instance, where copyright rights are transferred, is the so-called "work for hire" (US Copyright Act, Art. 17 U.S.C., §201b). This general industry practice occurs when a work is created by employees, i. e. made "for hire" (Besen and Raskind 1991, p. 14). Then the employer, not the creator(s), is automatically the copyright holder with all its accompanying exclusive rights (US Copyright Act, Art. 17 U.S.C., §201b). For example, the animation studio DreamWorks hires a team to produce an animation. After its termination DreamWorks is the copyright owner of the respective work and is authorised to execute any of the exclusive rights as well as to license the animation.

The concept of licensing is the same among different countries. However, as there are differences in copyright law (compare previous subsection), there are as well differences in licensing. In German legislation, for example, the copy-

right is inseparably connected with the creator and cannot be transferred to others, unless it is inherited. (Brack 2003, pp. 153-155). Yet, there are contractual possibilities. One extreme example in German copyright legislation is the so-called Buy-out. With this contract, creators of content are able to provide third parties with unlimited usage rights in exchange for a one-time compensation (Jani 2003, p. 7).

Often, the individual creator is not in the position to exploit its creation alone. To nevertheless make a living on its creative skills, he or she is dependent on somebody contracting him or her, might this be in the form of licensing, work for hire, or even through a buyout-contract. The creator might not even be in the position to produce its creation on his or her own. For example, in animation production a whole team is needed to finish a work. As every individual is generally free to decide how to use its creative skills, he or she chooses amongst the existing options that one, with which he or she hopes to benefit the most. Generally, copyright holders are free to decide on licensing (Tysver 1996-2007). Yet, as Liebowitz and Watt (2006, p. 535) criticise, buy-out contracts often base upon force. It is the relative market power traditionally owned by these companies that puts creators of content in the weak position of not seeing a better option, as making a living through buyout-contracts or work for hire.

3.1.3. Copyright Protection of Digital Media Content

While physical goods have a natural, built-in copy protection so that copying is costly and the quality of a copy generally speaking cannot reach the quality of the original (Shy 2000, p. 100), digital media content can be reproduced and altered easily (Brack 2003, p. 18). If not copy-protected, copies of digital media content can be made indefinitely, cheap, fast, and with the same quality as the original, while the original does not have to be moved (Brack 2003, p. 148; Shy 2000, p. 104; Hass 2006, p. 382). In fact, a high number of copies can circulate originating from one original only (Shy 2000, p. 102).

This phenomenon of digital copying leads to the non-excludability of digital media content consumption. Because digital media content can be shared limitless through digital networks, the industry is in threat of illegal copying and copyright law is even more important in the context of digital media content (Choi et al. 1997, p. 200; Peiser 1999, p. 132; Loebbecke 2002, p. 639; Bates 2004, pp. 231-232; Stahl et al. 2004, p. 23). However, it was not constructed for digital media content. The ease of digital copying caused a tremendous increase in copyright infringements (see section 4.3 below). As a consequence, it is hard to maintain the balance between copyright protection and consumer protection. Nevertheless, during the last years international organisations and governments tried to restore this balance through changes of and amendments to existing copyright laws (Loebbecke 2002, p. 639). Most important were the Audio Home Recording Act and the Digital Millennium Act in the USA, the EU Copyright Directive in the EU, and the international WIPO treaties. In the following, these regulations are explained in chronologic order, followed by a conclusion of their consequences for digital media content.

The Audio Home Recording Act (AHRA) of 1992 was the first intend to address digital copying (Bates 2004, p. 233). Through the AHRA, US legislation mandated the integration of copy protection into so-called digital audio recording devices and established compensation payments to copyright holders (Bates 2004, pp. 233-234). By trying to prevent the piracy of audio content on one side and compensation payments on the other side, the AHRA tried to find the balance between copyright protection and consumer protection (Hepler 2000, p. 1178). However, because it defined music recording as being material, it exempted personal computers from the list of digital audio recording devices and for that reason failed to protect copyright holders from piracy (Bates 2004, p. 234).

In 1996, the World Intellectual Property Organization (WIPO) was established with the intention to extend existing copyright protection standards to electronic copyright protection internationally (Bauchner 2002, as cited by Bates 2004, p. 238). In the same year it proclaimed two treaties obligatory for countries joining the treaties: the WIPO Copyright Treaty (WCT) and the WIPO Performances and Phonograms Treaty (WPPT) (Bates 2004, pp. 238-239). Both treaties mandate technological copy protection, also called Digital Rights Management System (DRMS) (see next subsection for more detail) and require countries to provide legal remedies against the circumvention of copy protection measures (Bauchner 2002, as cited by Bates 2004, p. 239).

To incorporate the WIPO treaties into US law, Congress passed the Digital Millennium Copyright Act (DMCA) in 1998 (Bates 2004, p. 235). As already the WIPO treaties, it transferred protection from the content itself to the technological devices that carry it (Deak 2004, pp. 111-112). The DMCA explicitly grants certain fair use exemptions (US Copyright Act, Art. 17 U.S.C. § 1201d). However, while the AHRA still granted the right to make copies for personal use, the DMCA hinders this by making the circumvention of technological encryptions or watermarks a criminal act (Bates 2004, pp. 235-236; Deak 2004, p. 112). As a result, the DMCA puts more weight on copyright protection (Bates 2004, p. 237), whilst weakening consumer protection by strongly restricting consumers in their possibilities to use received content.

Likewise, to incorporate the WIPO treaties and to extend copyright law to electronic copyright protection, in 2001 the EU Parliament passed the Directive 2001/29/EC of the ‘European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society’, better known as the European Union Copyright Directive (EUCD) (Bates 2004, p. 239-240). It grants copyright holders the exclusive rights to authorise others or prohibit to reproduce, to communicate, to make available, or to distribute the content they created (EU Directive 2001/29/EC, Art. 2-4). The EUCD is in so far similar to its US counterpart, as it allows protecting copyrighted content through encryption, but puts more weight on consumer protection (Deak 2004, p. 113). It explicitly allows certain private use of digitally distributed copyrighted content (Bates 2004, p. 240). Though, it only allows for private use under the “condition that the rightholders receive fair compensation” (EU Directive 2001/29/EC, Art. 5(2)b, in this way allowing the copyright holder

to benefit from exceptions (EU Directive 2001/29/EC, Art. 6(4)) (compare Bates 2004, p. 240).

In conclusion, the WIPO treaties and the DMCA as well as the EUCD, as the treaties' implementations into US law and EU law respectively, strengthened the protection of copyright holders. They achieved this by putting more weight on the protection of the devices that carry the digital media content (Bates 2004, p. 252). Two consequences follow: First, copyright law in the US as well as in the EU requires content providers to apply technical copy protections. Otherwise, no copyright protection can be granted. Secondly, the provision of private use exemptions is greatly affected to the extent that, according to Bates (2004, p. 249), consumer protection is virtually not existing any more (compare as well Lucchi 2006, p. 50). This is strong criticism, as both, the DMCA and the EUCD, provide private use exemptions (see above). It is a fact though, that technical copy protections hinder consumers in being able to do whatever they might want to do with the digital media content they received legally. In recent years, this has been made clear to consumers in a number of lawsuits against individuals filed in the USA and in the EU (see e. g. Bates 2004, p. 250; Scotchmer 2004a, pp. 197-201).

3.1.4. Copy Protection to Enforce Copyright Protection

Providers of digital media content can potentially enforce their copyrights and exclude illegitimate users from consumption by technical exclusion (copy protection) and by exclusion by law (litigation).

In the previous subsection it has been seen that litigation alone, without a technical copy protection, is not sufficient to exclude illegitimate users from the consumption of digital media content. Different copy protection techniques, also called Digital Rights Management Systems (DRMS) are available. Fetscherin (2005, p. 3) refers to

- encryption,
- watermarking, and
- fingerprinting.

Before each of them will be explained, first the terms Digital Rights Management (DRM) and Digital Rights Management Systems (DRMS) have to be put into relation.

The term Digital Rights Management (DRM) is often used in popular literature as a reference for encryption: digital media content that is provided DRM-free refers to content provided without encryption (see e. g. Graham 2007, February 2; Rosenblatt 2007, August 16). In academic literature, which defines terms connected with the copy protection issue, however, the term DRM has a much broader meaning. According to Knüppfer (2007), DRM includes the selection and integration of systems to technically protect digital media content. According to Rump (2003), DRM includes "everything that someone does with content in order to trade it" (p. 4). The development of a DRM contains the design of access control, usage control and the pursuit of infringements (Knüppfer

2007). While access control defines the user (groups) who shall be allowed to access the digital media content, usage control defines what users can do with the content (compare Knüppfer 2007). The copy protection techniques applied to enforce these objectives of DRM are called Digital Rights Management Systems (DRMS) (Ünlü 2005, p. 49). Fetscherin (2002, p. 166) distinguishes seven components of DRMS: access and usage control, protection of authenticity and integrity, identification of metadata, specific hardware and software for end devices, copy protection systems, billing systems, integrated e-commerce systems. This detailed assessment goes far beyond the scope of this paper, so with encryption, watermarking, and fingerprinting only the most discussed techniques are explained in the following.

Encryption

Encryption is a technique, which prevents the circumvention of access and usage control (Ünlü 2005, p. 68). Using encryption algorithms, the provided digital media content is encoded. In this way, it shall be assured that the rights provided to the consumer are not circumvented by potential pirates (Fetscherin 2002, p. 167). Fetscherin (2002, p. 167) names render rights (print, view, play), transport rights (copy, move, loan) and derivative work rights (extract, edit, embed) as the main elements described in the rights model, along with their associated attributes and constraints.

Watermarking

An alternative technique to prevent piracy is watermarking (Loebbecke 2002, p. 39). It can be used when encryption does not work as intended (Ünlü 2005, pp. 71-73). A digital watermark is embedded and invisible information, added to a digitally provided file that enables identification of the original and its buyer (Loebbecke 2002, p. 640; Petitcolas 2003, p. 81; Ünlü 2005, p. 73). This includes the identification of copies and pirates, respectively. So-called transactional watermarks even contain information about the buyer or their devices (Rosenblatt 2007, August 16). Watermarking is also useful in combination with reception devices, which screen the content and only play content that has watermarks showing a valid license (Petitcolas 2003, p. 81; Ünlü 2005). Often, though, unmarked content is played as well (Petitcolas 2003, p. 81).

Fingerprinting

Fingerprinting, also called content-based identification, refers to the identification of digital media content with the help of a database, where digital media content has been registered previously (Herre 2003, p. 93). The concept of fingerprinting differs from the concept of watermarking mainly in the way that fingerprinting does not require a modification of content (Herre 2003, p. 94). Contrastingly, fingerprinting uses processes which recognise the pattern of the digital signal to automatically recognise content information, as e. g. title, author, and description (Herre 2003, pp. 93-94).

In contrast to encryption, watermarking and fingerprinting are not copy protection techniques in a strict sense. They do not technically prevent illegal copying

itself (Loebbecke 2002, p. 640, referring to watermarking only), but are intended to prevent copying by identifying pirated content.

It was shown that content supplemented with a copyright constitutes an asset. Indeed, for content providers the copyrighted content is strategically from uttermost importance. In principal, digital media content can be produced indefinitely (see previous subsection). However, through copyright protection techniques companies can artificially make digital media content scarce (Brack 2003, p. 149). So only the supplement of content with rights and with copy protection protects the content provider from (potential) competitors and therefore enables a company to maintain a competitive advantage (Brack 2003, p. 148). The content created and provided constitutes a core resource (Brack 2003, p. 148). The architecture for commercialising copy-protected digital media content is shown in the next section.

3.2. Value Chain of Digital Media Content Provision with Copy Protection

Value chains describe the architecture of value creation and answer the question, how and in which configuration goods and services are created (Stähler 2001, p. 41). This section describes a typical value chain for the provision of copyrighted digital media content.

The concept of value chains was developed by Porter and, since then, developed as well as used extendedly in literature. Porter's original value chain divides a company's activities into so-called primary activities as e. g. inbound logistics, production, outbound logistics, sales and marketing and customer service on the one hand and so-called support activities as e. g. human resources, technology development, procurement, and firm infrastructure on the other hand (Porter 2004, p. 36ff). First and foremost the primary activities are strategically important, as they are the activities necessary to produce and commercialise a certain product so it can be sold to customers with a profit margin. While Porter understands the value chain as being the activities within one company only, it is more common in the provision of digital media content that different companies occupy only certain elements and more players act in one value chain. In this case, there is not only one customer, but one player might be the customer of the preceding company in the chain. Independent thereof, at each value chain stage value is added to the product so that the whole value chain shows the total value added, which is finally valued by the end consumer (Picard 2002, pp. 30-33). This section will demonstrate the value chain in the industry of digital media content provision.

The value chain constructed here is a combination of concepts found in literature that shall be discussed first. Zerdick, Picot, Schrape, Artopé, Goldhammer, Lange, Vierkant, López-Escobar and Silverstone (2000, pp. 171-173) propose a value chain for the multimedia market with the segments content, packaging, transmission, navigation, value added services (VAS), and reception devices. They assume that content is provided, then packaged by broadcasters, publishers, news agencies, or Internet service providers (ISPs), and transmitted via some network. Also being part of their proposed value chain is navigation, i. e.

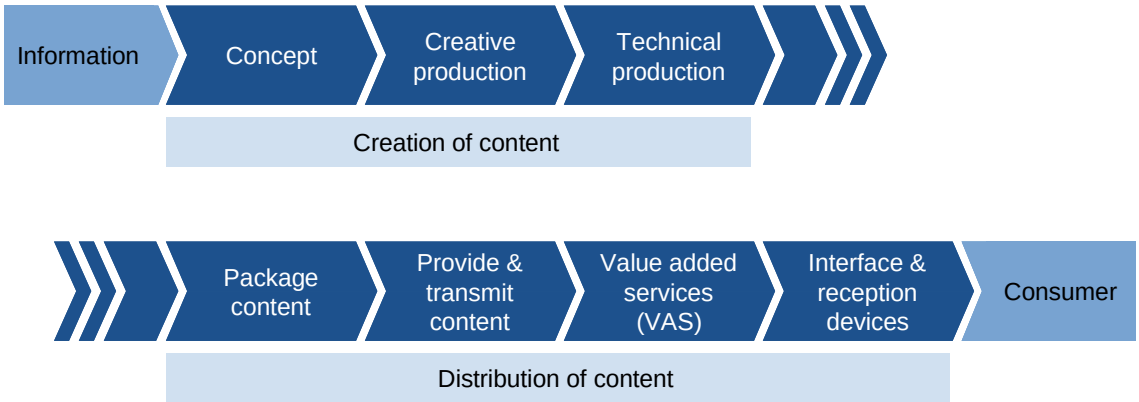
manipulation of physical infrastructure, the provision of VAS, e. g. consultancy, billing, installation, and training, as well as the provision of reception devices. Especially the provision of reception devices could also be seen as being a (parallel) value chain on its own, consisting of e. g. procurement of resources, production, distribution, etc. From the perspective of content providers, however, it is a necessary value chain stage to enable consumers to use the content they provide. Likewise, navigation understood as providing the necessary infrastructure could be seen as a separate value chain or as a value chain stage for providing digital media content. Navigation understood as improving orientation in the physical infrastructure, though, might be a central part of the business model and therefore should be included into the value chain model in any case.

Similar to the model of Zerdick et al. (2000, pp. 171-173) is the model developed by Wirtz (2003, pp. 584-585). He also proposes a value chain for multimedia content constituting of aggregation (i. e. bundling or packaging), VAS, transmission, and navigation. While he does not consider reception devices, he more importantly specifies the provision of content. The first value stage in the model of Wirtz (2003) is labelled “procurement or creation of content or services” (pp. 584-585). So he includes the possibility that content is sold by the creator and procured by a third party, which then distributes it.

In both models, the production itself is not included. Wirtz (2003, pp. 82-83), though, separately proposes a value chain for the production of content. Value chain stages are the concept (i. e. events, trends, ideas), selection, creative and technical production, and distribution including transmission and reproduction.

As stated, this paper adopts the models of Zerdick et. al (2000, pp. 171-173) and Wirtz (2003, pp. 82-82, 584-585) to combine them to a comprehensive model of digital media content provision. It is also in line with Schumann and Hess (2006, pp. 53-54), who see the production of media embracing creation, bundling, and reproduction or distribution. Figure 5 shows the resulting value chain model for the provision of digital media content.

Figure 5:
Value Chain for Digital Media Content Provision



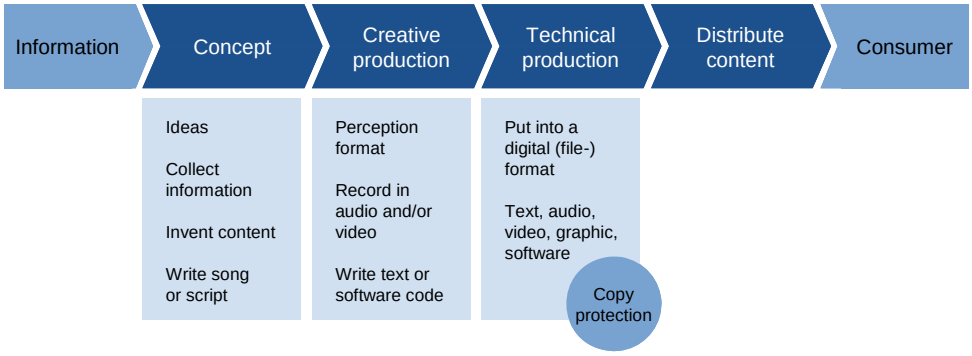
Source: own illustration

The value chain elements are concept, creative production, technical production, package, provide and transmit, VAS, and reception devices. The illustration is rather general, as digital media content is a very broad term and there are huge differences in the production of music, movies, TV program, radio program, news and software. The illustration is an attempt to modelise a typical architecture for the provision of different types of digital media content, as e. g. digital video content, digital audio content, digital news, e-books, software, etc. The following subsections explain the model used here and its respective value chain stages in detail. Subsection 3.2.1 puts the focus on creation (and production) and subsection 3.2.2 puts the focus on distribution of digital media content. It is important to keep in mind that both, creation and distribution, are parts of the same value chain.

3.2.1. Value Chain with Focus on Creation

Figure 6 illustrates the same value chain as figure 5, here with focus on the creation (including the production) of digital media content.

Figure 6:
Value Chain for Digital Media Content Provision with Focus on Creation



Source: own illustration

Concept

As Wirtz (2003, pp. 82-83) proposes, the first value chain stage in the production of content is the concept. In this stage, the creator invents content based on his own ideas and information, openly available to everybody.

Creative production

According to Wirtz (2003, pp. 82-83), the following value chain stage is the selection, in turn followed by creative and technical production (see above). The author, though, understands selection to be either part of the concept, if the final concept is the one to be realised, or to be part of the creative production, as it might be e. g. in movie production, where during production it is still possible to make changes to the concept. Accordingly, here the second value chain stage is called creative production instead. This is in line with the value chain process for content proposed by Brack (2003, p. 17). In the stage indicated as creative production, the ideas or concept is put into a perception format, i. e. it is recorded in audio and/or video or written down in text or software code. As well in

line with Brack (2003, p. 17), the last value chain stage of value creation is the technical production. Here, the content is put into a technical (file) format as e. g. a text-file, an audio or video file, a graphic file or software-files. In this format the content then is distributed to the consumer who can use it on some reception device (compare as well with figure 4 in section 2.2).

