

Digital Rights Management and Consumer Acceptability

A Multi-Disciplinary Discussion of
Consumer Concerns and Expectations

State-of-the-Art Report

December 2004

by

Natali Helberger (ed.), IViR

Nicole Dufft, Berlecon

Stef van Gompel, IViR

Kristóf Kerényi, SEARCH

Bettina Krings, FZK-ITAS

Rik Lambers, IViR

Carsten Orwat, FZK-ITAS

Ulrich Riehm, FZK-ITAS

► **INDICARE**

<http://www.indicare.org>



The Informed Dialogue about Consumer Acceptability of DRM Solutions in Europe



Disclaimer

This publication is a deliverable of the INDICARE project. INDICARE is financially supported by the European Commission, DG Information Society, as an Accompanying Measure under the eContent Programme (Ref. EDC - 53042 INDICARE/28609). This publication does not express the European Commission's official views. In its views and opinions the INDICARE project is independent from the European Commission and the views expressed and all recommendations made are those of the authors. Neither the European Commission nor the authors accept liability for the consequences of actions taken on the basis of the information contained in this publication.

Copyright

This report is copyright protected and licensed under a Creative Commons License allowing others to copy, distribute, and display the report in its entirety only if a) the author/authors is/are credited; b) it is used for non-commercial purposes only; c) not with respect to derivative works based upon the original report.

Contact

You are invited to send any comments, critics or ideas you may have on this report to helberger@ivir.nl.

INDICARE Project

INDICARE – The Informed Dialogue about Consumer Acceptability of Digital Rights Management Solutions – addresses problems pointed out in the eContent work programme 2003-2004: “There has been little attention to the consumer side of managing rights. Questions remain open as to the level of consumer acceptability of rights management solutions. Interface and functionality of systems, as well as policy issues linked to privacy and access to information should be investigated. The consumer question also involves the easiness of access, the legitimate use of content and business models and the easiness of access for disabled persons” (p. 19). In addition to consumer issues INDICARE addresses the user side, in particular concerns of creators and small and medium-size information providers.

INDICARE maintains an informed dialogue about consumer and user issues of DRM. Informed dialogue means that discussions are stimulated and informed by good quality input such as news information and profound analyses. Options for participation and more information are provided at the project website:

<http://www.indicare.org>

INDICARE produces a biweekly newsletter. To subscribe to the newsletter please type in your email address at the INDICARE website or send an empty e-mail to:

indicare-news-subscribe@indicare.org

The INDICARE project is conducted by the following partners:

- Forschungszentrum Karlsruhe, Institute for Technology Assessment and Systems Analysis (FZK-ITAS), Project Co-ordination
- Berlecon Research GmbH, Berlin
- Institute for Information Law (IViR), University of Amsterdam
- Budapest University of Economics and Technology, SEARCH Laboratory

Table of Contents

Executive Summary	vi
1 Introduction	1
1.1 Digital Rights Management.....	1
1.2 Acceptance and Acceptability.....	2
1.3 Consumers and Users.....	3
1.4 Goal of the Report.....	3
1.5 Structure and Method.....	4
2 Overview of European DRM Initiatives	6
2.1 The European Commission's Initiatives on DRM.....	6
2.2 European Projects on DRM.....	12
2.3 Conclusion.....	17
3 Consumer Concerns	19
3.1 Introduction.....	19
3.2 Access to and Usages of Content.....	20
3.3 Privacy.....	22
3.4 Transparency and Fair Contract Terms.....	24
3.5 Interoperability.....	26
3.6 Security and Hardware Issues.....	27
3.7 Flexibility in Business Models.....	28
3.8 Product Diversity and Pricing.....	29
3.9 Concerns of Consumers with Disabilities.....	29
3.10 Library Concerns.....	33
3.11 Science and Higher Education Concerns.....	37
3.12 Conclusion.....	42
4 Legal Aspects	44
4.1 Introduction.....	44
4.2 European Copyright Directive.....	45
4.3 Consumer Protection Law.....	50
4.4 Interoperability and Standardisation.....	64
4.5 Alternative Model: DRM and Levies.....	68
4.6 Conclusion and Outlook.....	70
5 Technical Aspects	72
5.1 Introduction.....	72
5.2 DRM Functionality.....	74
5.3 Content Distribution.....	76
5.4 Usage Control.....	80
5.5 Privacy.....	85
5.6 Interoperability.....	88
5.7 Conclusion.....	92
6 Business Aspects	94
6.1 Introduction.....	94
6.2 DRM-based Business Models.....	94
6.3 Benefits and Costs of DRM Systems for Consumers.....	98
6.4 The Role of Standards for Consumers.....	102

6.5	Alternative Business Models.....	104
6.6	Conclusion and Outlook.....	108
7	Summary and Overall Conclusions.....	110
7.1	Content Industry versus Consumers.....	110
7.2	What DRM Is Not About	111
7.3	Informed Dialogue	112
7.4	The “Consumer”.....	112
7.5	Consumer Concerns.....	114
7.6	In Conclusion	122
	Literature	126
	Online Resources	135
	Annex I.....	137
	Annex II.....	139