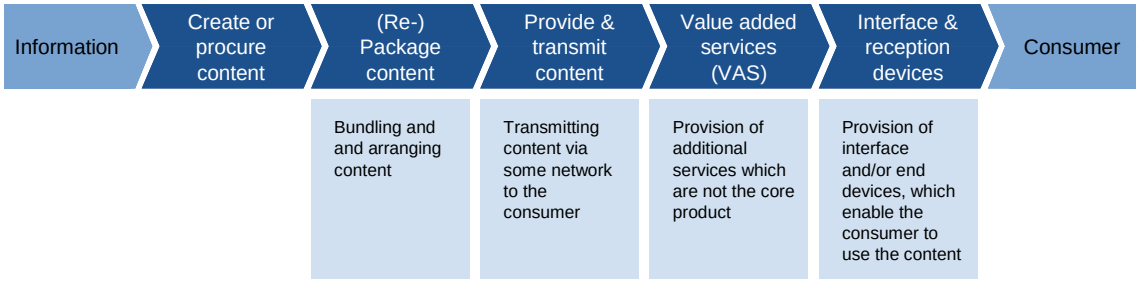
Technical production

On this last stage of value creation the content provider attaches a technical copy protection to the content-file.[4] In section 2.1 it was explained that content is essence supplemented with metadata (compare figure 1 in section 2.1). Essence, in turn, is (collected) information put into a specific format. In consequence, the creation of digital media content is collecting information and turning it into digital media content by adding a digital format and digital metadata (Brack 2003, p. 11). As also seen in section 2.1, content can only be commercialised if it is supplemented with rights. It was then explained that these rights are the copyright and its accompanying exclusive rights and that it is required to technically protect digital media content.

3.2.2. Value Chain with Focus on Distribution

Figure 7 shows again the same value chain as figures 5 and 6, this time with focus on the distribution of digital media content. It is important to recall that figures 6 and 7 merely focus on two different aspects.

Figure 7:
Value Chain for Digital Media Content Provision with Focus on Distribution



Source: own illustration

Create or procure content

After digital media content is created, it can be distributed. However, often the creator (and copyright holder) does not distribute the content (compare e. g. Wirtz 2003, pp. 584-585). In this case, the distributor first procures the content.

[4] Fetscherin (2002, p. 165) refers to a complete value chain stage labelled package and protection, in which the content is encoded and a copy protection with rights and usage rules is attached. In this paper the respective value chain stage is broken down into the distinct value chain stages technical production and package content. The attachment of the copy protection is assigned to the technical production, as afterwards the protected files can be packaged.

(Re-)package content

Digital media content, created or procured from others, is then packaged (Zerdick et al. 2000, p. 172). Single content files are bundled and arranged to form a package. If they have been bundled already in the process of creation and then sold to a different company, the buyer might repackage, i. e. re-arrange, the content to provide it as a different bundle. Yet, it is also common that content is not bundled at all but the single file is provided instead. Examples are online music shops offering music for download as single files or as albums, which are bundles of numerous files. Another example is an electronic journal, which is a bundle consisting of several papers.

Provide and transmit content

The following value chain stage is the provision (in a strict sense) or transmission to the consumer (Zerdick et al. 2000, p. 172). Digital media content, in a bundle or not, is offered on some platform and that way provided to an audience. This platform can be the Internet with users in the whole world or with regionally restricted audiences.[5] The transmission happens via some network, as the Internet or any telecommunications network. Two technically different forms can be distinguished: streaming on the one hand and offering for downloading on the other hand. In the case of streaming, a program (e. g. a TV program or a radio program) is packaged by the provider and then pushed to the consumer. In contrast, in the case of downloading, the transmission is pulled by the consumer. The latter case is also referred to as transmission 'on demand'.

Value added services

According to Zerdick et al. (2000, p. 172) and Wirtz (2003, p. 585), value added services (VAS) comprise billing, hosting, installation, training and consultancy. To some extent, these services are necessary for the maintenance of the digital media content provision; to some extent, they merely increase the value of the content as perceived by the consumer. For example, hosting is certainly essential while consultancy is generally not. For the consumers' perception of the value added, it is not relevant if the company offering these services is a third party or in direct contact with the consumer. Streamed digital media content, for example, has c. p. more value if it lies on fast and reliable servers as opposed to servers with frequent malfunctions. The author of this paper adds to the group of VAS advertising and promotion because digital media content providers, as e. g. music labels, engage in these services to popularise the content they provide.

Interface and reception devices

The last value chain stage in the model depicted here is the provision of interface and/or reception devices (Zerdick et al. 2000, p. 172). End devices are

[5] In the Internet, this is technically possible through Geo targeting. In this way digital media content can be made available to users with IP addresses from one region only. As well, different versions can be provided depending to different regions.

e. g. computer, TV, radio, game console, or any mobile device (compare section 2.2). As mentioned above, it is arguable whether to include the provision of reception devices in the value chain for providing digital media content. While Wirtz (2003, p. 585) does not include such a value chain stage, Zerdick et al. (2000, p. 172) include it, stating that it is the stage closest to the consumer. The author agrees with Zerdick et al. and also sees the necessity for inclusion in the fact that some companies' business models relate on providing both, digital media content as well as end devices. Examples are Apple, Microsoft, and Sony. All three provide digital media content through online and mobile shops as well as portable devices and players for computers. Reception devices provide an interface, which acts as an interconnection point between provider and consumer. In this way, it includes the navigation function proposed by Zerdick et al. (2000, p. 172).

3.2.3. Players in the Value Chain

As stated in the introductory text to section 3.2, potentially there are more than only one company within the value chain of digital media content provision. So a company's statement about its business model is also a statement about which value chain stage(s) it occupies and which one(s) it considers as its core business. Turow (1992, as cited by Kiefer 2001, p. 194) identifies 13 distinct players in the mass media industry.[6] Besides the consumer, three of these players, namely the creator, the producer, and the distributor, are of most importance for this paper, so they are depicted in this subsection.

Creator

According to Turow (1992, as cited by Kiefer 2001, pp. 194-195), the creator is an individual that provides ideas, talent, and creativity for the production of content. He or she arranges information to develop a concept but has little control, as he or she is part of a producing organisation and less visible (Turow 1992, as cited by Kiefer 2001, pp. 194-195). Creators of digital media content are e. g. software developers, authors of e-books, e-journals, journalists, photographers, artists, singers, songwriters, and composers (compare Fetscherin 2005, p. 85; Kiefer 2001, p. 195). With respect to the value chain of digital media content provision, creators act in the first value chain stages, 'concept', 'creative production', and 'technical production' (compare e. g. figure 5).

Producers

Turow (1992, as cited by Kiefer 2001, p. 194) defines the producer as a producing company, and he understands this role as a second producer, since the creator is the first producer. These companies employ and supervise creators to produce the first copy, which is released to the public (Turow 1992, as cited by Kiefer 2001, p. 194). Producers draw power from the control over ideas and people (Turow 1992, as cited by Kiefer 2001, p. 194). Examples for produ-

[6] Turow (1992, as cited by Kiefer 2001, p. 194) identifies the following so-called power roles in the mass media industry: producer, authority, investor, client, auxiliary, creator, union, distributor, exhibitor, linking pin, facilitator, public advocacy, public.

cers of digital media content are music labels, film studios, software companies, and publishing companies (compare Fetscherin 2005, p. 85). Producers act in the value chain elements ‘technical production’ and ‘package content’ (compare e. g. figure 5).

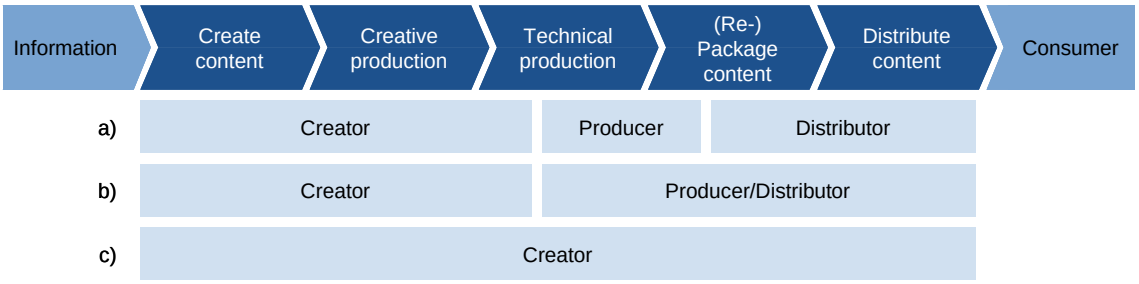
Distributor

The distributor, also a company, chooses content, he or she wants to provide and distributes it trough the appropriate channels to the consumer (Turow 1992, as cited by Kiefer 2001, pp. 194). The control over distribution channels puts distributors in powerful positions (Turow 1992, as cited by Kiefer 2001, p. 194). Distributors of digital media content are e. g. online music stores, video websites, and TV and radio broadcasting companies that retail digital content (compare Fetscherin 2005, pp. 86-87) and cover all the value chain elements starting from the re-packaging (compare e. g. figure 5). They might even provide the interface and reception devises for the consumption of digital media content.

Not clear is, if the creator or the producer is the copyright owner who would have to decide whether the content should be provided with or without a copy protection measure attached. This first depends on which player has finished the content and is entitled as a copyright holder (compare figure 1 in section 2.1 One case would be a musician producing his own music. This creator of music would then be the copyright holder. More common, though, is the case that a creator works ‘for hire’ or otherwise cedes his or her rights to a producer. Then the producer is the copyright holder (compare subsection 3.1.2).

Not considered by Turow (1992, as cited by Kiefer 2001, p. 194) is the possible disintermediation. As figure 8 shows, upstream players might bypass their downstream players.[7]

Figure 8:
Possible Configurations in the Value Chain for Digital Media Content Provision



Source: own illustration

While a) refers to the situation depicted above, b) depicts a situation without a distributor. The producer also does the distribution. In fact, the roles of the producer and the distributor are combined here in one company. Examples for this situation are big media conglomerates that produce (digital) media content and also control the distribution channels. Music labels could e. g. provide their digi-

[7] The additional role of a potential provider of an interface or reception devices is neglected at this point.

tal music through a corporate online store. In situation c), the creator bypasses both, producer and distributor, and provides his or her content directly to the consumer. A band could e. g. offer its music for download on their own website. Especially situation c) has become feasible by cost-efficient digital distribution channels. Throughout the paper, each of the players is referred to as content provider, where not otherwise specified.

3.3. Revenue Model of Digital Media Content Provision with Copy Protection

Another fundamental part of the business model is the revenue model, as the whole business model depends on how revenue is generated (Stähler 2001, p. 42). Two fundamentally different concepts of financing exist in the media industry: direct financing on the one hand and indirect financing on the other hand (Zerdick et al. 2000, p. 27). While companies might decide for either direct or indirect financing, a combination of both models and of different revenue types within these models is possible and often practiced as well (Zerdick et al. 2000, p. 29; Stähler 2001, p. 47).

Direct Financing means that financing happens through some kind of payment done by the user. Zerdick et al. (2000, p. 27) further differentiate between usage-related payments, one-off-payments, and subscription fees.

Usage-related payments are individual transactions based either on the quantity or on the duration of media usage (Zerdick et al. 2000, p. 28). As media usage can only be measured in the case of services (e. g. telecommunication services or streaming), this form of financing does not make sense for digital media content.

One-off payments are not usage-related and can be connection fees, licence fees, payments for special reception devices (Zerdick et al. 2000, p. 28), or simply a payment in exchange for the purchase of a media product. For example, the payment in exchange for a mp3 or video file can be a simple one-off transaction. The price for the purchase of this content is the same, no matter how intensively the content is actually used afterwards.

Subscription fees are not usage-related either, but in contrast to one-off payments they are regularly recurring (Zerdick et al. 2000, p. 28). Therefore, these payments are not only independent from the actual usage but also independent from the amount purchased. For example, someone who owns a subscription for a video rental service pays the same amount of money every month, independently of how many videos he actually rents.

While in direct financing only two players interact in a bilateral relationship, in indirect financing the user does not pay for the media he or she uses but receives it for free. Instead, the payment is received from a third party. Zerdick et al. (2000, pp. 28-29) separate indirect financing types according to who makes the payment to the content provider and names advertising or commissions (payments from advertisers), datamining (payments from companies interested in consumer data), and subsidies (payments from the state).

Advertising: In the advertising model, advertisers pay content providers in exchange for the opportunity to address their users within some advertising reach (Zerdick et al. 2000, pp. 40-41). Consequently, a company choosing the advertising model to generate revenues acts on two markets at the same time, on the advertising market and on the recipient market (Wirtz and Pelz 2006, p. 265). Both markets are connected because the recipients of the provided content are at the same time the target group of the advertisers. Ultimately, the interests of advertisers are decisive for sufficient compensation payments (Zerdick et al. 2000, p. 40).

Datamining: Datamining is selling consumer information collected in the business process to companies who are interested in this data and are willing to make a payment in exchange (Zerdick et al. 2000, pp. 28-29). This indirect revenue type became especially relevant in the digital age, because in the business process of selling media content digitally data can be collected automatically and without much disturbance to the consumer.

Subsidies: Subsidies are payments from the state to providers of content, which is considered to be important for state and society and would assumingly not be provided (in this form, amount, or quality) without the state's payment. Zerdick et al. (2000, p. 29) mention that, in principle, subsidies do not constitute revenue but nevertheless consider subsidies as a basic form of financing business activities in media provision.

As mentioned already, providers of digital media content can choose and combine all the mentioned revenue types. Therefore, some of these models will be referred to throughout this paper. This chapter, however, intends to describe a typical business model for the provision of copy-protected digital media content. The typical revenue model for the provision of copy-protected digital media content is direct financing. As seen in section 2.1, to incite individuals and companies to get creative and productive, exclusive rights are provided if they do so. These rights enable them to license the copy-protected content to others in order to achieve compensation (compare subsection 3.1.2). The receipt of sufficient compensation payments strongly depends on the copy protection. Financing is in danger, if consumers find ways to obtain content, which was intended for sale, while circumventing the payment (see chapter 4 below).

The provision of copy-protected digital media content is common e. g. in the music industry, where digital music can be purchased in online shops in exchange for a one-off-payment for each track and/or album or in exchange for a subscription payment. Examples for many are iTunes, Napster 2.0 and Rhapsody (Jacob 2005). Older already is the digital provision of software. The Microsoft Office suite, e. g., is offered for download on Microsoft's corporate website and can be purchased online in exchange for a one-off-payment (Microsoft 2007). Security suites for private personal computers and small businesses, as e. g. the Norton software offered by Symantec, can be purchased once with a renewable subscription plan for continuous updates (Symantec 1995-2007). These examples represent a wide range of digital media content that is provided digitally

and copy-protected in order to achieve direct compensation payments from its users. They are at the centre of the discussion addressed throughout this paper.

3.4. Value Propositions of Digital Media Content Provision with Copy Protection

According to Stähler (2001, pp. 42-43), the value proposition addresses two distinct stakeholder groups: it is the description of value delivered to customers on the one side and to partners on the other side. Its objective is to motivate both groups, the customers to buy the products, and the partners, as suppliers and providers of complementary products, to be part of the business model (Stähler 2001, pp. 42-43).

As value propositions are composed to address the particular wants and needs of the stakeholder, it is hardly possible to make a general statement that would apply to all providers of digital media content. However, a few general statements can be made about the value that digital media content delivers to customers. According to Picard (2002, p. 22), different media is used in different contexts. So different types of digital media content might address different consumer wants and needs. With respect to the value delivered to the consumer, digital media content can be informational, educational, entertaining, or supporting (compare Detering 2001, p. 11; Brack 2003, pp. 18-19). Supporting content such as software can be distinguished without difficulty. However, not in every case does content provide only one function (Detering 2001, p. 11). A separation between informational content and entertaining content is often not possible (Heinrich 2001, p. 18). Informational and educational content can be entertaining. Vice versa, entertaining content can be informational and educational. Content might be rather entertaining (e. g. comedies, sports live coverage, movies, music, etc.) or rather informational (e. g. financial news, sports news, political coverage, etc.), however this is subject to judgement.

A differentiation, which leads more to the objective of this paper, is done by J Allard, a Microsoft executive concerned with the Zune music player and the game console Xbox business. As the New York Times (Hansell 2007, November 16) reports, Allard, talking about the target group of Microsoft's entertainment and devices division, distinguishes consumers according to three different user types. Ars technica (Reimer 2007, November 19), referring to the New York Times article, found adequate words, so they shall be cited here:

> *"Allard wants to be able to cater to either the 'renter,' who doesn't mind paying a small amount of money for content that expires, the 'owner,' who wants to be able to play purchased content forever, and even the 'physical goods guy,' who wants something solid that can be put in a backpack."*

Digital media content obviously does not address the wants and needs of the 'physical goods guy', but one of the other two. As will be seen in the next chapter, especially in section 4.1, digital media content that is provided with a copy protection, does not address the 'owner', but only the 'renter'.

4. Drivers towards Alternative Business Models without Copy Protection

This chapter exposes certain downsides of copy protection techniques (section 4.1), of which the restrictions imposed on consumers as one downside account for a missing consumer acceptance (section 4.2). It will be seen that the resulting occurrence of copying is perceived by providers of digital media providers as a serious threat to their business model (section 4.3). As this typical business model of providing copy-protected digital media content is endangered, the threats are also drivers towards alternative business models without copy protection techniques.

4.1. Downsides of Copy Protection Techniques

Copy protection techniques tend to be insecure

Encryption can be cracked and Digital Rights Management Systems (DRMS) can be removed (Peitz and Waelbroeck 2006a, p. 470). Doctorow (2007, September 4) explains that it is technically impossible to make a copy protection safe: For every kind of encryption a key is necessary. To make an encryption safe, the key has to be kept apart from those who are not supposed to access the information. With digital media content, however, the receiver as well as the potential pirate can be the same person. The receiver needs the key so that the content can be processed. So, by providing the receiver with the key, the potential pirate is provided with the key as well. Doctorow (2007, September 4) argues that there will always be a receiver who has the necessary background and/or intellect to crack a DRMS. If a copy protection is cracked once and the key shared on a network (such as the Internet), it is useless (Doctorow 2007, September 4).

In result, it is only a question of time when a new DRMS will be cracked (Doctorow 2007, September 4; Jobs 2007, February 6). Generally, if pirates want to access content, they ultimately can (Peitz and Waelbroeck 2006a, p. 470), while the inconvenient restrictions of DRMS only affect the legal receivers of digital media content, who are the ones honestly paying for their usage (Doctorow 2007, September 4).

For example, the DRMS for both DVD-successor formats, HD DVD and Blu-ray, which is called Advanced Access Content System (AACS), has been cracked after a few weeks only and the key has been published, so every next-generation DVD in circulation already was effectively unlocked (Johnson 2007, February 22). Another example is iTunes which can be cracked using a freely-available software called QTFairUse6 (Cheng 2006, September 13).

Copy protection techniques tend to be cost-intensive

Djekic and Loebbecke (2005) explain that, for the copy protection of software, licence fees have to be paid to the provider of copy protection. Loebbecke and Fischer (2005) investigate the economic effects of piracy on content providers for pay-TV. They find that revenue is decreased and costs are increased when

content providers have to invest to maintain a copy protection (Nagravision 2003, as cited by Loebbecke and Fischer 2005, p. 28). What Djekic and Loebbecke as well as Loebbecke and Fischer state about pay-TV and software is true for digital media content as well. Here as well, licensing fees besides other implementation and maintenance costs decrease the provider's revenues (Johnson 2007, February 22). Maintenance costs include costs for multiple encoding, costs for working on new rights schemes, and costs of dealing with customers which cannot use their purchased content like they want to (Johnson 2007, February 22). The circle of a company implementing a copy protection, pirates cracking it and companies renewing it thereafter is called "cat-and-mouse game" (Jobs 2007, February 6) or "technological arms race" (Ku 2002, p. 47).

Copy protection techniques tend to entail restrictions on the user

Besides being insecure and costly, copy protections have another downside: as DRMS intend to control the users' interactions with the content (Fisher 2007, September 23), they entail restrictions on the user of how he or she can use the obtained digital media content. Without a DRMS, exchange between different devices, such as computers, mp3 players, and mobile devices, is possible (Schofield 2007, August 16). With a DRMS this is generally not the case. The user can be restricted in all or some of the rights mentioned in subsection 3.1.4. He or she may be limited e. g. in printing, viewing, playing, copying, moving, loaning, extracting, editing, or embedding the digital media content.

For example, the online retailer iTunes Store allows purchasers to use their acquired digital media content on up to five computers with an installed version of the iTunes jukebox software and on authorised portable Apple devices only (Jobs 2007, February 6). Besides Apple, Microsoft, and Sony are other examples for providers who maintain their own proprietary systems with a combination of online store, jukebox software and portable device (Jobs 2007, February 6). These ecosystems are illustrated in figure 9. Each of the companies attaches its own proprietary file format and DRMS: Apple uses the file format Advanced Audio Coding (ACC) with the DRMS FairPlay (Jobs 2007, February 6), Microsoft uses the file format Windows Media Audio (WMA) with the DRMS Windows DRM (WDRM) (Burrows 2006, July 26), and Sony uses the file format Adaptive Transform Acoustic Coding 3 (ATRAC3) with the DRMS Open Magic Gate (openMG) (Viksnins 2004, November 24). In result, compatibility is only given within these ecosystems. The file formats themselves can generally be transformed from one to another, however not when restricted by encryption, which is the case. Microsoft's ecosystem is not even compatible with its own PlayForSure DRMS, which it licenses to other providers of digital media content and reception devices (Burrows 2006, July 26). It even occurs that users can no longer use content they legally obtained, because the provider abandoned support for the respective DRMS (e. g. Reimer 2007, November 19). Sony has announced to close its Connect Store, which Ars technica (Bangeman 2007, August 30) interprets as the failure of Sony's proprietary strategy.

Figure 9:
Proprietary Systems of Apple, Microsoft and Sony

	Apple	Microsoft	Sony
Online shop	iTunes Store	Zune Marketplace	Connect Store (announced to close)
Jukebox software	iTunes	Zune	SonicStage
Portable devices	iPod, iPhone	Zune, XBox	Walkman, Hi-MD, PSP, Clie
DRMS	FairPlay	WDRM (not compatible with PlayForSure)	openMG
Audio encoding format	ACC	WMA	ATRAC3

Source: own elaboration based on Jobs (2007, February 6), Burrows (2006, July 26), and Viksnins (2004, November 24)

To come back to the target groups mentioned by Microsoft executive J. Allard (compare section 3.4), providers of digital media content cater only the wants and needs of the so-called ‘renter’ type of consumer, who doesn’t mind that content expires. They neglect the consumers that prefer to be owners, the ones that want to be able to use their purchases forever.

4.2. Many Consumers Do Not Accept Copy Protection

In subsection 3.1.3 it was also seen that providers of digital media content are not only entitled to maintain control over the content they provide, but that they also have to do so if they want to protect their content from illegitimate copying. In the previous section it was further shown that copy protection has some downsides: It often fails to efficiently exclude users from sharing and copying, it is costly, and, if working, it restricts consumers in their possibilities to use the digital media content.

The fact, that pirates are not only able to crack encryptions and remove DRMS as well as share the cracked content with other users, shows that many consumers apparently prefer copies of digital media content to originals. This is an important point for further discussion.

According to Varian (2005, p. 130), the consumer can decide between purchasing and copying to obtain digital media content. The consumer chooses that option, which provides higher utility. He or she is indifferent between both options if the following equation is true:

Utility of purchasing = Utility of copying

It follows that, if the utility of purchasing is higher than the utility of copying, the consumer decides to purchase and vice versa (Varian 2005, p. 130).

It was mentioned that naturally and generally the quality of original and copy is the same (subsection 3.1.3). So in both cases the user has the same utility from consumption. However, leaving benefits of consumption equal on both sites, a number of different types of costs potentially diminish the utility. In the case of purchasing the price paid to the provider reduces the consumer's utility of purchasing. In the case of copying, so-called transaction costs reduce the consumer's utility of copying. As examples for transaction costs, Varian (2005, p. 134) names

- the direct cost of copying,
- the inconvenience cost of copying,
- waiting for the copy, and
- the inferiority of the copy compared to the original.[8]

One can claim that with a lot of digital media content, especially in the case of mass media, these transaction costs are rather small. For that reason, providers of digital media content try to artificially increase these costs.

Direct costs of copying

Copying of digital media content can generally be done with a mouse-click. The attachment of a copy protection is an intention by many providers of digital media content to increase the direct costs of copying. However, once a copy protection is removed and shared through networks, the direct cost of copying the cracked version is small again.

Inconvenience costs of copying

For a big number of digital music, for example, the costs of searching for cracked copies (essentially being inconvenience costs of copying) is about the same as the costs of searching for the original in online shops because they are conveniently available in file sharing networks. In some cases the catalogues of online shops even might not include searched artists, while file sharing networks do. Many providers of digital media content intend to increase the inconvenience costs of copying through litigation. Some illegitimate consumers are sued to pay compensation but more importantly these lawsuits shall evoke the consciousness to do something illegal, which in turn would increase the inconvenience costs of copying.

[8] Transaction costs occur in the case of purchasing as well, e. g. search costs. However, to better distinguish both cases, these types of transaction costs are at this point assumed to be equal in both cases.

Costs of waiting for the copy

The cost of waiting for a copy is usually higher in the case of copying as compared to the case of purchasing. Many providers of digital media content push their content with high bandwidth rates and the connection is often steady and convenient. Sharing copies over peer-to-peer networks mostly depends on how many users of the network are in possession of the respective copy, the speed of their internet connections and if they are logged in at all. A different case is sharing digital media content among friends, which is often done in big amounts by sharing over local networks or using hard drives and therefore faster than searching for each file or bundle of files in online shops or on corporate websites.

Costs coming from inferiority of the copy compared to the original?

In the case of digital copying, generally the copy is not inferior to the original but has the same quality (compare section 3.1.3). If then the original is provided with a copy protection, the quality of the original is actually reduced. Consequently, the utility of purchasing is not only diminished by the price paid to the provider but also by a cost coming from inferiority of the copy-protected original compared to the copy. The statement has to be reformulated to 'costs coming from inferiority of the (copy-protected) original compared to the copy'. It can be assumed that the occurrence of copying is a result of the utility of purchasing being lower than the utility of copying because of the restrictions in usage as imposed by the copy protection (compare previous section).

Fetscherin's statement that consumers want to purchase, consume, and own digital media content hassle-free (2003, p. 203) would underline this argumentation (compare as well Singh, Jackson, Waycott, and Beekhuyzen 2006, pp. 55-60). Shy (2000, p. 104) states that, over the years, software providers have gradually removed copy protection because of consumers' frustration over the restricted usability of protected software. Similarly, Ars technica (Paul 2007, November 21) states that consumers tend to prefer copying because they are not satisfied with DRMS that entail restrictions, as they erode the right of private use (compare subsection 3.1.3). Further, consumers are confused by the missing interoperability between different DRMS (Edgecliiffe-Johnson 2007, November 20). Moreover, consumers know from purchasing physical products that once having paid for the product, one can do whatever he or she wants to do with the content. Because of this experience, many purchasers do not accept being restricted in usage after having paid honestly for digital media content (Singh et al. 2006, pp. 62-63). Rimmer (2007) argues in his book 'Digital Copyright and the Consumer Revolution' that the (illegal) circumvention of copy protection techniques is an expression of consumers' wants and needs, which he refers to as "consumer revolution" (p. 296). Apparently, many consumers do not accept copy-protected content; they do not want to be 'renters', but 'owners'.

The 2007 Digital Music Survey, conducted among 1,700 users by Entertainment Media Research and published in July 2007, fortifies these arguments. It shows that, of those who have an opinion on the matter, 68 % perceive only DRMS-free digital media content to be worth purchasing (EMR 2007, p. 20). While

63 % think that copy protection “is a good idea because it protects copyrighted music from illegal file sharing”, 61 % state that copy protection “invades the rights of the music consumer to hear their music on different platforms” and with 49 % almost half of the respondents do not like copy protection at all because they perceive it as a “nuisance” (EMR 2007, p. 86).

4.3. Copying Harms Providers of Digital Media Content

This chapter showed so far that copy protection techniques have downsides, which lead to low consumer acceptance of copy-protected digital media content and, in this way, explain the decision of many consumers to obtain content through copying instead of purchasing. Subsequently, this section illustrates that providers of digital media content perceive copying as harm to their business model.

According to online measurement company BigChampagne (2005, as cited by Sandulli 2007, p. 326), in December 2005 almost 10 million users downloaded music files via peer-to-peer (P2P) networks. According to the Organisation for Economic Co-operation and Development (OECD) (2005, p. 74), in OECD countries already one third of Internet users has obtained digital media content from P2P networks. The OECD (2005, p. 76) further states that originally mainly digital music was shared but nowadays other types of digital media content are shared as well. Research by BigChampagne (OECD 2005, p. 76) showed the following shares: audio files 48.6 %, video files 27 %, and 24.3 % of other files that are not further specified. So, while discussion often focuses on music, the issue affects every type of digital media content. There is more research showing high numbers of file sharing or other means of (illegal) copying (see for comprehensive overviews Liebowitz 2004a, pp. 4-14; OECD 2005, pp. 73-79; Hill 2007, pp. 9-10; Sandulli 2007, pp. 325-327). Though, what is more interesting for this paper’s objective is the mere fact that copying happens to a great extent.

What follows, is the question, whether this sharing harms the providers of digital media content. With increasing degrees of copying, the providers’ revenues from sales are decreased, as the users of the copy do not buy the original content. This assumption is based on the so-called “substitution effect” (Liebowitz and Watt 2006, p. 521) of copying and exists if copies of digital media content are perfect substitutes of the originals. With reference to its result, Shy (2000) speaks of a “loss-of-consumers effect” (p. 105), because former-purchasing consumers may switch to copying if a former-existing copy protection is not attached any more (Shy 2000, p. 105). The existence of the loss-of-consumer-effect is not disputed. However, it can be discussed to what extent copying actually harms the providers of digital media content. The discussion often neglects that, because of the higher price of the original, not every user of a copy would buy the original in a world without copying. According to Shy (2000, p. 105), the crucial question is how many purchasers switch to copying when digital media content is provided without a copy protection. This, in turn, depends on how many consumers can be

convinced to purchase the original instead of obtaining a copy (compare Shy 2000, p. 105).

It is especially the providers of digital media content who do not hesitate to communicate, to what extend copying decreases their revenues and harms their profits:

Music: The International Federation of the Phonographic Industry (IFPI) (2006, p. 5) claims that 37 % of CDs purchased in 2005 were pirated products, which would amount to losses of US$ 4.5 billion, based on pirate prices. Not included in these numbers, however, are estimated 20 billion songs copied through the Internet (IFPI 2006, p. 5). The IFPI (2006, p. 5) cites the NPD Digital Music Study, conducted in the USA and published in 2005, which estimates that the consumption of digital music copies caused 25 % of the decline in CD sales. Also cited by the IFPI (2006, p. 5) is research by IFPI and Jupiter among Europeans, which estimates that 35 % of file-sharers buy fewer CDs.

Film: Research by the Motion Picture Association of America (MPAA) (2005, p. 2) suggests that in 2005 piracy caused losses in profits of US$ 6.1 billion among its members, of which US$ 2.3 billion were assigned to hard-goods piracy and US$ 3.8 billion to Internet piracy.

Software: Research by the Business Software Alliance (BSA) (2007, pp. 10-12) suggests that 35 % of the software installed on personal computers (PC) was copied, which is estimated to equal losses in profits of US$ 40 billion.

It is not transparent in every case, how these numbers are determined and if Internet copying is included. For example, stating that meaningful statistics would not be available, the International Intellectual Property Alliances (IIPA) (2007) explicitly did not include Internet piracy, estimating worldwide losses due to piracy of US$ 30 to US$ 35 billion in 2005. Fetscherin (2003, p. 303) names research by analysts Forrester and Media Matrix, as well as research by authors Liebowitz, Hui, and Cave, which suggests that piracy costs are statistically not supported and doubt the amounts claimed by providers.

Whether statistically supported or not, the simple fact that providers of digital media content complain about the profit-diminishing effects of copying demonstrates that copying is an issue for providers of digital media content and that it threatens their business models (compare Kapko 2007, June 18). According to Hill (2007, p. 10), the issue will get even larger in the next years.

5. Alternative Business Models of Digital Media Content Provision without Copy Protection

In subsection 3.1.4, two methods to enforce copyrights were mentioned. Illegitimate users of digital media content can potentially be excluded by attaching a copy protection (technical exclusion) and by law (litigation). Many providers do both to ensure their revenues from the provision of digital media content (Fetscherin 2005, pp. 50-51).

However, in the previous chapter it was shown that technical exclusion as well as exclusion by law are difficult to maintain and not even accepted by many consumers. Therefore, the business model of providing copy-protected digital media content is increasingly under threat. Especially the non-acceptance by the consumer, however, hints that these threats are also drivers towards alternative business models. New alternative business models have to be found, which are oriented more on the consumers' wants and needs. According to Jobs (2007, February 6), the consumers' behaviour shows that they especially demand interoperability. This can only be provided sufficiently if digital media content is provided without copy protection techniques (Jobs 2007, February 6). The abandonment of copy protections implies several possibilities and chances for providers of digital media content (Haber, Horne, Pato, Sander and Tarjan 2003, p. 204). Haber et al. (2003, p. 204) refer to the possibility of competing with copying instead of fighting it with copy protection and litigation. This chapter describes potential alternative business models for the provision of digital media content without copy protection as alternatives to the business model with copy protection.

Besides the two methods of excluding illegitimate users, mentioned in subsection 3.1.4, technical exclusion and exclusion by law, an alternative exists: excluding illegitimate users economically. In spite of forcing the consumer to not copy the provided content, he or she can be convinced instead by increasing the utility of purchasing as compared to the utility of copying (Varian 2005, pp. 134-135; Liebowitz and Watt 2006, pp. 527-532). Maybe, though, providers of digital media content do not want to completely eliminate copying. Maybe copying does not only have the negative effects, examined in section 4.3, but positive ones as well. If this is the case and if there are ways to economically exclude consumers, maybe then providers can benefit from providing unprotected digital media content.

This chapter first discusses potential alternative business models, which intend to combine positive effects of copying with partial exclusion to reach the degree of exclusion, which is optimal for a provider (section 5.1). Afterwards, potential alternative business models are presented, which focus on complementary goods (section 5.2) and advertising (section 5.3) as alternative revenue sources, while giving away the digital media content unprotected or even free-of-charge.

5.1. Combine Positive Effects of Copying with Partial Exclusion

This section first shows, in what way providers of digital media content might benefit from copying (subsection 5.1.1). Even if positive effects of copying exist, however, the negative effects of copying might still reduce the providers' revenues. Subsection 5.1.2 therefore shows mechanisms that aim at economically excluding a certain part of consumers. It will be shown that, for some providers of digital media content, a combination of both, the positive effects and some economical exclusion, qualifies as an alternative business model without copy protection.

5.1.1. Positive Effects of Copying

Indeed, copying has positive effects as well, namely network effects and sampling effects (Peitz and Waelbroeck 2006a, pp. 461-466). These effects and their associated mechanisms are explained in the following.

Network effects

Network effects base on the assumption of network externalities (compare Shy 2000, p. 104). In the existence of network externalities, the willingness-to-pay (WTP) of one user for the consumption of a good depends on how many users consume the same good (Economides 1996, p. 678; Shy 2000, p. 104). Network externalities can be direct or indirect (Economides 1996, p. 679). Direct network effects directly increase usefulness and value of a good, as perceived by consumers (Detering 2001, p. 24). In the case of digital media content, often usefulness is increased with an enlarging user base because consumers of the same content can exchange experience and information about the content, which might as well benefit the social interactions among consumers (Detering 2001, p. 25). Contrasting is the case of indirect network effects. There, the larger user base results into more complementary goods, which, in a second step, results into higher usefulness (Peitz and Waelbroeck 2006a, p. 461). As can be seen in a model developed by Shy (2000), it is of no importance for one user whether the other users obtained the good legally or illegally. With an enlarging user base consisting of both, legal and illegal users, the value of a good and therefore the associated WTP increase as well (Shy 2000, pp. 104-105). It follows that the WTP for purchasing digital media content is the higher, the larger the user base. Besides Shy (2000), a number of authors describe the mechanisms in theoretical models, e. g. Katz and Shapiro (1985), Rohlfs (1974), and Takeyama (1994). In the case of digital media content, copying, like purchasing, enlarges the user base. If network externalities occur, copying consequently increases the users' WTP (Liebowitz and Watt 2006, p. 527). As a higher WTP c. p. increases the revenues, providers of digital media content potentially benefit from the network effects associated with copying.