Acronyms

AAP	Association of American Publishers
ACS	Alternative Compensation System
ADR	Alternative Dispute Resolution
AFB	American Foundation for the Blind
ALA	American Library Association
ANEC	l'Association Européenne pour la Coordination de la Représentation des Consommateurs dans la Normalisation/European Association for the Co-ordination for Consumer Representation in Standardisation
ARM	Automated Rights Management
B2C	Business-to-consumer
BEUC	Bureau Européen des Unions de Consommateurs/European Consumers' Organisation
BOAI	Budapest Open Access Initiative
CD	Compact Disc
CEC	Commission of the European Communities
CEN	Comité Européen de Normalisation/European Committee for Standardisation
CLVC	Consommation, Logement et Cadre de Vie
CMS	Copyright Management Systems
CPTWG	Copy Protection Technical Working Group
CSR	Corporate Social Responsibility
CSS	Content Scrambling System (DVD)
DAB	Digital Audio Broadcasting
DAISY	Digital Audio-based Information System
DG	Directorates General of the European Commission
DLNA	Digital Living Network Alliance
DMCRA	Digital Media Consumers' Rights Act
DRM	Digital Rights Management
DRMS	Digital Rights Management System
DTB	Digital Talking Books
DVB	Digital Video Broadcast(ing)
EBLIDA	European Bureau of Library, Information and Documentation Associations
EBU	European Blind Union
ECMS	Electronic Copyrights Management Systems
ECUF	Educational Copyright Users Forum
EDPD	European Data Protection Directive
EDRi	European Digital Rights initiative
EFF	Electronic Frontier Foundation
ERMS	Electronic Rights Management Systems
EU	European Union
EUCD	European Copyright Directive
FCC	Federal Communications Commission
HLG DRM	High Level Group on Digital Rights Management
IDA	International Disability Alliance
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
IP	Intellectual property
IPMP	Intellectual Property Management & Protection (MPEG)
IPR	Intellectual property rights
IPRM	Intellectual Property Rights Management
ISSS	Information Society Standardisation System
JISC	Joint Information Systems Committee

LACA	Libraries and Archives Copyright Alliance
LWDRM	Leight Weight DRM
MMC	MultiMediaCard
MP3	Moving Picture Experts Group Layer-3 Audio
MPAA	Motion Picture Association of America
MPEG	Moving Picture Experts Group
NCLIS	National Commission on Libraries and Information Science
NSF	National Science Foundation
NTIA	National Telecommunications and Information Administration
OASIS	Organization for the Advancement of Structured Information Standards
OCLA	Online Computer Library Center
ODRL	Open Digital Rights Language
OJ	Official Journal of the European Union
OMA	Open Mobile Alliance
OS	Operating System
PDA	Personal Digital Assistant
PDF	Portable Document Format (Adobe Acrobat)
PETs	Privacy Enhancing Technologies
PRM	Privacy Rights Management
REL	Rights Expression Language
RNIB	Royal National Institute of the Blind
SD Card	Secure Digital Card
SDMI	Secure Digital Music Initiative
STM	International Association of Scientific, Technical and Medical Publishers
TPM	Technological protection measure
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
VCR	Videocassette Recorder
W3C	World Wide Web Consortium
WBU	World Blind Union
WCAG WG	Web Content Accessibility Guidelines Working Group
WIPO	World Intellectual Property Organisation
WMS	Windows Media System
WWW	World Wide Web
XMCL	eXtensible Media Commerce Language
XrML	Extensible Rights Markup Language

Executive Summary

The INDICARE project – the Informed Dialogue about Consumer Acceptability of DRM Solutions in Europe – has been set up to raise awareness about consumer and user issues of Digital Rights Management (DRM) solutions. One of the main goals of the INDICARE project is to contribute to the consensus-building among multiple players with heterogeneous interests in the digital environment. To promote this process and to contribute to the creation of a common level of understanding is the aim of the present report. It provides an overview of consumer concerns and expectations regarding DRMs, and discusses the findings from a social, legal, technical and business perspective.

A general overview of the existing EC initiatives shows that questions of consumer acceptability of DRM have only recently begun to draw wider attention. A review of the relevant statements, studies and reports confirms that awareness of consumer concerns is still at a low level. Five major categories of concerns have been distinguished so far: (1) fair conditions of use and access to digital content, (2) privacy, (3) interoperability, (4) transparency and (5) various aspects of consumer friendliness. From the legal point of view, many of the identified issues go beyond the scope of copyright law, i.e. the field of law where DRM was traditionally discussed. Often they are a matter of general or sector-specific consumer protection law. Furthermore, it is still unclear to what extent technology and an appropriate design of technical solutions can provide an answer to some of the concerns of consumers. One goal of the technical chapter was exactly to highlight some of these technical possibilities. Finally, it is shown that consumer acceptability of DRM is important for the economic success of different business models based on DRM. Fair and responsive DRM design can be a profitable strategy, however DRM-free alternatives do exist too.

The report pinpoints some areas where more discussion and a higher level of knowledge and experience is needed in the short term:

1. The time is overdue for a mentality change

DRM is a topic that goes far beyond piracy prevention. DRM has to be seen in a broader context, namely as management of relationships between the providers of digital content and consumers in general. This is a topic of broader social, economic, legal and technical relevance concerning the ways digital information is distributed and used in an electronic environment. This should be taken into account when dealing with DRM in legislative and policy making processes.

2. Joint dialogue

To the extent that there are initiatives and projects that already discuss consumer acceptability of DRM, they lack a platform for a joint dialogue. The establishment of such a platform can increase the efficiency and effectiveness of discussions.

3. Better involvement of the consumer side

One factor that adds to the low level of awareness and responsiveness of existing legal instruments and political initiatives is the low level of active involvement of the advocates of consumer concerns and interests in legislative and policymaking processes. There is a need to identify effective ways of improving the way consumer-related issues are addressed in policy-making processes at all levels.

4. Learning about the expectations of consumers regarding DRM

More generally, there is a need to learn more about the level of acceptance of DRM by consumers, and what consumers' concerns and expectations are with regard to the use of digital content.

5. Improving the legal standing of consumers

Copyright law addresses only some of the expectations and concerns of consumers regarding DRM use, and the legal position of consumers under copyright law is weak. Also, there is a need to adopt a broader view and to treat DRM not only as a matter of copyright law, but also as a matter of general and sector-specific consumer protection law.