Sampling effects

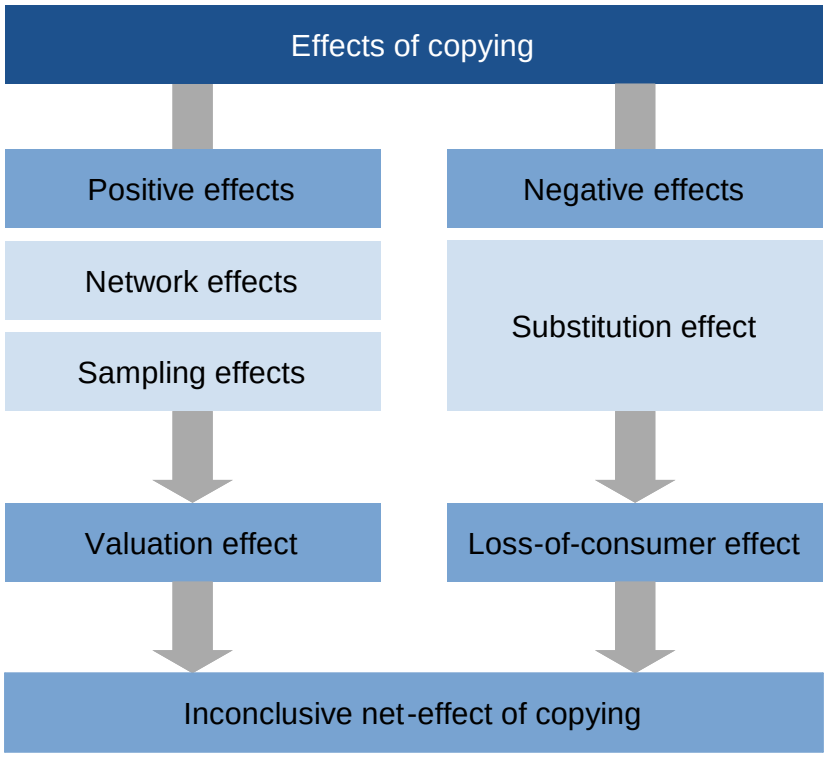
Digital media content is an experience good (Schumann and Hess 2006, p. 36; Shapiro and Varian 1999, p. 5): the quality of digital media content can only be

judged during or after consumption and never in advance. The result is information asymmetry: while the provider of content knows about the quality, the consumer acquires an unknown product. (Schumann and Hess, p. 36). Peitz and Waelbroeck (2006a, p. 464) conclude from this characteristic that consumers have to be enabled to experiment with digital media content in order to provide potential consumers with information about the content prior to the act of purchasing. Peitz and Waelbroeck (2006a, p. 464-466) refer to the sampling effect of copying, which can be used to provide information in a cost-efficient way: consumers that are provided with a sample of digital media content might find out that they like the content (Gopal, Bhattacharjee and Sanders 2006, p. 1529). If so, their higher attraction for the respective content potentially results in a higher WTP, which in turn might benefit the provider through higher profits (Gopal et al. 2006, p. 1529; Peitz and Waelbroeck 2006b, p. 912). So sampling is a method to promote and popularise digital media content. Liebowitz and Watt (2006, p. 529) compare the sampling of digital media content with a system called payola, which is common in the music industry. There, they state, music labels pay radio stations to play new records of the artists they promote. If radio stations play music more often, it is more probable that the promoted records become more popular (Liebowitz and Watt 2006, p. 529). Instead of making a monetary payment, providers of digital media content might promote and popularise their creations by giving away their content unprotected or even for free. In this way they ‘pay’ a certain opportunity cost in the present (i. e. a decrease in sales volume) with the objective of increasing their revenues in the future. According to Peitz and Waelbroeack (2004, p. 5), the increased revenues are not only achieved by an increase in the WTP or increasing demand but might as well be the result of decreased marketing and promotion costs.

In brief, both positive effects of copying, the network effects as well as the sampling effects potentially increase the consumers’ WTP. Shy (2000) refers to network effects also as a “valuation effect” (p. 105). This nomination applies to sampling effects as well. The distinction between the two effects is that the higher valuation, given to the content, in the case of network effects results from a larger user base, while it results from promotional information in the case of sampling effects. By boosting copying among consumers or merely by accepting it, both effects can generally be used to increase the popularity of content, its WTP and/or demand, and finally revenues and profits. Sampling, moreover, represents a cost-efficient alternative to other promotional actions.

In result, copying of digital media content has negative effects as well as positive effects. Figure 10 gives an overview: the left side shows the network effects and the sampling effects, which are essentially valuation effects. The right side shows the substitution effect (compare section 4.2), which leads to a loss-of-consumer effect (compare section 4.3). As both effects have different algebraic signs, the negative effects and the positive effects of copying result into a net-effect of copying (Shy 2000, p. 105). Whether this net-effect is positive or negative depends on the individual case; it is inconclusive.

Figure 10:
Effects of Copying Digital Media Content



Source: own illustration

The objective for providers of digital media content is in every case to reduce the loss-of-consumer effect and to increase the valuation effects. At this point one issue gets obvious. One could conclude that to maximise the valuation effect, digital media content should not only be provided without copy protection, but given away for free to a large extent. This, however, also increases the loss-of-consumer effect. If digital media content was accessible openly and freely, the according WTP would be diminished completely because the copies would be perfect substitutes for the original (compare Liebowitz 2004a, p. 16; 2004b, p. 9). Then, the highly popular content would not get purchased (any more) and financing would not be possible (compare Liebowitz 2004a, p. 17, 32). If the losses in the sales of content cannot be compensated through other revenue sources (see sections 5.2 and 5.3 below), the utility of purchasing has to be kept higher than the utility of copying, at least to a certain part or for a specific number of consumers.

5.1.2. Mechanisms to Control Partial Exclusion

To achieve that the consumer decides to purchase, the content provider has to relatively increase the utility of purchasing as compared to the utility of copying (compare section 4.2). Varian (2005, pp. 134-135) as well as Liebowitz and Watt (2006, pp. 527-532) suggest a number of mechanisms, which have the potential to reduce the loss-of-consumer effect and maintain a certain degree of (economical) exclusion:

- make the original cheaper than the copy,
- sell a personalised version,
- subscription, and
- bundle the original with a complementary good.

Make the original cheaper than the copy

One way to increase the utility of purchasing in comparison to the utility of copying is making the original cheaper than the copy. According to Liebowitz and Watt (2006, p. 530), the so-called limit pricing is a model traditionally used to prevent potential competitors from entering the market through the reduction of the market price. Varian (2005, p. 134) compares the provision of (illegal) copies with the provision by competitors and applies the so-called limit-pricing model to the situation of digital copying. Reducing the price for the original to a level, which is lower than the price for obtaining copies (i. e. transaction costs as explained in section 4.2), would effectively prevent copies from entering the market and thus reduce copying (Varian 2005, p. 134; Liebowitz and Watt 2006, p. 531).

Personalise

According to Smith, Bailey and Brynjolfsson (2000, p. 124), digital media content can be personalised almost without additional costs. It can be personalised to such extent that the version distributed to one consumer does not have (much) value to other consumers (Varian 2005, p. 135). Then there would not be (sufficient) incentives to engage in illegal copying. Every consumer would perceive the utility of purchasing as being higher compared to the utility of copying and would want to purchase his or her own personalised version. This way copying could be reduced.

Subscription

Alternatively to one-off payments and usage-related fees, a subscription fee can be charged (compare section 3.3). These payments are depending on time, but are independent from the actual usage and the amount purchased. Offering a subscription is economically offering a bundle over time (Varian 2005, p. 135). The consumers who decide (for whatever reason) to purchase a subscription, pay to obtain the original digital media content and decide against ‘paying’ the transaction costs of illegal copying. Varian (2005, p. 135) assumes that mainly higher convenience and/or timeliness of delivery are crucial factors in the decision for subscriptions. If originals provided in a subscription model carry higher convenience, timeliness of delivery, etc. than copies and if consumers value these factors, a subscription model potentially displaces copying and secures the revenue streams of digital media content providers without the need to attach a copy protection.

Bundle the original with a non-copyable good

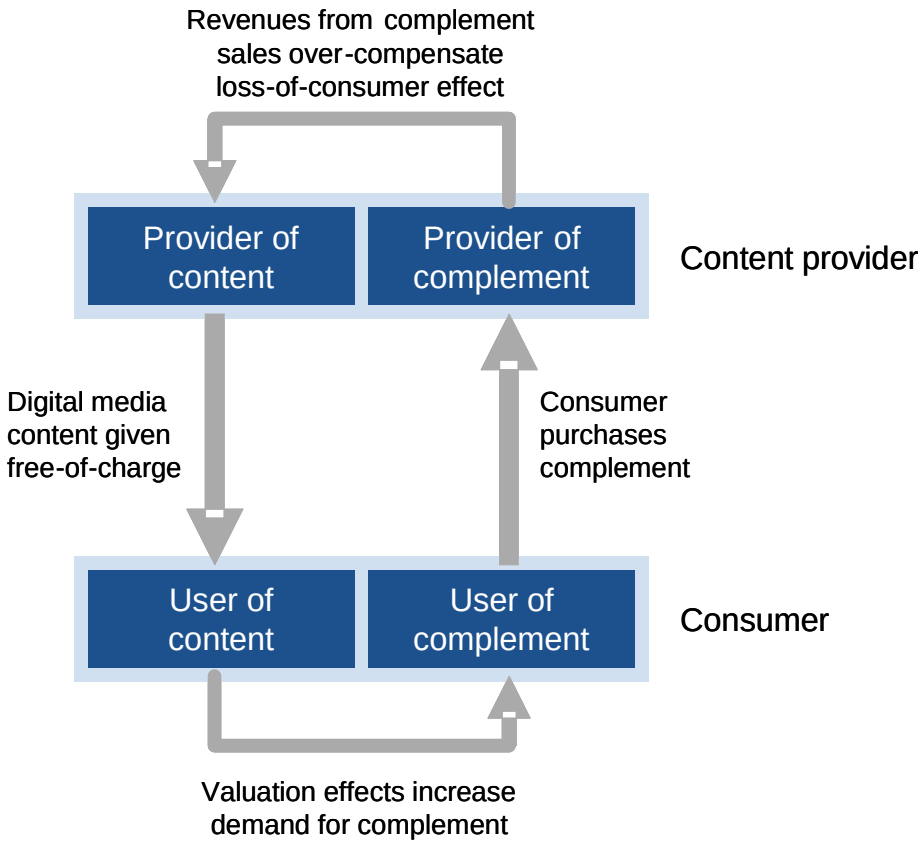
By bundling the original digital media content with a non-copyable good, the provider can also decrease the substitution effect of copying (Liebowitz and

Watt 2006, pp. 527-528). Copies do not substitute the original as good as without bundling because the copies do not include the non-copyable good. Copying is potentially reduced, as consumers prefer the higher value provided by the originals. The non-copyable good can be an intangible complement, e. g. a hotline service bundled with a software product, as well as a physical complement, e. g. merchandising articles provided in a bundle with digital music or movies.

5.2. Generate Revenues with Complementary Goods

Another alternative business model without copy protection is to generate revenues with complementary goods. Before this business model is explained, it is important to note that the decision, whether a provider wants to provide complements or not, is generally independent from the decision of providing the content with or without copy protection. However, in the case of provision without copy protection the providers of digital media content might have to search for alternative revenue sources. In general, it can be said that, the weaker the positive effects of copying and the stronger the negative effects of copying respectively, the harder it is for a provider to generate revenues from content sales and the more important are alternative revenue sources as e. g. complementary goods. The effects that occur when providing both, unprotected digital media content and complementary goods, are illustrate in Figure 11.

Figure 11:
Effects when Generating Revenues from Complementary Goods



Source: own illustration

A provider of digital media content, which also provides complementary goods, might be able to neglect the negative loss-of-consumer effect and benefit from the positive valuation effect, if the lost revenues from giving away content free-of-charge get over-compensated by increased complement sales. The general concept is to accept or even encourage copying of the provided digital media content. The larger user base then results into more demand of complementary goods, so revenues can be generated from the increasing sales of complements.

Examples of complements appear at the end of the value chain for digital media content, as developed in section 3.2. They can either be intangible, as the value added services (VAS), or physical, as the reception devices. As well, premium versions of sampled digital media content function as complements.

Sell intangible complements

An intangible complement might be support contracts for software given away without copy protection or even for free (Varian 2005, p. 135; Liebowitz and Watt 2006, p. 529). Support contracts are one type of VAS. They might include installation, hosting, training, and consultancy (compare section 3.2.2). Another example is live performances as complements to sound recordings (Ku 2002, pp. 37-38; Liebowitz and Watt 2006, p. 528). Generally, the more digital media content sold, the higher the demand for these complementary services and the more revenue can be generated. Not the distribution of the respective digital media content itself is at the core, but former value added services (VAS), i. e. additional services, move to the business model's centre.

Sell physical complements

Neither Varian (2005), nor Liebowitz and Watt (2006) propose to take advantage of copying to generate revenues from physical complements. Yet, this is just an analogous option to generating revenue with intangible complements. Varian (2005, p. 135) as well as Liebowitz and Watt (2006, pp. 527-528) do propose to provide merchandising, as e. g. the artist's autograph, posters, t-shirts, etc. in a bundle together with the digital media content as an argument to purchase the original content instead of a copy. Instead of giving away the complement, however, the digital media content can be given away without copy protection (or even for free) in order to increase the demand for physical complements. Reception devices are another example for physical complements, as the demand for reception devices increases with an increasing number of circulating digital media content. Again, it is an element at the end of the value chain that might move to the centre of the provider's business model.

Sell premium versions

Varian (2005, p. 135) as well as Liebowitz and Watt (2006, p. 529) propose to advertise digital or physical premium content through free content. Here, not the digital content intended for sales is given away for free but some version with lower functionality (Liebowitz and Watt 2006, p. 529). This is the economic concept of versioning, where two or more versions with different functionality and/or quality are offered for different prices (Liebowitz and Watt 2006, p. 529).

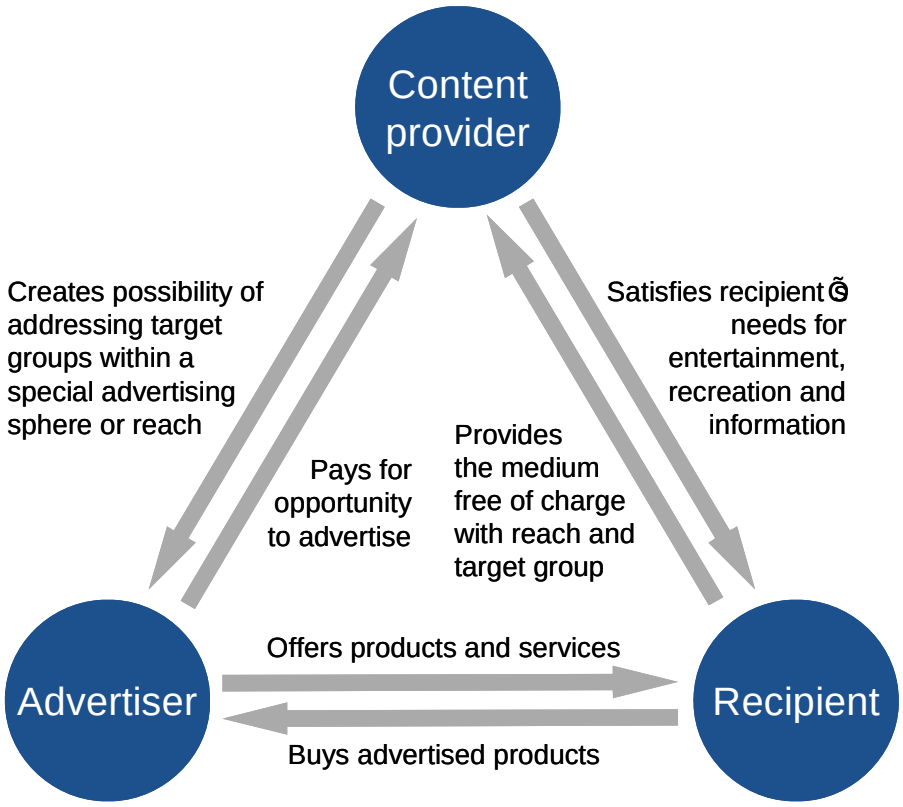
Versions that are designed according to the needs of different consumer groups can drive the total value of the content because each consumer group self-selects the appropriate version (Shapiro and Varian 1999). According to Takeyama (1994, pp. 156, 165), especially providers of digital media content can use the occurrence of copying to price discriminate: if users with differing needs in terms of value demand the content provided, the low-value users can be provided with a free-of-charge and unprotected version. The enlarged user base, then, increases the WTP of the high-value users through network effects. As the demand for the premium version increases with increasing user base of the low-value version, the former is a complement of the latter.

5.3. Generate Revenues with Advertising

Another potential source of revenues and therefore a potential alternative business model is advertising (Varian 2005, p. 135; Liebowitz and Watt 2006, p. 528). Like complements, advertising can be used as a source of revenue and as a replacement of the digital media content as revenue source.

In section 3.3, advertising was presented as a possible (indirect) financing method. It was mentioned, that advertisers pay content providers in exchange for the opportunity to address their users within some advertising reach. The resulting triangular relationship between the three players content provider, recipient, and advertiser (Zerdick et al. 2000, pp. 40-42) is illustrated in figure 12.

Figure 12:
Triangular Relationship in Media Financed by Advertising

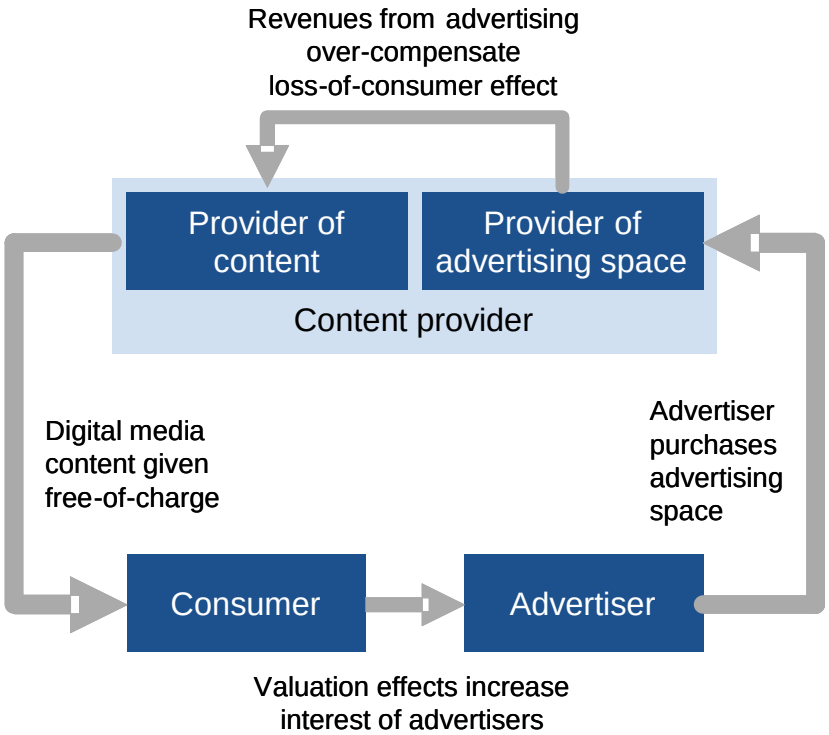


Source: own illustration based on Zerdick et al. (2000, p. 40)

In the advertising model, the digital media content itself is given directly from the provider to the consumer as in other revenue models. Yet, there is no direct payment in exchange. Instead, a third party pays the content provider in exchange for the consumers' awareness. According to Zerdick et al. (2000, p. 40) it is, in fact, not the digital media content, which is sold, but the recipient's potential attention. The advertiser pays for the possibility to use this potential attention to address the recipient and convince him to buy (more) of his products and services. Consequently, the more attention consumers give to a certain advertising sphere, the more interesting it is for advertisers.

As offering complementary goods (see previous section), the generation of revenues through advertising is generally independent from the decision of providing content with or without copy protection. Though, advertising is another alternative for the generation of revenues. As a company that provides complements to its digital media content, a provider of digital media content that finances its business with advertising might be able to neglect the negative loss-of-consumer effect. He or she can benefit from positive valuation effects, if the lost revenues from content sales get over-compensated by increased advertising revenues. These effects are shown in figure 13. Providers of digital media content can increase the attention, which is relevant to advertisers, by increasing the circulation of the content amongst the advertiser's target group. This can be achieved by providing unprotected content. The content could even be given away for free to receive the greatest possible valuation effect.

Figure 13:
Effects when Generating Revenues from Advertising



Source: own illustration

6. Discussion of Alternative Business Models for Different Types of Digital Media Content

To be able to discuss and compare the previously presented potential business models among each other and with the status quo, criteria have to be determined.