6. Delineation between legal and illegal use

Because many of the concerns of consumers as regards DRM fall outside copyright law, copyright law is not sufficient to stipulate when the use of digital content is in compliance with legitimate consumer interests and when not. Or, the other way round, there is still much uncertainty about when the terms and conditions that are enforced by DRM systems conflict with consumers' rights or protection-worthy interests. "Fair DRM use" requires a broader approach and must receive more attention in the legal and societal discussion.

7. Consumer-oriented DRM design and business models

There is potential for improving consumer friendliness and responsiveness of technical and business solutions involving DRM. Technical and business solutions could open a complementary or even an alternative route to address some of the acceptability problems of DRM. Further experimentation and discussion is needed as to how the potential of consumer-responsive technical and business solutions can be realised best.

1 Introduction

This is the first INDICARE report on ‘Digital Rights Management and Consumer Acceptability’ in Europe. The INDICARE¹ project was set up to raise awareness and to support the emergence of a common European position with regard to consumer and user issues of Digital Rights Management (DRM) solutions. The project is financially supported by the European Union, Directorate General Information Society in the framework of the eContent programme. One of the main goals of the INDICARE project is to contribute to the consensus-building among the heterogeneous interests of multiple players in the digital environment. Therefore it has established a neutral, pre-competitive and pre-regulatory environment for discussion and informative exchange, called Informed Dialogue. In this Informed Dialogue, issues regarding consumer and user acceptability of digital rights management solutions are addressed.

1.1 Digital Rights Management

The task of this report is to address issues regarding consumer acceptability of rights management solutions. Digital Rights Management (DRM) is about the electronic management and marketing of usage rights in digital content. Digital content can be text, graphics, images, audio, video or software in digital format. Mainly, DRM systems are applied to media products which are to great parts protected by copyright. According to this, such goods are the main focus of the INDICARE project. DRM systems are embedded in both the physical distribution of CDs, DVDs, and other media and in online distribution, such as the popular example of the online delivery of music files, e-books, games, or pay TV and video-on-demand. Online distribution takes place via the Internet, interactive TV cable networks, and increasingly via wireless communication.

Digital Rights Management solutions² are still in a state of development, and thus no standard definition exists.³ Fields of DRM applications are currently expanding and the variety of DRM concepts is broadening, making it more difficult to gain a common understanding. In the following the term “digital rights management” is used according to its main understanding, which means the “management” of usage rights of digital information resources by a control system comprising technological and organisational provisions.

¹ The Informed Dialogue about Consumer Acceptability of DRM Solutions in Europe (Ref.: EDC – 53042 INDICARE / 28609), see <http://www.indicare.org>.

² Also the terms Electronic Copyright Management Systems (ECMS), Copyright Management Systems (CMS), Automated Rights Management (ARM), Electronic Rights Management Systems (ERMS), or Intellectual Property Rights Management (IPRM) are used (Bechtold 2002, p. 2).

³ Remarkably, a participatory effort in defining DRM at the European Standards Committee/Information Society Standardisation System (CEN/ISSS) did not reach a consensual definition (CEN/ISSS 2003).

“Usage rights” can have different meanings. Usage rights can have their source in copyright law and flow from the exclusive right of rightsholders to authorise (license) certain kinds of uses. Subjects of a licence can be the right to make copies, to distribute digital content, or make it available to the public. “Usage rights” can also refer more generally to the different uses of digital content the consumer is entitled to under a DRM scheme. Subject of those so-called “business rules” can be forms of use covered by copyright law, but business rules can also relate to uses that are not regulated by copyright law, notably how consumers consume digital content (consumptive use). Examples of consumptive use are, e.g., listening to music. DRM can be used to control how consumers listen to music, on which devices using which software or middleware, how often or how long they can listen to a copy, whether and how much consumers have to pay for a copy and what conditions they have to meet before they can do so. For such use regulations and administrations, DRM systems are often used to monitor consumer behaviour and to administrate payments for content usage. But DRM systems are not only used to administer usage rights. DRM solutions can be used to protect sensitive data, e.g. in a business environment.

In recent years, DRM has experienced a boost of attention from the digital content industry, policy makers, legislators, academia and developers. Various initiatives examined ways of how to enable rightsholders to benefit from digital rights management as the basis for new business models. However, marketing digital content is a bi-directional process. The question if DRM-based business models can and should have a future, not only depends on implementers’ acceptability of DRM. It also, and probably most importantly, depends on consumer acceptability and acceptance of DRM.

1.2 Acceptance and Acceptability

The acceptance of a product or technology by consumers refers to an individual’s attitude and behaviour. Acceptability describes in a more abstract sense the characteristics of a product or service in question. Acceptability takes into account the long-term effects of technological developments and compliance with legal provisions and societal values. While products rejected by consumers can hardly be called acceptable, products or technologies that consumers do accept need not necessarily be called “acceptable” to society, for instance when their consumption is illegal or does not respect social values or has negative long-term effects for society. For example, highly polluting cars, cigarettes, or alcohol might be accepted by some consumers, but are often valued as unacceptable to society, and regulations are imposed. While “what anyone accepts is initially his or her own subjective decision [...] it is of societal interest to what extent it is justifiable to require people to accept a technological decision”.⁴ Assessments of acceptability are based on observation, evaluation, and judgements by third parties. INDI-CARE in general and this report attempts to contribute insights in both con-

⁴ Grunwald (1999), p. 51.

sumer acceptance and acceptability in society. While the individual consumer acceptance will also be investigated by two consumer surveys within the project, this report attempts to provide aspects of societal acceptability of DRM by summarising argumentations by society's stakeholders as well as legal and social aspects.

1.3 Consumers and Users

Often the terms “consumer” and “user” are used interchangeably. Notably the notion of “users” encompasses large and heterogeneous groups, including user groups of technologies, products and services on both the supply as well as the demand side of markets. Different disciplines and communities use this term in varied and sometimes contradictory ways. In some cases, “users” are understood as only commercial companies using DRM technologies for content distribution. In other cases, the term mainly refers to private “end-users”. For the purpose of this report, “user” will be used in relation to content providers that apply DRM systems to protect their content or the term will be replaced by the precise naming of the actor group referred to. This is consistent with how the notion is used in many respective documents of the European Union, where “consumer” refers to the end-user and “users” stands for DRM controllers.

The notion of “consumer” is no less clear.⁵ As a working definition, the report handles the notion of consumers as end-users that use content for the purpose of private consumption (as opposed to commercial purposes). But in the course of the report it will also be shown that the discussion of what “consumer” actually refers to, and what individuals or groups should fall under this definition, remains unsolved, and that there are different views on how to define the notion.

1.4 Goal of the Report

Recently, there is a growing awareness among stakeholders to take a broader perspective on both DRM-based business models on the one hand and consumer concerns and expectations on the other. However, there is still limited experience regarding what consumer concerns and expectations are with a view to digital rights management, how they perceive new DRM-based content distribution models and what models consumers would regard as practical, fair and balanced. This report gives an overview of the state of discussion from a social, legal, technical and economic perspective. The report also attempts to contribute to forming the basis for a common level of understanding for what is largely an interdisciplinary discussion.

⁵ See e.g. the different definitions in Article 2 of the Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive), OJ, L 108/33 (24.04.2002), where consumers are referred to as “user”, “consumer”, “subscriber” and “end-user” at the same time.

The goal is to bring together social, technical, business and legal considerations, which to date have often been treated separately. And the report will identify areas where we, the INDICARE team, believe that further research and consensus building is most urgently needed, and how INDICARE intends to contribute to this.

1.5 Structure and Method

The report starts with an overview of the different European initiatives that have dealt or are still dealing with DRM (Chapter 2). The Social Chapter 3 is an overview of consumer concerns and expectations regarding DRM which can recently be found in public debates. The Legal Chapter 4 then examines the legal position of consumers, to what extent recent legislation responds to concerns and protects legitimate expectations. In the Technical Chapter 5, DRM is discussed from the technical perspective. The goal of this chapter is not to give a technical description of DRM, but to explain the functionalities of DRM systems, their technical context, and what major factors have to be considered when designing DRM systems. Finally, the Business Chapter 6 explains different business models that are possible on the basis of DRM systems, their costs and benefits for consumers, and whether DRM is or is not the sole basis for a functioning paid-content market. The report's final chapter summarises the main conclusions from the different chapters.

INDICARE is an interdisciplinary consortium comprising social, technical, economic and legal experts. The composition of the consortium makes it possible to draw on rich expertise from different disciplines.

- Chapter 2 “Overview of European DRM Initiatives” was written by Stef Gompel from the Institute for Information Law (IViR), University of Amsterdam
- Chapter 3 “Consumer Concerns” was written by Carsten Orwat, Bettina Krings and Ulrich Riehm from the Institute for Technology Assessment and Systems Analysis (ITAS).
- The legal Chapter 4 was written by Rik Lambers from the Institute for Information Law (IViR), University of Amsterdam.
- Kristof Kerény from the SEARCH Laboratory at the Department of Measurement and Information Systems (DMIS) of Budapest University of Technology and Economics (BUTE) provided the Technical Chapter 5.
- Nicole Dufft from Berlecon Research was the author of the Business Chapter 6.
- The report was edited by Natali Helberger, Institute for Information Law (IViR), who also wrote the final conclusions (Chapter 7).

Different resources were used, including in-house expertise, literature analyses, information exchange with experts and representatives of consumers as well as industry players. It should be noted that the issue of consumer acceptability of DRM is still new and that therefore little research, documentation, studies or statements currently exist. This is a conclusion in itself. And

by providing an overview of the current state of discussion, the report can identify areas that must receive more attention in the near future, some of which INDICARE will address during the lifetime of the project. It is intended to update this report twice in the two years that the INDICARE project is running. This will show where changes have occurred and will introduce and discuss INDICARE's contribution to this process.

2 Overview of European DRM Initiatives

The last decade has seen tremendous growth of interest within the European Union for all aspects of the information society. This has been due to the rapid development of information technologies and communications in the new digital environment. The advances of digital electronics and new technologies allow the creation of new multimedia services and applications. This has major effects on both the economy and social life. One of the European Union's objectives is to make sure that Europe's businesses, governments and citizens continue to play a role in shaping and participating in this knowledge and information-based society. Many initiatives have been taken in this direction.⁶ In general, these initiatives aim to guarantee fair and open access to the infrastructure, provide universal service and secure widespread public acceptance and actual use of the new technologies. To achieve this, some preconditions must be met, i.e. the networks have to be interconnected, the services and applications have to be interoperable and both the intellectual property rights (IPR) and the privacy of data have to be protected.

Many efforts have already been invested in examining the possibilities of DRM systems that meet these criteria. Especially the European Commission is leading the way. The Commission has repeatedly seized the opportunity to address DRM issues themselves. An overview of these initiatives is given in Section 2.1. But the Commission has also supported specific projects in which DRM issues were examined from different perspectives. A selection of these projects is given in Section 2.2.

2.1 The European Commission's Initiatives on DRM

On 19 July 1995, the European Commission presented a Green Paper on Copyright and Related Rights in the Information Society.⁷ The objective of this Green Paper was to set the background for several questions concerning copyright and related rights in the development of the information society. The new and varied requirements arising in the digital environment raised new issues. One of these was the adaptation of legal measures to protect the many new services and products. New opportunities to exploit and enjoy protected multimedia works would be offered in the information society. To ensure that the creation of these works would not be obstructed by lengthy and costly procedures for the acquisition of rights, the management would have to evolve and adapt to the new environment. 'One stop shops' should be set up to facilitate access to these works. The Commission also considered technical identification and protection systems.⁸ Attention was given to

⁶ A historical overview of all these initiatives is available at:
http://europa.eu.int/ISPO/basics/i_history.html.