According to Schwinn (1993, p. 2), the initial point of management are the needs of consumers, which are unlimited in principle. Goods, on the other hand, are proportionally limited and scarce. It follows, that it is rational to optimize an input-output-relation, i. e. to optimize the relation of output to input (Schierenbeck 2003, p. 3). If input minus output equals profit, the input-output-relation is generally optimized when the profit is maximized. So costs (input) on the one side and revenues (output) on the other side have to be put into relation (Gläser 2002, p. 8).

Profit maximisation can be seen as the ultimate objective of market-oriented companies (Wöhe and Döring 1996, p. 124; Gläser 2002, p. 8). The objective of profit maximisation can be criticised, especially as it ignores long-run aspects, as e. g. investment decisions and the time-value of money (Rappaport 1998, pp. 13-20; Davies and Lam 2001, p. 16). The focus of profit maximisation is on single periods only, while for companies it is essential to maximise returns over a long time, i. e. the maximisation of the company's value and therefore the maximisation of shareholder value measured in the present value of future net cash flows (Rappaport 1998, p. 32; Davies and Lam 2001, p. 16). Profit maximisation leads to the maximisation of the shareholder value if the profits generated in each period do not depend on each other (Davies and Lam 2001, p. 16). Most of the following discussion will neglect the time-value of money and refer to inter-temporal effects only where they are of special importance. However, the long term is not to be neglected. It is crucial that profits are not only maximized in the short term but that profitability is sustaining. According to Stähler (2001, p. 48), to raise capital companies have to explain in business plans, how their business model is supposed to work (feasibility) and how it is supposed to create value in a sustainable way.

Following these arguments, to qualify for an alternative business model, the previously presented potential business models have to be feasible, profitable, and sustainable. Bearing these factors in mind, the potential business models are subsequently discussed in respect to different types of media content.

6.1. Discussion of Combining Positive Effects of Copying with Partial Exclusion

Combining positive effects of copying with partial exclusion is only feasible if positive effects actually exist and if they over-compensate the negative loss-of-consumer effect, which would then result in a positive net-effect of copying. This is only possible if at least one of the mechanisms, mentioned in subsection 5.1.2 and discussed in subsection 6.1.2, convinces enough consumers to still purchase the original content.

6.1.1. Discussion of Positive Effects of Copying

According to Krishnan, Smith, Tang and Teland (2007, p. 206), different types of digital media content have many common characteristics, but some differences as well. They refer to Peitz and Waelbroeck (2006a, p. 468), who mention network externalities and the role of free samples as being differing characteristics.

It has been seen in subsection 5.1.1 that network externalities exist, when the WTP of one user increases with the size of the user base (Liebowitz and Watt 2006, p. 527). Liebowitz and Watt (2006, p. 527) refer to software as one classical example of network externalities. In contrast to the other classical examples mentioned (telephones and fax machines), software is digital media content. Krishnan et al. (2007, p. 206) assume that network externalities are more important for software than for other digital media content as e. g. digital music. Peitz and Waelbroeck (2006a, p. 461) identify both types of network effects, direct and indirect (compare subsection 5.1.1), in the case of software. First, network effects occur in the consumption of software because the different file-formats work as standards. The more consumers work with the same standard, the more consumers are able to process the files one user created (Peitz and Waelbroeck 2006a, p. 461). As the usefulness results directly from the larger user base, this is the direct network effect. Indirect network effects occur, when the larger user base from copying results into more complementary goods and then indirectly into higher usefulness (Peitz and Waelbroeck 2006a, p. 461). Some authors empirically illustrate the existence of network externalities for the case of software, as e. g. Greenstein (1993) and Gandal (1994; 1995) for spreadsheet and database management software. This proves a statement of Liebowitz and Watt (2006, p. 527) that for the case of software the existence of network externalities was certain. However, Peitz and Waelbroeck (2006, p. 469) also mention that network externalities in the software industry are weakened by the development of universal cross-manufacturer standards. Although this might be true, operating systems, Microsoft products, instant messaging services, and PDF-readers and -writers are just few examples for software strongly benefiting from network effects (compare Peitz and Waelbroeack 2006, p. 469). Moreover, the introduction of online software (components) can also be seen as an intent to re-strengthen network effects, as software like Microsoft Office Live[9] has online collaboration elements (e. g. Microsoft 2006, February 15). Strong network effects are also assumed in the provision of some video and computer games (Peitz and Waelbroeck 2006a, p. 470): more and more games have an online component where players can compete or interact with others through the Internet.

Although, because of the interaction component, network effects might be stronger for software (and games), Peitz and Waelbroeck (2006a, p. 461) state that network effects are relevant for other types of digital media content as well. There, it is not the existence of standards that increases the popularity with an

[9] http://officelive.microsoft.com

increasing user base but the mere fact that more consumers know about the respective content (Peitz Waelbroeck 2006a, p. 461) as e. g. music from a specific artist or books from a specific author. Peitz and Waelbroack (2006a) speak in this context of “social network effects” (p. 471). Liebowitz and Watt (2006, p. 527) refer to this effect discussing the case of music. According to them, the WTP for an artist’s music is the higher, the more people listen to his or her music. This is because in social interactions it is important to be able to talk about mutual topics and to demonstrate group membership (Peitz and Waelbroeck 2006a, p. 471). This does not only apply to music but to every type of content that depends on high popularity, as e. g. books or movies. These consumer needs are addressed by interfaces such as MySpace[10], iTunes Store[11], or Yahoo! Music[12], where users search group memberships in order to share tastes and recommendations (Peitz and Waelbroeck 2006a, p. 471). This functionality, called social music discovery, can also be implemented as a gadget into social community websites, such as the tool iLike[13] into Facebook[14] (iLike 2007). Applications like this base on the mechanisms of network effects and boost them. For example, if installed, the name and link of an artist added by one community user appears in the so-called feed of all of his or her contacts. In this way the artist gets exposed to a multiplied number of users in a short time.

Subsection 5.1.1 explained sampling as another valuation effect. As the payola example there shows, promoting digital media content is not new. Peitz and Waelbroeck (2006a, p. 464) state that it is common to provide information about physically provided content: music can be tested prior to purchase by listening to CDs in stores, books can be opened prior to purchase in stores. With the example of shareware they also give an example of digital media content that can be tested prior to purchase (Peitz and Waelbroeck 2006a, p. 464). Shareware are free-of-charge versions of software that often have a restricted functionality and mostly cease to work after a specific time period (Peitz and Waelbroeck 2006a, p. 469).

Promoting music by boosting copying with unprotected digital content is especially interesting for new market entrants (Krishnan et al. 2007, pp. 205-206; Zhang 2002). As e. g. the music of new artists is unknown, nobody has a positive WTP for their sound recordings, their audiovisual recordings, or their live performances. They promote their music in order to increase their popularity so that, once popular, they can charge for their recordings and/or concerts. The traditional system of payola was already mentioned. Though, even without paying radios to play their records, artists generally give their music to radios and in this way eventually to consumers free of charge. As already mentioned in subsection 5.1.1, file-sharing is a cost-efficient alternative, not only for the distribution of digital media content, but also for its promotion. Traditionally, in the mu-

[10] http://www.myspace.com
[11] http://www.apple.com/itunes
[12] http://music.yahoo.com
[13] http://www.ilike.com
[14] http://www.facebook.com

sic industry, advertising and promotion are cost-intensive tasks done by music labels (Peitz and Waelbroeck 2006a, p. 471). Compared to this, sampling is a low-cost alternative (Krishnan et al. 2007, p. 205) and artists do not have to agree to contracts, which are often very restrictive and connected with the transfer of exclusive rights, or which leave them little royalties (compare Knoke 2007, October 11). According to Peitz and Waelbroeck (2006a, p. 471), instead of investing high amounts of money into pushing information to consumers, through the sampling effect providers of digital media content can let consumers pull the information. The Arctic Monkeys is the first band that became popular only through online means. They built up their fan base through chat rooms, blogs and especially the community site MySpace[15] prior to the release of their first album, which then became to be the “fastest-selling debut album of all time” (Hitwise 2006, January 31). Some already-popular artists started to bypass music labels (at least in part) as well and use the sampling effect of giving away unprotected content directly to consumers. Popular artists as Prince, Nine Inch Nails, The Charlatans, and Smashing Pumpkins have already given out free (digital or physical) samples (Knoke 2007, October 11). Radiohead probably received the greatest publicity so far, publishing their latest album ‘In Rainbows’ only on their band website[16] (e. g. Gibson 2007, October 2). More popular artists, like e. g. Oasis and Jamiroquai, have already announced to follow (Rayner 2007, October 11). It can be concluded that promoting digital media content is feasible for many.

Regarding profitability, Peitz and Waelbroeck (2006a, p. 464) name the (already-mentioned) crucial issue: once unprotected or even free samples of digital media content have been given away, it is difficult to monitor and control their spread and their effect of reducing revenues (loss-of-consumer effect). As well, in the case of shareware, the restrictions imposed on the evaluation version can be cracked like any other DRMS (compare section 4.1). Sampling is only feasible if the loss-of-consumer effect is over-compensated by the positive effect of increased demand and reduced promotion and marketing costs (Peitz and Waelbroeck 2006a, p. 464; compare figure 10 in subsection 5.1.1). Many argue that nothing will be left to sell once all digital media content is in circulation (Kerbusk and Schulz 2007, p. 80). Peitz and Waelbroeck (2006b, p. 908) show in an analytical model that the net-effect is positive if a large number of products with sufficiently high product diversity is offered. While they especially examined digital music, they state that it could also be applied to other digital media content, as e. g. computer games and software (Peitz and Waelbroeck 2006b, p. 912). Where sharing unprotected content is feasible and profitable it can be established as an alternative to traditional marketing and promotion activities (Peitz and Waelbroeck 2004, p. 1).

[15] http://www.myspace.com
[16] http://www.radiohead.com

6.1.2. Discussion of Mechanisms to Control Partial Exclusion

It has been seen so far that the exploitation of network effects and sampling effects is feasible and can be profitable for some types of digital media content. The profitability of this business model, however, ultimately depends on the extent to which consumers can be convinced to purchase originals instead of consuming only the free copies provided. Providers of digital media content might use the mechanisms described in subsection 5.1.2 to influence the consumers' decision to the desired direction.

Discussion of making the original cheaper than the copy

The most obvious mechanisms that can be used to influence the consumers' utility of purchasing as compared to the utility of copying is to make the original cheaper than the copy (compare subsection 5.1.2). The reduction of prices to convince consumers to purchase appears to be rather trivial. The extreme case would be to give away all the content for free. This case is an immanent component of the business model described in section 5.1, discussed in this subsection, and referred to as giving away free samples or providing content free-of-charge. Generally can be stated that the lower the prices charged, the less revenue can be raised from the provision of the content itself. Liebowitz and Watt (2006, p. 530) state that in the limit-pricing model not only the entrant but also the incumbent suffers losses from reducing the price. Because costs for the production and distribution of content have to be recovered, however, a minimum level cannot be crossed. In consequence, the exact price has to be found at which the valuation effect sufficiently increases the consumers' utility of purchasing, while, at the same time, the revenues raised are sufficient to finance the business activities. At this point, it can be taken into account that sampling potentially decreases the costs for marketing and promotion. The viability of lowering the price also depends on the level of transaction costs that determine the consumers' utility of copying. Generally, the purchase price charged can be higher for types of digital media content that have higher transaction costs of copying.

Discussion of personalisation

Another mechanism described in subsection 5.1.2 and intended to influence the consumers' utility of purchasing as compared to the utility of copying is to personalise the content. The possibility to personalise content differs among the different types of digital media content. According to Peitz and Waelbroeck (2006a, p. 469), business software is a type of content where personalisation is common. Software providers offer integrating services that build a highly customised software version for every customer. One example is SAP[17] which offers solutions "that meet unique business goals" (SAP n. d.), although this function is outsourced. One can assume, however, that these corporations do not consider illegal copying as an option anyway. In contrast, users of video and computer games are more likely to consider this option. While the games themselves are difficult to personalise, network games can have a personal component. There,

[17] http://www.sap.com

players often need their own profiles, which can only be accessed with a valid identification number provided together with the original software (Peitz and Waelbroeck 2006a, p. 470). Other digital media content, as e-books, music, movies, etc., disqualifies for personalisation. Though, also in these cases, it might be possible to personalise the interface. Whenever, for example, a profile is necessary on a website, this potentially adds sufficient value to the original so that consumers decide for the purchase option. As personalisation especially through interfaces is not too cost-intensive, it might qualify, where feasible, as a profitable mechanism to not lose all consumers when giving out unprotected samples.

Discussion of subscription

Personalised additional services can be offered free-of-charge or provided in exchange for a subscription fee. Especially if compared to one-off-payments, subscriptions can be an argument for purchasing content instead of copying it because consumers might especially value the convenience of subscriptions (compare subsection 5.1.2). After a regular amount is paid once a month or once a year, the registered consumer can do whatever he or she wants. According to Peitz and Waelbroeck (2006a, p. 469), software can be provided through the Internet with a subscription. Especially business software is increasingly offered as a service with monthly or yearly payment plans, e. g. solutions by SAP[18], Salesforce[19] and Microsoft[20] (Illgner 2007; Microsoft 2006, February 15; Rivlin 2007, November 13). Fink (2003, p. 176) mentions the offer of subscription services in the provision of open source software. Also, the main objective of business software providers that offer software as a service is not assumed to fight copying (see following section), these are interesting examples of how to diminish copying, which can serve for the private consumer market as well. For the case of video and computer games, Peitz and Waelbroeck (2006a, p. 470) mention that often a monthly subscription for the usage of network games is charged. In reference to digital music, they further explain the convenience argument (Peitz and Waelbroeck 2006a, pp. 470-471): copying files can have high transaction costs because file names may be false, files may be corrupt, documentation is poor, and downloading depends also on connection speeds of the holders of the copies, so that consumers might prefer to pay subscription fees in order to evade these costs. Online music store eMusic[21] e. g. offers unprotected music files from independent labels in the universally compatible file format mp3 in exchange for monthly subscription fees (Webb 2007, February 8). Another characteristic potentially valued by consumers is timeliness of delivery (compare subsection 5.1.2). However, where timeliness of delivery is relevant, copy protection is not necessary. Online news, e. g., rapidly lose their value so it is not attractive to copy them. In contrast, digital media content types such as software, music, movies, or e-books generally do no lose

[18] http://www.sap.com
[19] http://www.salesforce.com
[20] http://www.microsoft.com
[21] http://www.emusic.com

their value over time so copying is attractive. Providing these types unprotected but under a subscription scheme can enable the exploitation of valuation effects and in the same time ensure revenues.

Discussion of bundling the original with a non-copyable good

The last mechanism presented in subsection 5.1.2 is to bundle the original with a non-copyable good. It was mentioned that the non-copyable product increases the consumers' utility of purchasing as compared to the utility of copying. This strategy is then feasible, if non-copyable products are indeed sufficiently valued by the consumer and not available outside the bundle (compare Varian 2005, p. 135). The services, which software providers offer, do not only personalise the software (see above), their mere existence increase the value of the original as compared to its copies. Besides integrating services, companies offer e. g. centralised information and hosting services (Peitz and Waelbroeck 2006a, p. 469). SAP[22] offers e. g. global support, consulting services, and training among other things (SAP n. d.). While these are intangible complements, digital media content can also be bundled with a physical complement. In this way providers could cater the so-called 'physical goods guy' as well (compare section 3.4). Content can be bundled to merchandising articles, where consumers are likely to become fans, e. g. in the case of providing music, movies, or books. These consumers do not only consume the content but want to get into contact with the creation or the creator to a greater extent. Purchasers of digital music could be entitled to get a band poster, autograph, fan club membership, a t-shirt, or could be allowed to participate in a lottery for concert tickets (Liebowitz and Watt 2006, p. 527; Varian 2005, p. 135). The same can be applied to movies, where movie posters or cinema tickets could be provided. As well, e-books could be bundled to options for a reading by the author, etc. As the production and provision of the non-copyable good, however, might be cost-intensive and might even counteract the cost-advantages of providing digital content, this strategy is only profitable if these additional costs get over-compensated by increased content sales.

6.2. Discussion of Generating Revenues with Complementary Goods

In the previous section it was at some points discussed to provide compatible goods in a bundle with digital media content. There, they are intended to increase the value of the original content. In the same time, complements might be separate sources of revenues. In section 5.2, the provision of intangible complements, physical complements and premium versions was presented as an alternative business model, which gets the more important, the more content providers suffer from the loss-of-consumer effect. Providers of digital media content, which have problems to (or do not want to) enforce the copyrights of the content itself, might be able to generate revenues with goods whose property rights can be enforced.

[22] http://www.sap.com

Discussion of selling intangible complements

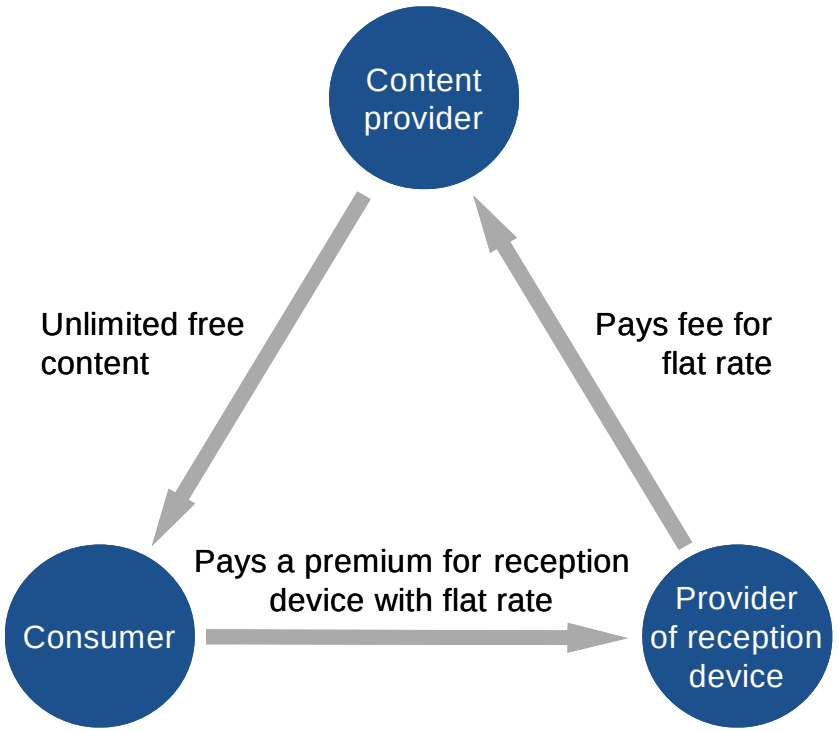
In section 5.2, live performances were presented as an intangible complement to digital music. Artists that want to exploit sampling effects to gain popularity, have the difficulty to convert this popularity into content sales (compare subsections 5.1.1 and 6.1.1). Instead, they could focus on converting their popularity into sales of concert tickets. Indeed, Ku (2002, pp. 37-38) reports of a statement of the former songwriter and musician of the Byrds, Roger McGuinn, before the US Senate Judiciary Committee on July 11, 2000: the musician testifies that concerts are his principal source of income. Referring to the Wall Street Journal, Ars technica (Bangeman 2007, October 11) reports that Madonna's last three tours raised revenues from ticket sales of about US$ 385, while she sold about 10.4 million copies of her last four CDs. Even with a hypothetical price of US$ 15 for each copy, this would account for US$ 156, which is not even half of the revenues from her concerts. Accordingly, Madonna terminates her contract with the Warner Music Group and closed a deal with a concert promotion company, which comprises the provision of three studio albums, concert promotion and merchandising (Bangeman 2007, October 11; Smith 2007, October 11). Another example for selling intangible complements mentioned in section 5.2 are support contracts for software, comprising e. g. software installation, hosting, training, and consultancy. This was also discussed in reference to personalisation and bundling, there with the objective to increase the value of the original (compare the previous section). Probably, though, instead of having this objective, the companies mentioned above (SAP, Salesforce, and Microsoft) intend to generate and ensure revenues with the provision of these VAS. In fact, selling support contracts is one business model in the provision of open source software. Many open source products are provided openly and free-of-charge (Fink 2003, p. 176). So one characteristic is that they are 'open', i. e. the source code is openly accessible, in order to enable mutual development in communities (Smith et al. 2000, p. 124). 'Free-of-charge' as the other characteristic means that no license fees are charged (Fink 2003, p. 176). As this way digital media content, namely the software product, is given away for free, no revenues can be raised from the content. Instead, providers of open source software often charge for support and professional services (Fink 2003, pp. 176-177).