⁷ European Commission (1995).
[http://www.ivir.nl/dossier/auteursrechtlijn/bronnen/COM\(95\)382final.doc](http://www.ivir.nl/dossier/auteursrechtlijn/bronnen/COM(95)382final.doc)

⁸ In this context the Commission mentioned the CITED project (see chapter 3).

digitisation. This could allow protected works to be identified, marked, protected and automatically managed. Appropriate systems should therefore be installed. The Commission concluded that it would appear necessary for these systems to be introduced and accepted at an international level if the information society was not to operate to the detriment of rightholder. Various technical and legislative questions were formulated in the Green Paper, about which interested parties could give their views.

On 20 November 1996 the Commission presented a communication concerning the follow-up to the Green Paper on Copyright and Related Rights in the Information Society.⁹ Consultations with interested parties confirmed the need for further action in this field. The prime objective was to maintain and further develop Europe's traditionally high level of copyright protection. At the same time a fair balance of rights and interests had to be ensured between the different categories of rightholders and between rightholders and consumers. The Commission adopted an approach in which several proposals could be found. One of the issues requiring immediate action was the legal protection of the integrity of technical identification and protection schemes. The Commission noticed that digitisation not only constituted new risks for rightholders, it also made it potentially easier to control acts of exploitation by means of access control, identification and anti-copying devices in electronic copyright management and protection systems.¹⁰ Therefore a large-scale introduction of these systems would be necessary. However, such an introduction could only be achieved successfully if these systems were interoperable and supported by measures that provide legal protection. In particular the precise scope of protection had to be defined. Also the scope of infringer's liability had to be considered, for which possible legitimate defences to civil liability, limitations to restricted acts and users' rights should be taken into account. Harmonisation at Community level was encouraged by the Commission.

On 21 January 1998 the Commission presented a proposal for a European Parliament and Council Directive on the Harmonisation of Certain Aspects of Copyright and Related Rights in the Information Society.¹¹ On 20 May 2001 the European Parliament and the Council adopted this Copyright Directive.¹² It entered into force on 22 June 2001 and was due to be implemented in the Member States by 22 December 2002. The Copyright Directive set the legal framework in which DRM would be administered. By pro-

⁹ European Commission (1996).

¹⁰ The Commission referred to the initiatives undertaken by the CITED/COPICAT, IMPRIMATUR and other projects in this field.

¹¹ Proposal for an European Parliament and Council Directive on the harmonisation of certain aspects of copyright and related rights in the Information Society, COM (97) 628 final - COD (97) 359, available at:
http://europa.eu.int/eur-lex/pri/en/oj/dat/1998/c_108/c_10819980407en00060013.pdf
 On 25 May 1999 the Commission amended this proposal (COM (99) 250 final - COD (97) 359), available at:

http://europa.eu.int/eur-lex/pri/en/oj/dat/1999/c_180/c_18019990625en00060014.pdf
¹² 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, available at:
http://europa.eu.int/eur-lex/pri/en/oj/dat/2001/l_167/l_16720010622en00100019.pdf .

protecting technological measures and by requiring Member States to take into account the application and non-application of technological measures when providing for fair compensation in the context of private use exception, the Directive supported the use of DRM. It also stimulated Member States to promote the use of voluntary measures to protect copyrighted material and encouraged the interoperability and compatibility of different systems in the protection of copyrighted material. However, the Copyright Directive did not provide for any exhaustive regulation. Details of DRM systems still had to be filled in. Business models, self-regulatory and standardisation schemes had to be established. The Directive largely left this to the Member States and the different stakeholders. To tackle outstanding DRM issues together and find common ground, the Commission initiated a dialogue in their working paper “Digital Rights. Background, Systems, Assessment”. To this end, the Commission organised two DRM Workshops and established four DRM Working Groups. It also requested CEN/ISSS¹³ to examine the state of the art in standardisation in the field of DRM issues in Europe’s information society.

One of the conclusions of the Commission’s working paper “Digital Rights. Background, Systems, Assessment”¹⁴ was that DRM was at that time neither widely deployed nor widely accepted. Therefore a number of issues were presented, which needed to be taken into account to ensure wide acceptability of DRM and to overcome certain obstacles. These issues were both technology and user-related. The main problems were that DRM systems could remain vulnerable to being cracked or were perceived as being vulnerable, that they could significantly reduce ease of use and hence demand for digital content (especially if there were many incompatible standards), that they might go too far by preventing generally accepted use (for example by allowing e-books to be read only once) and that they might invade people’s privacy by tracking and transmitting personal data. On the other hand, the Commission argued that widespread use of viable DRM schemes could bring about reduced risk of illegal copying, alternative compensation methods, use of new business models and compatibility and interoperability of DRM systems.

On 28 February 2002, the European Commission’s Information Society Directorate-General organised the first DRM Workshop in Brussels.¹⁵ The aim was to bring together representatives of the main stakeholders (industry, consumer rights groups and other interested parties) in an effort to promote and gather views on the acceptability of DRM systems for the lawful distribution of digital content. Both Erkki Liikanen, the Information Society Commissioner, and Frits Bolkestein, the Internal Market Commissioner, stressed the importance of DRM systems in the distribution of digital

¹³ CEN is the European Standards Committee. The Department responsible for standards activity within CEN for information and communication technologies is ISSS (the Information Society Standardisation System).

¹⁴ European Commission (2002a).