Discussion of selling physical complements

Merchandising was discussed in the previous section as another possibility to increase the value of the original content. Again, however, it might also qualify as an alternative revenue stream. For example, as fans of a certain band probably assign some value to the band's concerts, they might assign value as well to posters and t-shirts with the band's name and logo, etc. It is questionable, though, if revenues from merchandising are sufficient to recover and over-compensate the losses from providing digital media content without a copy protection. Probably more potential has the provision of complementary reception devices. According to Peitz and Waelbroack (2006a, p. 470), providers of video and computer games follow this business model element. For example, Ninten-

do[23] generated 60.5 % (585 million yen) of revenues in its financial year 2007[24] with hardware and only 39.3 % (380 million yen) of revenues with software (Nintendo 2007, p. 20). This business model can be applied to more types of digital media content. Schumann and Hess (2006, p. 65) state that in the first quarter of 2005, Apple received US$ 1.2 billion in revenue from the sales of its reception device, the iPod, and only US$ 177 million from content sold through its online music store iTunes Store. When seeing these numbers, it does not surprise that Apple's chairman and CEO, Steve Jobs, published a white paper opposing the attachment of copy protections (Jobs 2007, February 6). In October 2007, Business Week (Grover and Burrows 2007, October 22) spread rumours about a progressive business model, based on financing a free provision of digital music through complementary devices. Probably against Apple's market power, with Universal Music Group, Sony BMG Music Entertainment and Warner Music Group, three of the four major music labels are said to negotiate about a music flat rate, financed through complementary reception devices. The business model of the so-called 'Total Music' model would base on a triangular relationship between labels, consumers, and providers of reception devices, as illustrated in figure 14. The music flat rate would cost about US$ 5 per month, but it is the providers of reception devices that would pay this subscription fee. To get entitled to use the flat rate, customers would have to purchase a reception device from participating providers for a premium price.

Figure 14:
Triangular Relationship of 'Total Music' Model



Source: own illustration based on Grover and Burrows (2007, October 22)

[23] http://www.nintendo.com
[24] Nintendo's financial year 2007 ended on March 31, 2007.

Discussion of selling premium versions

Finally, (digital or physical) premium versions can be also considered as complementary products (compare section 5.2). The basic version is given away without copy protection and often even for free to increase the consumers' valuation for the premium version. Revenues are then (mainly) generated from selling the premium version. In subsection 6.1.1 shareware was mentioned as software that is provided free-of-charge with the objection to lead to the purchase of the full version. Similarly, providers of video and computer games give out free and unprotected games to boost popularity and subsequently generate revenues from selling extension packs (Peitz and Waelbroeck 2006a, p. 470). In the provision of digital music, songs or albums can be provided unprotected or even free-of-charge in order to sell physical premium versions of albums, which could have, for example, a nice cover with lyrics, comprehensive information about the artist and maybe a bonus DVD. This is an overlapping concept with the provision of merchandising. In fact, the bundling with additional merchandising articles transforms a basic version into a premium version. The example of Radiohead's online provision of their latest album 'In Rainbows' (compare subsection 6.1.1) is also an example for versioning. While the downloader could download the unprotected version of the album for as much as he or she wanted, starting at 45 cents, which was the administration charge (Gibson 2007, October 2), there was an option to also order a physical premium version of the album for US$ 80, comprising vinyl and show recordings on CD (Rayner 2007, October 11). Liebowitz and Watt (2006, p. 540) apply the concept of versioning to books and mention Creative Commons founder Lawrence Lessig, who offers his book 'Free Cultures' as a free-of-charge online version[25] while still selling the physical hardcopy version, e. g. through Amazon.

In result, providers of different types of digital media content appear to also generate revenues from alternative sources. The provision of these goods does not suffer from copying because their property rights can be better enforced as the property rights of digital content. According to Liebowitz and Watt (2006, p. 528), however, it is not sure whether these goods are substitutes or complements, while the business model, discussed in this section, can only work, if the goods are strong complements. Only then, the increased circulation, coming from the valuation effects, leads to increased revenues from alternative goods. The examples presented above seam to qualify as complements, which would make the according business model feasible. Numbers showed that at least the sale of concert tickets and the sale of complimentary reception devices might be profitable for some providers. The same can be assumed for the provision of software support contracts.

[25] As Lessig is the founder of the Creative Commons (see http://www.freeculture.org), he provides the online version of his book (http://www.free-culture.cc) under the Creative Commons license. The downloader is allowed to "redistribute, copy, or otherwise reuse/remix" the book, if he or she does so "for non-commercial purposes and credit Professor Lessig" (www.freeculture.cc/freecontent, Accessed 08/12/2007).

6.3. Discussion of Generating Revenues with Advertising

Another potential source of revenues and therefore a potential alternative business model is advertising (Varian 2005, p. 135; Liebowitz and Watt 2006, p. 528). Like complements, advertising can be used as a source of revenue and as a replacement of the digital media content as revenue source.

Advertising as a financing model is not new at all in the provision of media content. Television and radio programs are provided free-of-charge in order to sell advertisements and magazines as well as newspapers are partially financed by advertising revenues (Varian 2005, p. 135). The price to reach 1,000 contacts, the so-called cost per mille (CPM), is used as a reference price to agree on (Rogge 2007, p. 74). This classical form of advertising has been also applied to newer forms of digital media content, as e. g. digital audio and video. Advertising is more efficient, when it is implemented into content, given that consumers cannot or do not mute the channel or even leave the room for the time of the commercial (compare Varian 2005, p. 135). Implementation into content is possible e. g. with streamed digital audio and video content similar to streamed TV and radio programs.

Other forms of digital media content are not suitable for implementation of content. On-demand content, as songs and albums or movies, is generally provided without implemented commercials. When not implemented, advertising can also be put on the interface from which the content is accessed. This form of advertising is generally possible with every type of digital media content. So-called pay-per-performance does not calculate a potential reach a priori (as the CPM), but measures the actual reach in clicks, sales, or registrations (Rogge 2007, p. 74). Internet advertising is becoming increasingly important. According to PriceWaterhouseCoopers (PwC 2007, pp. 107-111), the revenues from Internet advertising in Germany have risen from € 227 million in 2002 to € 495 million in 2006 and will further increase to about € 1,600 in 2011. Statistics like this probably have moved many providers of digital media content to change their business models.

According to the International Herald Tribune (Pfanner 2007, November 18), advertising will be the predominant financing model for videos on the Internet. The newspaper further argues that the Internet enables matched advertising formats (Pfanner 2007, November 18): possible are classical advertising spots, advertising implemented into text, so-called overlays that literally lay themselves over the content, and finally advertising on community sites that “spread virally” (Pfanner 2007, November 18). Especially the newest and last form mentioned is interesting for the provision of unprotected digital media content. The term ‘virally’ refers to the multiplying spread of a biological virus. Likewise, this so-called viral advertising spreads multiplied by network effects. Viral advertising is also called social advertising because the multiplying factors, which lead to the network effects, are a phenomenon occurring on websites with social community elements as, most-prominently these days, Facebook[26]. ILike as one gadget

[26] http://www.facebook.com

using these effects was already mentioned in subsection 6.1.1. The gadget implements an area on a user's profile site which displays e. g. the user's favourite artists and concerts he or she plans to or would like to visit. Any changes done to this iLike module are automatically published in the mini-feeds of all the user's contacts. Consumer attention then gets channelled to online shops where the content or complementary goods are sold (Facebook 2007, November 6). While this advertising is intended to lead to a purchase, Facebook also enables providers of content to 'get friends' with consumers in the same way that real friends can connect through the social community site (Facebook 2007, November 6). For example, users can get connected with providers and thus get informed about all the changes on the providers' profile sites (Facebook 2007, November 6). The increased attention is attractive for advertisers who might want to put advertisements on the content providers' websites. Bebo[27] is another example for a community website on which providers of digital media content can benefit from network effects. Recently, the British social community website introduced a service through which providers can present their content as well as advertisements to users (Pfanner 2007, November 18). This service, called Open Media, lets content providers publish their own content and also keep their own advertising (Bebo 2007, November 13). As with Facebook, content providers can create their own profile and add users as 'friends' (Bebo 2007, November 13). The attractiveness of social advertising in general and Bebo's Open Media in particular gets proved by an extract of the list of content providers participating in the launch: "CBS, MTV Networks, ESPN, the BBC, Channel Four, ITN, Yahoo! and BSkyB" (Bebo 2007, November 13).

It has been seen that the Internet opened new possibilities to personalise content. Personalisation is especially valued by advertisers, as they are interested in information about the content users to effectively address their target groups (Varian 2005, p. 135). Moreover, as the Internet is a network, providers using this channel can benefit from network effects. Other networks with high potential for future development are telecommunication networks. As every consumer has his or her own personal mobile (number), it is even easier for providers of digital media content as for advertisers to personally address consumers.

In result, advertising is another attractive revenue source for providers of digital media content that want to benefit from valuation effects.

[27] http://www.bebo.com

7. Consequences of Alternative Business Models

Finally, this chapter shows the consequences of the business models developed in chapter 5 and discussed in chapter 6. First, the consequences for providers of digital media providers are shown in greater detail (section 7.1). Then, this paper briefly addresses possible consequences for society and the legislator (section 7.2).

7.1. Consequences for Digital Media Providers

Chapter 5 presented potential alternative business models for the provision of digital media content without copy protection. Chapter 6 discussed these propositions and showed that they can be feasible and profitable at least for certain types of digital media content and in certain circumstances. This section finally discusses the consequences of the alternative business models for providers of digital media content.

It can be assumed that consequences differ in respect to which combination of the following dimensions applies to the individual provider:

1. Which type of digital media content is provided?
2. Is the provider a new entrant or already established?
3. Is the provider a creator, a producer, or a distributor?

The following elaboration concentrates on software, video and computer games as well as digital music as three examples for different content types (question 1) to address questions (2) and (3) within this structure.

Consequences for providers of software

It has been seen that software in general has strong direct and indirect network effects. These network effects have been weakened over the last years but some software providers re-strengthen them by online collaboration elements. Many software producers popularise their software with shareware versions. By giving out these shareware versions for free, they exploit sampling and network effects in combination with a versioning approach. Although many users crack and copy premium or complete software versions, network effects seem to be strong enough to motivate sufficient consumers to purchase original copy-protected software.

Especially for professional usage, software is often personalised, bundled with additional services, and offered with a subscription plan. It has to be noted, though, that giving out shareware still includes the attachment of a copy protection. It is merely tolerated that some users (especially private users) remove the copy protection, while especially for professional usage copyrights are enforced in a greater extent. In this way, software providers achieve benefits from valuation effects while still being able to sufficiently exclude illegitimate users. They do not completely abandon copy protection techniques.

Distinct to proprietary software, open source software is provided without a copy protection. Here, the source code is provided openly and for free, so others are

able to copy, distribute (also as open source), and create derived works. While the open source approach is often chosen to enable mutual creation and development of new software, it is not always driven by profit maximisation objectives.

Often, intrinsic motivation is an important factor in the motivation of software creators. Other creators might want to increase their reputation, which would increase their market price for subsequent projects. However, open source is also a viable business model for profit maximizing software producers and distributors. Although the source code, i. e. the content itself, is provided unprotected and free-of-charge, producers and distributors of open source software generate revenues with advanced software packages and support contracts. The lower costs associated with implementing open source software as compared to proprietary software (no costs for copy protection, litigation, less costs for marketing and promotion) might facilitate market entry. It is easier for new-entering providers of open source software to exploit network and sampling effects and to take market shares from already-established providers of proprietary software. The Mozilla Foundation[28] is an example for a relatively new entrant using an open source approach. With the Firefox Browser they entered the Internet browser market and have rapidly won market shares, competing against Microsoft's proprietary Internet Explorer. In a relatively short time the Firefox Browser became a brand that is nowadays comparable to the Internet Explorer brand. The success of the Mozilla Foundation was also enabled by another important characteristic. It is increasingly possible to generate profits from advertising. The Mozilla Foundation generated royalties amounting to US$ 61.5 million in 2006 from search engine providers in exchange for implementing search engines in the browser's navigation toolbar (Mozilla 2006, p. 3-6).

Advertising as a revenue source even benefits creators of software. The offer of freeware, which is proprietary but free-of-charge, is not new. However, their creators, often intrinsically motivated, are increasingly able to refinance their creative activity. Often the creation of software tools is only an additional occupation for these software developers. When it is able to sufficiently generate revenues with this additional occupation, they might be able to establish small (growing) businesses. Advertising can be implemented into the software itself (then also called 'adware') or provided through advertising programs as Google's AdSense[29]. Moreover, creators of software tools as the mentioned iLike tool directly benefit from sampling and network that enable them to rapidly win users and generate revenues. Again, creating brands through popularising effects is increasingly possible.

Consequences for providers of video and computer games

Video or computer games are software as well, so also game providers can exploit direct and indirect network effects. As children and teenagers talk about games and groups favour certain games, they even exhibit social network

[28] http://www.mozilla.org/foundation
[29] http://www.google.com/adsense

effects. Similar to the online collaboration component of business software, many providers of video and computer games implement online components. So in contrast to ‘normal’ games, network games can be personalised. Often a subscription is required to get access to the network component. It has also been seen that often basic versions are sampled to increase the valuation of consumers for extension packs. As for ‘normal’ software, different concepts for the provision of games exist. For example, the shareware example applies to games as well. An interesting example is the video games market because the indirect network effects are extremely strong there and providers of video games generate a great portion of their income from complementary products, as e. g. in the case of Nintendo. Additional to some of the consequences of ‘normal’ software, especially this strong compatibility between games consoles or game handsets and video games enables game producers to exploit the positive effects that occur when the games are provided unprotected.

It has to be questioned, though, if this business model is also achievable for new market entrants as nowadays Nintendo, Sony, and Microsoft share the market of video games hardware among themselves. Microsoft was a late-mover itself. However, it made use of its strong brand to enter a new market. Even if new entrants would be able to popularise their content rapidly, it would be hard to take market share from the incumbents because entry barriers in the video console market are high. New entrants are still dependent on compatibility with the incumbents’ hardware. The provision of complementary devices serves here as an example for a business model element that providers can apply to defend the status quo.

Consequences for providers of digital music

As mentioned, in music provision there are not as strong network effects as in the provision of software. However, social network effects do occur because the value of consuming certain music is the higher the more people know and can talk about this music.

It has also been seen that sampling is a cost-efficient way to popularise new music and therefore qualifies as an alternative to traditional marketing and promotion. Especially new artists (creators of music that enter the market) do not have the financial means to popularise and distribute their music themselves and therefore enter often-restrictive contracts with music labels. Although music can now be distributed digitally, it is still common for artists to publish the music as well on physical data carriers. However, it is feasible nowadays to get sufficient popularity through networks before the first album is released by a music label, as e. g. the Artic Monkeys proved. So, new channels increasingly enable creators to directly address consumers. For music creators these channels are of advantage because they represent cost-effective alternatives to enter the music market.

The example of Radiohead showed furthermore, that also already-popular artists try to bypass (at least to some extent) music labels as distributors and promoters. They exploit the benefits of valuation effects and generate revenues

with live performances and limited premium versions for fans. So, not only entry barriers are lower, but also established creators are enabled to emancipate themselves. The labels themselves recognize this development and increasingly try to shape their profiles as service providers that connect artists with consumers. As mentioned, with the EMI Group and the Universal Music Group, two of the big four music labels, accept the consumers' wish to 'own' music instead of only 'renting' it and engage in publishing their content without attaching a copy protection. They also begin to imitate the way consumers receive copied music and implement by offering flat rates financed by subscription fees.

Regarding distributors of digital music, their distinctive position as compared to the labels' position gets clear. The open letter of Steve Jobs showed that for them the costs of excluding illegitimate users are higher as the respective benefits. They as well suffer under the loss-of-consumer effect of copying, but not as much as the labels as copyright owners. This is especially true for distributors that also provide complementary reception devices, as e. g. Apple, Microsoft, and Sony. The example of the 'Total Music' model shows that the music labels would also like to get into the position of benefiting more from complement sales. This model, which is still only hypothetic, also shows that new business models are still to come.

Concluding thoughts about consequences for providers of digital media content

It has been seen that alternative channels of digital media content provision without copy protection lower the entry barriers for new creators, producers and distributors. Through the exploitation of network and sampling effects new entrants are able to popularise their creations and create a brand in a cost-efficient way. Among the new entrants, creators are increasingly in the position to bypass subsequent value chain players, address consumers directly and generate revenues themselves.

Although the alternative business models are not new, incumbents increasingly have to re-think their existing business models, as competition is increased and the alternative business models might prove to better cater to consumers. Still, already-established providers might apply only parts of the presented models as business model elements. It was seen that different combinations are possible. Network effects as well function to defend the status quo, as the Nintendo example showed. The universal abandonment of copy protection cannot be expected as of today. Nevertheless, it might be a viable business model also for incumbents to engage in the provision of unprotected content. The combination of positive effects from copying with partial exclusion was one business model presented. Independent thereof, this business model can be combined with the provision of complementary goods and/or with advertising. Business models consist of different components and every provider has to find the combination that suits his or her individual characteristics.

7.2. Consequences for Society and the Legislator

The ultimate objective of copyright law is to benefit society. As the abandonment of copy protection undermines copyright protection, this section briefly explains possible consequences of the alternative business models for society.

The justification of copyright protection today is still based on the Statute of Anne as the first governmental protection of content creators (Deterin 2001, pp. 29-30). Davies (1994, as cited by Detering 2001, p. 30) identifies four basic principles:

1. The creator has the natural right to have the exclusive power of disposal over his own creations.
2. The creator has the natural right to get compensated for his productivity in the same amount that others benefit from his or her creations.
3. Incentives for creative activity are desired by society.
4. Broad distribution of creative works is important for the progress of society.

According to the first two principles, copyright protection would be natural. Detering (2001, pp. 30-31), however, refers to widespread criticism on these principles and Ohly (2008, p. 5) does not see any rational reasoning for the natural right of intellectual property at all. Ohly (2008, pp. 6, 8) especially criticises that copy protection is very long (compare subsection 3.1.1) and very strong, regardless of how incrementally important a creation might be. If there is no natural law, the justification of intellectual property protection is left to the provision of incentives for innovation (principle 3) and broad distribution of creative works (principle 4) (compare Ohly 2008, p. 3).