¹⁵ The first DRM Workshop report is available at:
http://europa.eu.int/information_society/eeurope/2005/all_about/broadband/digital_rights_man/doc/workshop2002/workshop_report1.pdf

content. Erkki Liikanen placed the emphasis on the need to find open, flexible and interoperable solutions acceptable to all players. He warned against the risk of stifling experimentation and innovation and locking consumers into technological solutions. Frits Bolkestein said that in order to ensure the timely and widespread acceptance of DRM systems for all stakeholders, the task ahead was to bridge the confidence gap. The workshop was divided into three sessions: a legal framework session, a technology and business models session and a session on how to make DRM systems acceptable. In the legal framework session, user groups expressed their concern that in their view DRM systems endangered the balance struck between the rightholders and users in the Copyright Directive. Consumer organisations repeated this concern in the session on how to make DRM systems acceptable. There it was pointed out that users and consumers should have clearly defined rights. They should not have to rely on the restraint, goodwill or corporate social responsibility of the rightholder. In this session it was also stated that for DRM systems to be acceptable to the consumer, they must be non-intrusive, frictionless and comparable. For content owners, on the other hand, they had to be cost-efficient, effective and market-enhancing.

As a follow up to the first DRM Workshop, the Commission established four DRM Working Groups, each of them focusing on the interests of a particular sector (the users, the technology companies, the producers & publishers and the collective management societies).¹⁶ The aim was to produce a consensus document for each of the Working Groups by the end of 2002, which then could be presented to a larger-scale workshop in early 2003. The purpose of the Working Group from a user perspective was to give users and consumer organisations the opportunity to explain and discuss their specific concerns and perspectives on DRM in an open dialogue with the other stakeholder groups. The consensus document was to be drawn up with agreed requirements and guidelines focusing on the user and consumers' perspectives. A meeting was held on 18 July 2002. A number of overriding themes were discussed there. The preliminary list of agreed user perspectives and requirements was drawn up and discussed in the meeting's concluding session. This list included aspects such as user-friendliness as a key-factor for the success of DRM, interoperability of DRM systems, provision of sufficient information and guidance on DRM systems for consumers, respect that DRM systems should have for the legal exceptions in copyright law as well as for consumer contract rules and data protection rules, the requirement that DRM systems and levies should not exist simultaneously, and finally that DRM standards must not be made mandatory by governments and that the governments had to ensure that access to public domains is provided for.

¹⁶ The reports of the different working groups are available at:
http://europa.eu.int/information_society/eeurope/2005/all_about/broadband/digital_rights_man/events/text_en.htm#workshop1.

The second DRM Workshop organised by the Commission was held on 25 March 2003.¹⁷ The aim of this workshop was to bring together representatives of the Member States and of the main stakeholders to present the results of the Working Groups and to gather views on how to take advantage of the dialogue going forward. Again, the opening remarks were made by Information Society Commissioner Erkki Liikanen. He praised the success of the Working Groups in bringing attention to the concerns and needs of each interested group, in preparing the ground to identify areas of potential consensus, in enabling participants to identify the role of DRM systems viewed from the perspective of each group, in assessing the current ‘state of the art’ and in creating a better understanding between all participants of the issues and different positions. Each of the Working Groups presented the results of their meetings. In order to gather views on how to proceed, the future challenges and actions in the field of DRM systems were discussed. Major issues to be addressed were the legal framework (including enforcement rules), security, the choice of management of DRM systems, levies (as a policy issue), the confidence and awareness gap, the study of the economic impact and a possible follow-up study on public perception of copyright protection. Issues as standardisation and interoperability, the request for transparency and the need for user-friendly systems (with the consumer in the centre) were also mentioned during the discussion.

On 30 September 2003 the CEN/ISSS Digital Rights Management Group released their final report.¹⁸ This report examined the state of the art in standardisation in the field of DRM and was prepared by experts from the IT, telecoms, software, music, publishing, film and associated industries and interested parties. DRM systems were considered as a very important technology to help better implementation of the Copyright Directive. The report gave an inventory of DRM technical standards and specifications, as well as a description of existing DRM technologies and implementations. It did not, however, present a common view on how to ensure interoperability between different technology platforms, nor did it contain provisions on the role that open standards could play. The report only reflected the views of the different stakeholders.

In their Communication “Connecting Europe at high speed: recent developments in the sector of electronic communications”¹⁹ of 3 February 2004, the Commission, DG Information Society, announced the establishment of a High-Level Group to address current issues arising from DRM systems. In this High-Level Group the Commission would work with industry to address the issues that could possibly hamper the development of new innovative services and business models (such as micro-payments, security and trust, and interoperability). The work of this High-Level Group should aim at facilitating the development of these services whilst taking into account other primary interests such as financial stability and consumer confidence.

¹⁷ The second DRM Workshop report is available at: http://europa.eu.int/information_society/topics/multi/digital_rights/doc/workshop2003/minutes.doc.

¹⁸ CEN/ISSS (2003).

¹⁹ European Commission (2004b).

The High-Level Group on Digital Rights Management held a first meeting on 31 March 2004.²⁰ The Group comprised several representatives of interested parties (however, it included only one consumer organisation) and was chaired by Information Society Commissioner Erkki Liikanen. In order to review the actual obstacles linked to DRM, the Group wanted to address some of the key issues, including the (technical) requirements. It therefore focused on questions relating to interoperability of DRM systems and related requirements towards open standards on the one hand, and those relating to users and consumers perspectives on the other. In order to gain consumer acceptance and trust, it would be necessary to address requirements for security and privacy. For migration towards the use of legitimate e-content services by consumers, it is essential to raise awareness on remuneration for access to protected content. This triggered a discussion relating to the co-existence of levies in the marketplace. The High-Level Group also made additional suggestions for consideration. These included the identification of commercial as well as consumer requirements and the question whether these requirements should differ according to needs or whether they should be sector-specific. It also encompassed a clearing house for IPR, consumer education and awareness, the scale of private copying and the extent to which DRM systems could address this, and security requirements to support trust and confidence by users. This meeting was followed by an additional meeting on 8 July 2004. The High-Level Group's final report on DRM was presented there.²¹ This report was to reflect a consensus on basic principles and recommendations for further action. The report covered three aspects of DRM, namely 'DRM and Interoperability', 'Private copying levies and DRM' and 'Migration to legitimate services'. The consumer representatives did however not support the last two aspects. These aspects therefore require further discussion.²²