The exclusiveness of copyright protection effectively constitutes a temporary monopoly (Engel 2008, p. 19). This quasi-monopoly allows copyright holders to set a price above the marginal costs, which enables them to make reasonable profits (Fetscherin 2005, p. 45). It therefore provides the copyright holder with monetary incentives (Kiefer 2001, pp. 275, 277) to overcome the disincentive to produce (Varian 1998). The obtained monopoly rent is the reward for successful innovation (Engel 2008, p. 20).

Monopoly power, though, does not come without costs (Engel 2008, pp. 19, 24). First, monopolies exploit consumers because the monopoly price is higher than in competition (Engel 2008, p. 24). Second, only consumers who want to pay this higher price can consume the content (Engel 2008, p. 24). This excludes consumers whose WTP would be sufficient to compensate production costs (Bauckhage 2003; p. 237; Engel 2008, p. 24). In effect, copyright protection leads to the underprovision of content, which is ineffective allocation and constitutes a deadweight loss (Bauckhage 2003, p. 237; Engel 2008, pp. 24, 42; Fetscherin 2005, p. 45).

Consequently, copy protection fails to accomplish principles (3) and (4) at the same time. Ohly (2008, p. 2) refers to a trade off between protecting creators of intellectual creations (incentives for innovation) on the one side and providing the public with access to these creations (allocation) on the other side. Copy-

right protection limits access and therefore excludes imitation. It takes this cost into account to favour innovation (Ohly 2008, p. 3).

This paper showed that the occurrence of digital copying further deteriorates the effect of copyright protection on welfare. First, the increasing requirement of copy protection techniques additionally limits access to digital media content. Many blame copy protection techniques to even restrict private usage exemptions. Second, the reaction of consumers to these restrictions by circumventing copy protection measures, demonstrates the ineffectiveness of copyright protection to provide sufficient incentives (Liebowitz and Watt 2006, p. 537). In result, copyright protection more and more fails to provide sufficient incentives for creation, while still increasing underprovision.

Further showed this paper that providers of digital media content increasingly change their business models to react to consumers' demand of unprotected content and abandon their quasi-monopolies. It was seen that they do this not only to benefit from short-term effects but with economic reasoning. Innovation is apparently also possible without copyright protection. This assumption is assured by Engel (2008), who shows in an analytic model that incentives for innovation are also provided by competition.

Engel (2008, p. 23) assumes a one-period world with two price-competing companies, no limited capacities, no inventories, no fixed costs, synchronous price-setting, no bargaining and a linear demand function. In this model he compares the Nash equilibriums of the two cases 'without innovation' and 'with innovation' and concludes that competition leads to innovation (Engel 2008, pp. 23-28). Engel (2008, pp. 28-36) shows that this is even true in case of collusion, though the incentives are stronger in competition. Although in his model he examines process innovation that leads to reduced costs, he states that the same is true for product innovation, only the analytics would be more difficult (Engel 2008, p. 22). A product improvement leads to some monopoly powers, because former equal products become substitutes, of which customers choose the better product also if this is a little more expensive (Engel 2008, p. 22). So, the perspective of competitive advantage or a bigger share of profit provides incentives for innovation (Engel, p. 20) and incentives out of competition qualify as a replacement for intellectual property protection (Engel, p. 21).

As concluded above, the alternative business models for the provision of digital media content in this paper have shown an increase in competition. In contrast to quasi-monopolies enforced by copy protection techniques, some of the alternative business models have an allocative advantage. Free access to creative works is important for progress in society (Fetscherin 2005, p. 46; compare principle 4). Unprotected digital media content is available to a wide range of consumers. Consequently, an increasing number of consumers has access to content. As more individuals can change, combine and create content, they are enabled to take over the roles of the creator (user-generated content), the producer (production and packaging), and the distributor (file-sharing). This leads to more providers and, again, to more content available.

So what are the consequences for the legislator? If justification of copyright protection is based on principles (3) and (4) and innovation is indeed better in providing the respective benefits to society, then existing copyright laws are not appropriate (any more). It has to be adapted to provide more access to copyrighted content. This consequence would be in line with widespread complaints about the de facto decrease in private use exemptions. It would also be in line with the widespread habit of illegal copying which can be interpreted as a non-acceptance of existing copyright laws among consumers.

However, uncontrolled dissemination of content is not the optimal situation either. The legislator still has to fulfil its role to protect consumers from negative externalities of media content that is inappropriate in any way for consumption. Children as well as mature consumers have to be protected from unwanted information, may it e. g. be brutality or advertising.

8. Conclusion

The objective of this paper was to explain alternative business models for the provision of unprotected digital media content and to discuss whether these potential business models qualify to endow content providers with sustaining profits.

After the introduction, the second chapter defined digital media content as processed information, which is produced, distributed, and consumed in a completely commercial cycle. Furthermore showed it the technologies that have driven development and importance of digital media content and further do. Chapter 3 explained a typical business model for the provision of copy-protected digital media content, beginning with the legal and technical fundamentals to continue with the value chain, the revenue model and the value proposition as the three defining business model parts. Chapter 4 then showed, how this business model is threatened by a number of downsides of copy protection techniques. These lead to a poor acceptance of copy-protected content among consumers, who consequently often prefer to obtain unprotected content through copying (loss-of-consumer effect). These threatening factors were understood as drivers towards alternative business models, which are explained in chapter 5. It was shown that copying, whether illegal or not, does not only have negative effects but positive ones as well, namely network effects and sampling effects. One alternative business model proposed is to exploit these positive effects while still excluding sufficient consumers to ensure revenues from content sales. If providers cannot or do not want to exclude consumers from copying, they can alternatively generate revenues with complementary goods or advertising. Chapter 6 discussed these potential business models in respect to different types of digital media content. Finally, chapter 7 showed their consequences for the digital media content providers themselves as well as for society and the legislator.

The discussion showed that many providers of digital media content already made positive experiences with the positive effects of copying. Thus, the alternative business models presented here are not only theoretical. In contrast, it was the business practice that has presented these models before academics and journalists examined their potential for success. Not all of the ideas seized here are new, but digitalisation and digital copying have driven re-thinking among providers. Laws that have been valid are not valid any more for digital media content. As can be seen from the great portion of references with recent publication dates, the content industries are in transition. The more providers create successful alternative business models, the more pressure is put on their competitors to adopt as well. This seems to apply for all players of the value chain.

This paper only presented a qualitative examination. Quantitative examinations of the alternative business models do not seem to be possible, as the outcome strongly depends on the provider’s individual characteristics and circumstances. Accordingly, there are no examinations if one business model is better than the other. This paper focused more on arguments for the abandonment of copy pro-

tections. Nevertheless, there are (still) viable business models for providing copy-protected digital media content. The author does not assume the complete abandonment of copy protection. He sees, however, chances for providers to define alternative business models and enter the market. In the end, it is the individual provider that has to find out, which business models are appropriate for his or her business model.

As Shapiro and Varian (1999, p. 5) put it: “When managing intellectual property, your goal should be to choose the terms and conditions that maximize the value of your intellectual property, not the terms and conditions that maximize the protection.”

References

Amit, R. and Zott, C. (2000): Value Drivers of E-Commerce Business Models, INSEAD, INSEAD Working Paper, Fontainebleau, France, http://ged.insead.edu/fichiersti/inseadwp2000/2000-06.pdf, Accessed 11/10/2007.

Anding, M. (2004): Online Content Syndication: Theoretische Fundierung und praktische Ausgestaltung eines Geschäftsmodells der Medienindustrie, 1st edition, Deutscher Universitäts-Verlag, Wiesbaden, Germany 2004.

Bangeman, E. (2007, August 30): Sony euthanizes Sony Connect, Ars technica, in Internet: http://arstechnica.com/news.ars/post/20070830-sony-euthanizes-sony-connect.html, Accessed 09/12/2007.

Bangeman, E. (2007, October 11): Radiohead still needs major label to let world see its "Rainbows", Ars technica, in Internet: http://arstechnica.com/news.ars/post/20071011-radiohead-still-needs-major-label-to-let-world-to-see-its-rainbows.html, Accessed 08/12/2007.

Bates, R. (2004): Communication Breakdown: The Recording Industry's Pursuit of the Individual Music User, a Comparison of U.S. and E.U. Copyright Protections for Internet Music File Sharing, in: Northwestern Journal of International Law & Business, Vol. 25, No. 1, pp 229-256.

Bauckhage, T. (2003): Digital Rights Management: Economic Aspects; in: Becker, E., Günnewig, D., Buhse, W. and Rump, N. (eds.): Digital Rights Management: Technological, Economic, Legal and Political Aspects, Springer, Berlin Heidelberg.

BBC (2007, November 21): UK broadband use reaches new high, in Internet: http://news.bbc.co.uk/2/hi/technology/7105242.stm, Accessed 24/11/2007.

Bebo (2007, November 13): Bebo Launches 'Open Media', Press release, in Internet: http://www.bebo.com/Press.jsp?PressPageId=5037676804, Accessed 11/12/2007.

Besen, S. M. and Raskind, L. J. (1991): An Introduction to the Law and Economics of Intellectual Property, in: Journal of Economic Perspectives, Volume 5, No. 1, pp. 3-28.

Bode, J. (1993): Betriebliche Produktion von Information, Deutscher Universitäts-Verlag, Wiesbaden.

Brack, A. (2003): Das strategische Management von Medieninhalten: Gestaltungsoptionen für die langfristige Erfolgssicherung in Medienmärkten, 1st edition, Deutscher Universitäts-Verlag, Wiesbaden.

Breunig, C. (2006): Mobile Medien im digitalen Zeitalter: Neue Entwicklungen, Angebote, Geschäftsmodelle und Nutzung, in: Media Perspektiven, No. 1.

BSA (2007): Fourth Annual BSA and IDC Global Software Piracy Study, Business Software Alliance, http://w3.bsa.org/globalstudy/, Accessed 01/12/2007.

Burrows, P. (2006, July 26): Microsoft's Dangerous About-Face, Byte of the Apple, Business Week, in Internet: http://www.businessweek.com/technology/ByteOfTheApple/blog/archives/2006/07/microsofts_dang.html, Accessed 09/12/2007.

Cheng, J. (2006, September 13): DRM cracks continue to thwart iTunes 7, Ars technica, in Internet: http://arstechnica.com/news.ars/post/20060913-7737.html, Accessed 29/11/2007.

Choi, S.-Y., Stahl, D. O. and Whinston, A. B. (1997): The Economics of Electronic Commerce, Macmillan Technical Pub., Indianapolis.

Davies, H. and Lam, P.-L. (2001): Managerial Economics: An Analysis of Business Issues, 3rd edition, Financial Times/Prentice Hall, Harlow.

Deak, E. J. (2004): The Economics of e-Commerce and the Internet, Thomson, South-Western, Mason.

Detering, D. (2001): Ökonomie der Medieninhalte: Allokative Effizienz und soziale Chancengleichheit in den Neuen Medien, Vol. 6, LIT, Münster.

Djekic, P. and Loebbecke, C. (2005): The Impact of Technical Copy Protection and Internet Services Usage on Software Piracy: An International Survey on Sequencer Software Piracy, Paper presented for the Proceedings of the European Conference on Information Systems (ECIS), Regensburg, May, http://www.mm.uni-koeln.de/team-loebbecke-publications-proceedings/Conf-077-2005-The%20Impact%20of%20Technical%20Copy%20Protection.pdf, Accessed 01/08/2007.

Doctorow, C. (2007, September 4): Pushing the impossible, Guardian Unlimited, in Internet: http://www.guardian.co.uk/technology/2007/sep/04/lightspeed, Accessed 06/09/2007.

Döring, N. and Dietmar, C. (2005): Medienproduktion für die Mobilkommunikation; in: Krömker, H. and Klimsa, P. (eds.): Handbuch Medienproduk-tion: Produktion von Film, Fernsehen, Hörfunk, Print, Internet, Mobilfunk und Musik, VS Verlag für Sozialwissenschaften, Wiesbaden, pp. 545-577.

Economides, N. (1996): The Economics of networks, in: International Journal of Industrial Organization, Vol. 16, Issue 4, pp. 673-699.

Edgecliiffe-Johnson, A. (2007, November 20): Anti-piracy moves 'hurt sales', Financial Times UK, in Internet: http://www.ft.com/cms/s/0/6ed6dd08-970a-11dc-b2da-0000779fd2ac.html, Accessed 22/11/2007.

EMR (2007): The 2007 Digital Music Survey, Entertainment Media Research, http://www.entertainmentmediaresearch.com/reports/EMR_Digital_Music_Survey2007.pdf, Accessed 21/11/2007.

Engel, C. (2008): Innovationsanreize aus Wettbewerb und Kollusion; in: Ohly, A. and Klippel (eds.), D.: Geistiges Eigentum und Gemeinfreiheit, 1st edition, Mohr Siebeck, Tübingen, pp. 20-43.

EU Directive 2001/29/EC: Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society, viewed in Internet: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32001L0029:EN:HTML, Accessed 29/11/2007.

Facebook (2007, November 6): Facebook Ads Launches with 12 Landmark Partners, Press release, in Internet: http://www.facebook.com/press/releases.php?p=9171, Accessed 11/12/2007.

Fechner, F. (2006): Medienrecht - Rechtsgrundlagen für Medienmanager; in: Scholz (ed.), C.: Handbuch Medienmanagement, Springer, Berlin Heidelberg, pp. 239-260.

Fetscherin, M. (2002): Present State and Emerging Scenarios of Digital Rights Management, in: The International Journal on Media Management, Vol. 4, No. 3, pp. 164-171.

Fetscherin, M. (2003): Evaluating Consumer Acceptance for Protected Digital Content; in: Becker, E., Günnewig, D., Buhse, W. and Rump, N. (eds.): Digital Rights Management: Technological, Economic, Legal and Political Aspects, Springer, Berlin Heidelberg.

Fetscherin, M. (2005): Implications of Digital Rights Management on the Demand for Digital Content, Verlag im Internet, Bern.

Fink, M. (2003): The Business and Economics of Linux and Open Source, Prentice Hall PTR, Upper Saddle River.

Fisher, K. (2007, September 23): DRM advocates getting nervous about consumer backlash, Ars technica, in Internet: http://arstechnica.com/news.ars/post/20070923-drm-advocates-getting-nervous-about-consumer-backlash.html, Accessed 03/12/2007.

Gandal, N. (1994): Hedonic price indexes for spreadsheet and an empirical test for network externalities, in: Rand Journal of Economics, Vol. 25, No. 1, pp. 160-170.

Gandal, N. (1995): Competing Compatibility Standards and Network Externalities in the PC Software Market, in: Review of Economics and Statistics, Vol. 77, No. 4, pp. 599-608.

Gibson, O. (2007, October 2): Radiohead's bid to revive music industry: pay what you like to download albums, The Guardian, in Internet: http://www.guardian.co.uk/media/2007/oct/02/digitalmedia.musicnews, Accessed 18/10/2007.

Gläser, M. (2002): Kosten, Erlöse und Gewinne bei Medienprodukten. Einige theoretische Anmerkungen, in: MW Zeitschrift für Medienwirtschaft und Medienmanagement, No. 1, pp. 8-10.

Gopal, R. D., Bhattacharjee, S. and Sanders, G. L. (2006): Do Artists Benefit from Online Music Sharing?, in: Journal of Business, Vol. 79, No. 3, pp. 1503-1534.

Graham, J. (2007, February 2): EMI in talks to dump copy protection, USA Today, in Internet: http://www.usatoday.com/tech/news/2007-02-12-emi-copy-protection_x.htm, Accessed 16/08/2007.

Greenstein, S. M. (1993): Did installed base give an incumbant any (measurable) advantages in federal computer procurement?, in: Rand Journal of Economics, Vol. 24, No. 1, pp. 19-39.

Grossman, W. M. (2007, April 26): Freedom of rights management, The Guardian, in Internet: http://www.guardian.co.uk/technology/2007/apr/26/newmedia.media, Accessed 09/08/2007.

Grover, R. and Burrows, P. (2007, October 22): Universal Music Takes on iTunes, Business Week, in Internet: http://www.businessweek.com/magazine/content/07_43/b4055048.htm, Accessed 12/12/2007.

Haber, S., Horne, B., Pato, J., Sander, T. and Tarjan, R. E. (2003): If Piracy Is the Problem, Is DRM the Answer?; in: Becker, E., Günnewig, D., Buhse, W. and Rump, N. (eds.): Digital Rights Management: Technological, Economic, Legal and Political Aspects, Springer, Berlin Heidelberg.

Hansell, S. (2007, November 16): J Allard: Microsoft's Plan to Be King of All Media, in Internet: http://bits.blogs.nytimes.com/2007/11/16/j-allard-microsofts-plan-to-be-king-of-all-media/, Accessed 12/12/2007.

Hass, B. (2006): Content Management - Inhalte für Neue Medien strategisch nutzen; in: Scholz (ed.), C.: Handbuch Medienmanagement, Springer, Berlin Heidelberg, pp. 375-391.

Hayn, C. (1995): The information content of losses, in: Journal of Accounting and Economcs, Vol. 20, No. 2, pp. 125-153.

Heinrich, J. (2001): Mediensystem, Zeitung, Zeitschrift, Anzeigenblatt, 2nd edition, Westdeutscher Verlag, Opladen.

Hepler, D. A. (2000): Dropping Slugs in the Celestial Jukebox: Congressional Enabling of Digital Music Piracy Short-Changes Copyright Holders, in: San Diego Law Review, Vol. 37, No. 4, pp. 1165-1200.

Herre, J. (2003): Content Based Identification (Fingerprinting); in: Becker, E., Günnewig, D., Buhse, W. and Rump, N. (eds.): Digital Rights Management: Technological, Economic, Legal and Political Aspects, Springer, Berlin Heidelberg, pp. 93-100.

Hill, C. W. L. (2007): Digital piracy: Causes, consequences, and strategic responses, in: Asia Pacific Journal of Management, Vol. 24, No. 1, pp. 9-25.

Hitwise (2006, January 31): Arctic Monkeys most popular band online; visits to MySpace.com up 555%, Hitwise UK Online, in Internet: http://www.hitwise.

co.uk/press-center/hitwiseHS2004/uk-arcticmonkeys-013106.php, Accessed 08/12/2007.

Hui, K. L. and Chau, P. Y. K. (2002): Classifying Digital Products, in: Communications of the ACM, Vol. 45, No. 6, pp. 73-79.

IFPI (2006): The Recording Industry 2006 Piracy Report: Protecting Creativity in Music, International Federation of the Phonographic Industry, http://www.ifpi.org/content/library/piracy-report2006.pdf, Accessed 01/12/2007.

IIPA (2007): IIPA Special 301 Letter to U.S. Trade Representative for Intellectual Property and Innovation, International Intellectual Property Alliance, http://www.iipa.com/pdf/2007SPEC301COVERLETTERfinal02122007.pdf, Accessed 01/12/2007.

iLike (2007): Company Info, in Internet: http://www.ilike.com/about, Accessed 08/12/2007.

Illgner, H. (2007): SaaS für den Mittelstand – SAP Business ByDesign: Die neue On-Demand-Lösung für SAP, Paper presented for the expert discussion Software as a Service: Strategische Perspektiven und praktische Bedeutung, October 25, München, Münchner Kreis, http://www.muenchner-kreis.de/pdfs/SoftwareAsAService/Illgner.pdf, Accessed 08/11/2007.