The Commission, DG Internal Market, again recognised the importance of DRM systems in its communication "The Management of Copyright and Related Rights in the Internal Market"²³ of 16 April 2004. It has become a key issue in the context of the discussions on the management of copyright and related rights in the new digital environment. Because DRM systems could be used to clear rights, to secure payment to trace behaviour and to enforce rights, they had generated high expectations. They would be crucial for the development of new business models, in which pricing schemes, subscription models, credit sales and billing schemes could be incorporated. But some conditions would have to be met to make these systems workable and effective. First, the development of DRM systems should, in principle, be based on their acceptance by all stakeholders, including consumers. That is a precondition for their emergence. Another essential factor should be the copyright policy of the legislature. Transparency must be guaranteed there-

²⁰ Highlights of this first meeting are available at:
http://europa.eu.int/information_society/eeurope/2005/all_about/broadband/digital_rights_man/doc/040527_hlg_drm_highlights_1st_final.pdf.

²¹ HLG DRM (2004).

²² See for an explanation Kutterer (2004).

²³ European Commission (2004a).

in. A final condition for the development of DRM systems was Community-wide accessibility to these systems and services by rightsholders, users and, in particular, consumers. A prerequisite to ensure this, should be that both DRM systems and services are interoperable.

2.2 European Projects on DRM

To deal with DRM issues more specifically, the Commission financed some projects to examine DRM from different perspectives. These projects were supported within the different Framework Programmes in the context of the INFO 2000 Programme and in the eContent Programme.

2.2.1 Projects under the Framework Programmes

The European Research and Technological Development (RTD) activities were carried out under the different Framework Programmes (the 2nd to the 6th Framework Programme). Specific programmes covered the activities in the field of Information and Communications Technologies. One of the thematic programmes was ESPRIT,²⁴ an integrated programme of industrial research and development projects and technology take-up measures on information technologies. It was established by the DG Industry (DG III) of the European Commission. The ESPRIT programme focused on eight intertwined areas of research, namely long-term research, research into software technologies, into technologies for components and subsystems, multimedia systems, open microprocessor systems initiative (OMI), high-performance computing and networking, technologies for business processes (including electric commerce) and integration in manufacturing. A significant part of the ESPRIT programme was devoted to measures designed to increase the interaction between users and developers. But it also wanted to encourage product and process adoption in the market, disseminate results more widely and build trial applications. Other thematic programmes were TELEMATICS APPLICATION (Applied Research) and ACTS (Advanced Communications Technologies and Services) that built on the work of the earlier RACE programme (Research into Advanced Communications for Europe). Under the 5th and 6th Framework Programme all these different thematic programmes were brought together and extended in a multi-theme structure: the IST programme (Information Society Technologies). The IST programme was managed by DG Information Society of the European Commission.

²⁴ The European specific programme for research and technological development, including demonstration, in the field of information technologies (ESPRIT) see: <http://www.cordis.lu/esprit/home.html>. The ESPRIT projects are traceable on the website: <http://www.cordis.lu/esprit/src/projects.htm>

2.2.2 Projects under the Second Framework Programme (1987-1991)

The objective of the ESPRIT project CITED²⁵ (December 1990 – December 1992), was to safeguard copyright material stored and transmitted in digital form. Therefore a generic IPR management model was developed, in which viable technical means were demonstrated. This model should provide control, policing and remuneration in respect of the use of these copyrighted material. The model defined some distributed components that would transparently be located at the user level, at the information system level and wherever there was a relationship among the users, the distribution system and the information system. One of the results was the implementation of the model for computer based systems. The project also realised five software tools for PCs that are transferable to other projects.

2.2.3 Projects under the Third Framework Programme (1990-1994)

The ESPRIT project COPICAT²⁶ (December 1993 – March 1996) continued the work of CITED under the Third Framework Programme. Its goal was to develop a generic architectural model for an “electronic copyright protection system”. Therefore it would incorporate the copyright-related event management model from the CITED project. COPICAT extended this model by adding a security model appropriate to the application domain.

2.2.4 Projects under the Fourth Framework Programme (1994-1998)

IMPRIMATUR²⁷ (December 1995 – February 1999) was one of the horizontal projects under the ESPRIT programme in the area of multimedia technology and electronic copyright management. The intention of this project was to establish a study on the challenges of multimedia rights clearance in networks. In practice that meant that it aimed at investigating how an agreement on trade in electronic versions of creative works could be reached and what role DRM systems could play in this context. To achieve this, the goal of the project was to function as a central consensus forum for debate and discussion between different stakeholders. A broad variety of interests were represented in this forum, namely those of European and American content providers, users, IT and telecom companies. The content providers on the one hand wanted to preserve their traditional rights structure and business models, but the users, on the other, preferred to have a system of rights clearance that would be both simple and cost-effective for the production of new multimedia products. IT and telecom companies were involved in the debate because of their function as intermediaries in this multimedia revolution. In an electronic communication network, in Special Interest Groups and workshops (on business, legal, technical and standards areas) and in other project activities, discussions were held on the key issues relating to

²⁵ Copyright in transmitted electronic documents (Ref.: EP 5469), <http://www.newcastle.research.ec.org/esp-syn/text/5469.html>

²⁶ Copyright Ownership Protection in Computer-Assisted Training (Ref.: EP 8195), <http://www.newcastle.research.ec.org/esp-syn/text/8195.html>