Jani, O. (2003): Der Buy-out-Vertrag im Urheberrecht, Volume 49, Berliner Wissenschafts-Verlag, Berlin.

Jobs, S. (2007, February 6): Thoughts on Music, in Internet: http://www.apple.com/hotnews/thoughtsonmusic/, Accessed 19/07/2007.

Johnson, B. (2007, February 22): Hollywood faces up to DRM flop, The Guardian, in Internet: http://www.guardian.co.uk/technology/2007/feb/22/piracy.newmedia, Accessed 10/08/2007.

Kapko, M. (2007): The DRM Challenge, in: RCR Wireless News, Vol. 26, No. 23, June 18, p. 21.

Katz, M. L. and Shapiro, C. (1985): Network Externalities, Competition, and Compatibility, in: American Economic Review, Vol. 75, No. 3, pp. 424-440.

Kerbusk, K.-P. and Schulz, T. (2007): Alles nur geklaut, in: Spiegel Special Leben 2.0 - Wir sind das Netz, No. 3, pp. 74-80.

Kiefer, M. L. (2001): Medienökonomik: Einführung in eine ökonomische Theorie der Medien, Oldenburg Wissenschaftsverlag, München Wien.

Knoke, F. (2007, October 11): Web-Machtkampf: Musiker triezen Plattenfirmen mit Kostenlos-Downloads, Spiegel Online, in Internet: http://www.spiegel.de/netzwelt/web/0,1518,510867,00.html, Accessed 08/12/2007.

Knüppfer, W. (2007): Digital Rights Management, in: WISU-Studienblatt, April.

Kotkamp, S. (2000): Pricing Strategies for Information Products, Deutsche Bank-Inhouse Consulting Manager, No. 3, pp. 40-45, http://finance.fbv.uni-

karlsruhe.de/download/ICM2000_03_Artikel_7_Kotkamp.pdf, Accessed 29/11/2007.

Krishnan, R., Smith, M. D., Tang, Z. and Teland, R. (2007): Digital Business Models for Peer-to-Peer Networks: Analysis and Economic Issue, in: The Review of Network Economics, Vol. 6, No. 2, pp. 194-213.

Krüger, M., Leibold, K. and Smasal, D. (2006): Internetzahlungssysteme aus Sicht der Verbraucher: Online-Umfrage IZV8, Universität Karlsruhe, http://www.iww.uni-karlsruhe.de/reddot/download/izv8_internet_version.pdf, Accessed 04/09/2007.

Ku, R. S. R. (2002): The Creative Destruction of Copyright: Napster and the New Economics of Digital Technology, The University of Chicago Law Review, http://ssrn.com/abstract=266964, Accessed 15/11/2007.

Lackman, E. M. (2003): Slowing Down the Speed of Sound: A Transatlantic Race to Head Off Digital Copyright Infringement, in: Fordham Intellectual Property Media and Entertainment Law Journal, Vol. 13, No. 4, pp. 1161-1208.

Liebowitz, S. J. (2004a): File-Sharing: Creative Destruction or just Plain Destruction?, December, http://som.utdallas.edu/capri/destruction.pdf, Accessed 03/12/2007.

Liebowitz, S. J. (2004b): Pitfalls in Measuring the Impact of File-Sharing, Paper Presented in Munich Germany at CESIfo Conference, July 2004, to be published in a Conference Volume, http://ssrn.com/paper=583484 Accessed 29/10/2007.

Liebowitz, S. J. and Watt, R. (2006): How To Best Ensure Remuneration for Creators in the Market for Music? Copyright and its Alternatives, in: Jour-nal of Economic Surveys, Vol. 20, No. 4, pp. 513-545.

Loebbecke, C. (1999): Electronic Trading in Online Delivered Content (ODC), Paper presented for the Proceedings of the Research Symposium Emer-ging Electronic Markets, London.

Loebbecke, C. (2001): Online Delivered Content: Concept and Business Potential; in: Hunt, B. and Barnes, S. (eds.): E-commerce and V-business: business models for global success, Butterworth-Heinemann, Oxford, pp. 23-44.

Loebbecke, C. (2002): Digital Goods: An Economic Perspective; in: Bidgoli, H. (ed.): Encyclopedia of Information Systems, Academic Press, San Diego, pp. 635-647.

Loebbecke, C. (2006): Digitalisierung - Technologien und Unternehmens-strategien; in: Scholz (ed.), C.: Handbuch Medienmanagement, Springer, Berlin Heidelberg, pp. 357-375.

Loebbecke, C. and Fischer, M. (2005): Pay TV Piracy and its Effects on Pay TV Provision, in: Journal of Media Business Studies, Vol. 2, No. 2, pp. 17-34.

Lucchi, N. (2006): Digital Media & Intellectual Property: Management of Rights and Consumer Protection in a Comparative Analysis, 1st ed., Springer, Berlin.

Markoff, J. (2007, November 12): Intel says new chips will speed high-definition video online, International Herald Tribune, in Internet: http://www.iht.com/articles/2007/11/12/business/chip.php, Accessed 23/11/2007.

Microsoft (2006, February 15): Microsoft Launches Beta Program for Microsoft Office Live Services: Internet-based services include free Web site, domain name and e-mail account, in Internet: http://www.microsoft.com/presspass/press/2006/feb06/02-15OfficeLiveBetaPR.mspx, Accessed 08/12/2007.

Microsoft (2007, October 4): Internet Explorer 7 Update, The Microsoft Internet Explorer Weblog, in Internet: http://blogs.msdn.com/ie/archive/2007/10/04/internet-explorer-7-update.aspx, Accessed 11/12/2007.

Microsoft (2007): Windows Marketplace: Product details for Microsoft® Office Standard 2007, in Internet: http://www.windowsmarketplace.com/details.aspx?view=info&itemid=2970357, Accessed 06/12/2007.

Mozilla (2006): Independent Auditor's Report and Consolidated Financial Statements, Mozilla Foundation and Subsidiary, http://www.mozilla.org/foundation/documents/mf-2006-audited-financial-statement.pdf, Accessed 14/12/2007.

MPAA (2005): 2005 U.S. Piracy Fact Sheet, Motion Picture Association of America, http://www.mpaa.org/USPiracyFactSheet.pdf, Accessed 01/12/2007.

Nintendo (2007): Consolidated Financial Statements, Nintendo Co., Ltd. and Consolidated Subsidiaries, http://www.nintendo.com/corp/report/FY07FinancialResults.pdf, Accessed 14/12/2007.

OECD (2004): Broadband Audio-Visual Services: Market Developments in OECD Countries, Working Party on Telecommunication and Information Services Policies, Organisation for Economic Co-operation and Development, http://www.oecd.org/dataoecd/46/45/24404295.pdf, Accessed 15/10/2007.

OECD (2005): Digital Broadband Content: Music, Working Party on the Information Economy, Organisation for Economic Co-operation and Development, http://www.oecd.org/dataoecd/13/2/34995041.pdf, Accessed 11/08/2007.

OECD (2006): The Future Digital Economy: Digital Content Creation, Distribution and Access: Conference Summary, Paper presented for the The Future Digital Economy: Digital Content Creation, Distribution and Access, January 30-31, Rome, Organisation for Economic Co-operation and Development, http://www.oecd.org/dataoecd/54/35/36854745.pdf, Accessed 11/08/2007.

Ohly, A. (2008): Geistiges Eigentum und Gemeinfreiheit: Forschungsperspektiven; in: Ohly, A. and Klippel, D. (eds.): Geistiges Eigentum und Gemeinfreiheit, 1st edition, Mohr Siebeck, Tübingen, pp. 1-17.

Paul, R. (2007, November 21): UK retailers to record lables: DRM is killing us, Ars technica, in Internet: http://arstechnica.com/news.ars/post/20071121-uk-retailers-to-record-labels-drm-is-killing-us.html, Accessed 03/12/2007.

Peiser, W. (1999): Folgen der Digitalisierung aus kommunkationswissen-schaftlicher Sicht; in: Schumann, M. and Hess, T. (eds.): Medienunternehmen im digitalen Zeitalter: neue Technologien - neue Märkte - neue Geschäftsansätze, Gabler, Wiesbaden, pp. 123-136.

Peitz, M. and Waelbroeck, P. (2004): File-Sharing, Sampling, and Music Distribution, December, http://www.gesy.uni-mannheim.de/dipa/31.pdf, Accessed 08/12/2007.

Peitz, M. and Waelbroeck, P. (2006a): Piracy of digital products: A critical review of the theoretical literature, in: Information Economics and Policy, Vol. 18, Issue 4, pp. 449-476.

Peitz, M. and Waelbroeck, P. (2006b): Why the music industry may gain from free downloading - The role of sampling, in: International Journal of Industrial Organization, Vol. 24, Issue 5, pp. 907-913.

Peter, I. (2004a): History of the World Wide Web, in Internet: http://www.nethistory.info/History%20of%20the%20Internet/web.html, Accessed 30/10/2007.

Peter, I. (2004b): The beginnings of the Internet, in Internet: http://www.nethistory.info/History%20of%20the%20Internet/beginnings.html, Accessed 30/10/2007.

Petitcolas, F. A. P. (2003): Digital Watermarking; in: Becker, E., Günnewig, D., Buhse, W. and Rump, N. (eds.): Digital Rights Management: Technological, Economic, Legal and Political Aspects, Springer, Berlin Heidel-berg.

Pfanner, E. (2007, November 18): The Web starts gunning for TV ads, International Herald Tribune, in Internet: http://www.iht.com/articles/2007/11/18/business/video19.php, Accessed 22/11/2007.

Picard, R. G. (2002): The Economics and Financing of Media Companies, Fordham University Press, New York.

Picot, A. (2003): Digital Rights Management, Springer, Berlin Heidelberg New York.

Porter, M. E. (2004): Competitive Advantage: Creating and Sustaining Superior Performance, Free Press, New York London.

PwC (2007): German Entertainment and Media Outlook 2007-2011: Die Entwicklung des deutschen Unterhaltungs- und Medienmarktes, PriceWaterhouseCoopers, Fachverlag Moderne Wirtschaft, Frankfurt am Main.

Quah, D. (2002): Digital goods and the New Economy, December, http://econ.lse.ac.uk/~dquah/p/dp-0212hbne.pdf, Accessed 11/08/2007.

Rappaport, A. (1998): Creating Shareholder Value: A Guide for Managers and Investors, 2nd edition, Free Press, New York London.

Rayner, B. (2007, October 11): Radiohead's bold gambit: Relax, it's not the death of CDs, just another opportunity to get the industry to wake up, Toronto Star, in Internet: http://www.thestar.com/entertainment/article/265164, Accessed 08/12/2007.

Reimer, J. (2007, November 13): DivX support coming to PlayStation 3, Xbox 360 support in the works, Ars technica, in Internet: http://arstechnica.com/news.ars/post/20071113-divx-support-coming-to-play-station-3-xbox-360-support-in-the-works.html, Accessed 03/12/2007.

Reimer, J. (2007, November 19): Microsoft plans digital content future, dreams of unified services, Ars technica, in Internet: http://arstechnica.com/news.ars/post/20071119-microsoft-plans-digital-content-future-dreams-of-unified-services.html, Accessed 03/12/2007.

Rimmer, M. (2007): Digital Copyright and the Consumer Revolution: Hands off My iPod, Edward Elgar, Cheltenham Northampton.

Rivlin, G. (2007, November 13): Software for Rent, The New York Times, in Internet: http://www.nytimes.com/2007/11/13/technology/13salesforce.html, Accessed 23/11/2007.

Rogge, P. S. (2007): Nutzergenerierte Inhalte als Erlösquelle für Medienunternehmen, Working Papers of the Institute for Broadcasting Economics Cologne University, No. 230, Köln, http://www.rundfunk-institut.uni-koeln.de/institut/publikationen/arbeitspapiere/ap230.php, Accessed 15/07/2007.

Rohlfs, J. (1974): A Theory of Interdependent Demand for a Communications Service, in: The Bell Journal of Economics and Management Science, Vol. 5, No. 1, pp. 16-37.

Rosenbach, M. and Schmundt, H. (2007): Globaler Pokertisch, in: Spiegel Special Leben 2.0 - Wir sind das Netz, No. 3, pp. 36-39.

Rosenblatt, B. (2007, August 16): Music Industry Accelerating Watermark Adoption, DRM Watch, in Internet: http://www.drmwatch.com/drmtech/article.php/3694781, Accessed 01/09/2007.

Rump, N. (2003): Digital Rights Management: Technological Aspects; in: Becker, E., Günnewig, D., Buhse, W. and Rump, N. (eds.): Digital Rights Management: Technological, Economic, Legal and Political Aspects, Springer, Berlin Heidelberg.

Sandulli, F. D. (2007): CD music purchase behaviour of P2P users, in: Technovation, Vol. 27, No. 6 & 7, pp. 325-334.

SAP (n. d.): SAP Services: Maximize Your Success, in Internet: http://www.sap.com/services/index.epx, Accessed 08/12/2007.

Schierenbeck, H. (2003): Grundzüge der Betriebswirtschaftslehre, 16th edition, Oldenbourg München Wien.

Schofield, J. (2007, August 16): Can Universal turn the tide against Apple's iTunes?, The Guardian, in Internet: http://www.guardian.co.uk/technology/2007/aug/16/guardianweeklytechnologysection.drm, Accessed 30/08/2007.

Schofield, J. (2007, February 15): Why Steve isn't going to upset the DRM Apple cart, The Guardian, in Internet: http://www.guardian.co.uk/technology/2007/feb/15/stevejobs.comment, Accessed 10/08/2007.

Schumann, M. and Hess, T. (2006): Grundfragen der Medienwirtschaft, 3rd edition, Springer, Berlin Heidelberg.

Schwinn, R. (1993): Betriebswirtschaftslehre, Oldenbourg München Wien.

Scotchmer, S. (2004a): Innovation and Incentives, MIT Press, Cambridge London.

Scotchmer, S. (2004b): The Political Economy of Intellectual Property Treaties, in: The Journal of Law, Economics, & Organization, Vol. 20, No. 2, pp. 415-437.

Shapiro, C. and Varian, H. R. (1999): Information Rules: A Strategic Guide to the Network Economy, Harvard Business School Press, Boston.

Shy, O. (2000): The Economics of Copy Protection in Software and Other Media; in: Kahin, B. and Varian, H. R. (eds.): Internet Publishing and Beyond: the Economics of Digital Information and Intellectual Property, MIT Press, Cambridge London, pp. 97-113.

Singh, S., Jackson, M., Waycott, J. and Beekhuyzen, J. (2006): Downloading vs Purchase: Music Industry vs Consumer; in: Safavi-Naini, R. and Yung, M. (eds.): Digital Rights Management: Technologies, Issues, Challenges and Systems. First International Conference, DRMTICS 2005, Sydney, Australia, October 31 - November 2, 2005. Revised Selected Papers, 1st, Springer, Berlin Heidelberg New York, pp. 52-65.

Smith, E. (2007, October 11): Madonna Heads for Virgin Territory, The Wall Street Journal, in Internet: http://online.wsj.com/article/SB119205443638155166.html, Accessed 08/12/2007.

Smith, M. D., Bailey, J. P. and Brynjolfsson, E. (2000): Understanding Digital Markets: Review and Assessment; in: Brynjolfsson, E. and Kahin, B. (eds.): Understanding the Digital Economy: Data, Tools, and Research, MIT Press, Cambridge, pp. 99-136.

Stahl, F., Siegel, F. and Maass, W. (2004): Paid Content - Paid Services: Analyse des deutschen Marktes und der Erfolgsfaktoren von 280 Geschäftsmodellen, Institut für Medien und Kommunikationsmanage-ment – Universität St. Gallen, St. Gallen.

Stähler, P. (2001): Merkmale von Geschäftsmodellen in der digitalen Ökonomie, Eul, Lohmar Köln.

Symantec (1995-2007): Symantec Home & Home Office Store: Upgrades & Renewals, in Internet: http://shop.symantecstore.com/store/symnahho/

en_US/DisplayUpgradePage/ThemeID.106300/pgm.5067200, Accessed 06/12/2007.

Takeyama, L. N. (1994): The Welfare Implications of Unauthorized Reproduction of Intellectual Property in the Presence of Demand Network Externalities, in: The Journal of Industrial Economics, Vol. 42, No. 2, pp. 155-166.

Tallmo, K.-E. (n. d.): History of Copyright: Statute of Anne, 1710, in Internet: http://www.copyrighthistory.com/anne.html, Accessed 29/10/2007.

Tapscott, D. (1996): Die digitale Revolution: Verheißungen einer vernetzten Welt - die Folgen für Wirtschaft, Management und Gesellschaft, Gabler, Wiesbaden.

Theysohn, S., Prokopowicz, A. and Skiera, B. (2005): Der Paid Content-Markt – Eine Bestandsaufnahme und Analyse von Preisstrategien, in: Media Perspektiven, No. 4, pp. 170-180.

Tysver, D. A. (1996-2007): Copyright Licenses and Assignments, BitLaw: A Resource on Technology Law, in Internet: http://www.bitlaw.com/copyright/license.html, Accessed 11/12/2007.

Ünlü, V. (2005): Content Protection: Economic Analysis and Techno-legal Implementation, Utz, München.

US Copyright Act, Art. 17 U.S.C., viewed in Internet: http://www.law.cornell.edu/uscode/html/uscode17/usc_sup_01_17.html, Accessed 29/11/2007.

Varian, H. R. (1995): Pricing Information Goods, Paper presented for the Proceedings of the Research Libraries Group Symposium on "Scholarship in the New Information Environment" held at Harvard Law School, May 2-3.

Varian, H. R. (1998): Markets for Information Goods, April, http://people.ischool.berkeley.edu/~hal/Papers/japan/, Accessed 29/11/2007.

Varian, H. R. (2005): Copying and Copyright, in: Journal of Economic Perspectives, Vol. 19, No. 2, pp. 121-138.

Viksnins, R. (2004, November 24): Sony Connect Audio & video reviews, CNET Reviews, in Internet: http://reviews.cnet.com/audio-video/sony-connect/4505-8037_7-30881104.html, Adressed 08/12/2007.

Webb, A. (2007, February 8): The end of the road for DRM, The Guardian, in Internet: http://www.guardian.co.uk/technology/2007/feb/08/newmedia.guardianweeklytechnologysection, Accessed 10/08/2007.

Wirtz, B. and Pelz, R. (2006): Medienwirtschaft - Zielsysteme, Wertschöpfungsketten und -strukturen; in: Scholz (ed.), C.: Handbuch Medienmanage-ment, Berlin Heidelberg, pp. 261-278.

Wirtz, B. W. (2003): Medien- und Internetmanagement, 3rd edition, Gabler, Wiesbaden.

Wöhe, G. and Döring, U. (1996): Einführung in die Allgemeine Betriebswirtschaftslehre, 19th edition, Vahlen, München.

Zhang, M. X. (2002): Stardom, Peer-to-peer and the Socially Optimal Distribution of Music, November 26, http://web.mit.edu/zxq/www/mit/15575/p2p.html, Accessed 08/12/2007.

Zerdick, A., Picot, A., Schrape, K., Artopé, A., Goldhammer, K., Lange, U. T., Vierkant, E., López-Escobar, E. and Silverstone, R. (2000): E-conomics: Strategies for the Digital Marketplace: European Communication Council report, Springer, Berlin Heidelberg New York.

ISBN 978-3-938933-49-7
ISSN 0945-8999