²⁷ Intellectual multimedia property rights model and terminology for universal reference (Ref.: EP 20676), <http://www.newcastle.research.ec.org/esp-syn/text/20676.html>.

digital transmission (such as IPR issues and the legal analysis of them). But the project also focused on developing technology and exploring these issues in trials. Two conceptual models were developed during the project, a common reference set (concerned with the classification of issues) and a business model (concerned with the trading of rights). The Institute for Information Law of the University of Amsterdam (IViR) joined the IMPRIMATUR project in February 1997 and conducted several studies into legal issues related to DRM. The studies resulted in a number of reports published under the responsibility of the Institute, which covered the following subjects: liability for online intermediaries²⁸, contracts and copyright exemptions²⁹, the law and practice of digital encryption³⁰, privacy, data protection and copyright³¹, formation and validity of online contracts³² and protection of technological measures³³. These issues were discussed in the various Consensus Forums held during the project.

Another horizontal project under the ESPRIT programme in the field of multimedia technology and electronic copyright management was COPEARMS³⁴ (November 1995 – October 1998). It worked in co-operation with IMPRIMATUR, by participating in the business and legal Special Interest Groups and workshops and in feeding into the electronic communication network managed by IMPRIMATUR. The aim of COPEARMS was to assist other European Commission projects concerned with IPR management, by supporting the development and implementation of an interoperable ECMS (Electronic Copyright Management System) and by co-operating in a standardisation process necessary to permit interoperability among different ECMS. It thereby took advantage of the experience gained in CITED, the project under the Second Framework Programme.

Under the Fourth Framework Programme, ESPRIT project COPYSMART³⁵ (December 1995 – February 1998) aimed at the development of an industrial low-cost solution for implementing IPR management based on the earlier CITED model. Because of the general problem of media copyrights, author rights, access control and payment for digital multimedia material in the PC environment, COPYSMART would provide the hardware and software building blocks for implementing IPR management in multimedia applications.

The ARGOS³⁶ project (May 1998 – April 2000) also followed the idea of developing a copyright management system. The overall objectives of the ARGOS Centre Project were to ensure the effective management of IPR for all parties involved in the field of electronic commerce, to provide the

²⁸ Koelman (1997).

²⁹ Guibault (1997).

³⁰ Gervais (1998).

³¹ Koelman (1998).

³² Trompenaars (1998).

³³ Koelman; Helberger (1998).

³⁴ Co-ordinated project for electronic authors right management systems (Ref.: EP 20460), <http://www.newcastle.research.ec.org/esp-syn/text/20460.html>.

³⁵ CITED based multimedia IPR management on cost-effective smart device (Ref.: EP 20517), <http://www.newcastle.research.ec.org/esp-syn/text/20517.html>.

³⁶ ARGOS centre project for IPR data collection and management (Ref.: EP 26984).

rightholders with secure ways of dissemination and marketing of cultural works in digital format, and to improve the access to electronic distribution services of cultural works over both public and private networks. These objectives would be achieved by establishing a technical infrastructure (the “ARGOS Centre”) that could provide the individual rightholders and collecting organisations with effective monitoring tools and ensure them a fair remuneration for the use of their works. The ARGOS Centre also concentrated on establishing a standard Communication Protocol for the flow of information between the parties involved in the electronic commerce of copyrighted works.

The FILIGRANE³⁷ project (September 1998 – August 2000) was set up to concentrate on developing building blocks of management systems, in particular with respect to the protection of authors’ rights and piracy prevention. It checked the reliability in software components and off-the-shelf components (i.e. origin, integrity, or rights to use) and wanted to develop new fee-collecting mechanisms and potential abuse detection for IPR protection and management. The idea behind it was to produce a framework of a high-level regulation mechanism answering the increasing demand for software components trusted exchanges in the information society.

The E-CCLUSTER³⁸ project (October 1998 – September 1999) was established to promote the progress of the electronic commerce of intangible goods with which rights were associated. It focused on the operation of interoperable systems (for the protection of the information against piracy and for secure payment) and the promotion of IPR management systems. The project wanted to create a cluster of ESPRIT, ACTS, TELEMATICS APPLICATION and other projects concerned with e-commerce and IPR management. This should win consensus among the interested participants in the areas of technologies, standards, products & services, electronic payment models, market requirements and economic models of users.

2.2.5 Projects under the Fifth Framework Programme (1998-2002)

The CREA NET³⁹ project (January 2000 – September 2002) was one of the projects under the IST programme. It aimed to create a secure environment for authors and producers. This should allow them to collaborate in pre-development and development business stages, co-production and world-wide pre-sale regarding European film titles, TV programmes and media-rich interactive works. This environment should consist of a network (CREA Net) of local centres. It would be supported by an internationally distributed hub process that would set the basis for international collaboration and co-production with a consistent visibility of the CREA Net image world-wide. The core of the CREA Net project was the design and implementation of a flexi-

³⁷ Flexible IPR for software agent reliance (Ref.: EP 28423), <http://www.dice.ucl.ac.be/crypto/filigrane/>

³⁸ Electronic commerce cluster (Ref.: EP 29430).

³⁹ Creative’s rights European agency network (IST-1999-10871), <http://www.creativesrights.com/>

ble framework allowing the construction of a common rule-based trusted environment for both the individual CREA Centres and the CREA Net hub.

The OCCAMM⁴⁰ project (January 2000 – December 2001) addressed the problem of open architectures and interfaces for online access to digital content with IPR protection and management. Within this project, trials were conducted, involving real end-users both in home and in schools, to validate innovative business models for the benefit of market operators. By developing and utilising interoperable enabling tools and components for the controlled access, delivery and consumption (IPR) of multimedia information over networks (e.g. by prototype applications), OCCAMM wanted to establish a number of commercially-driven applications. Furthermore it attempted to identify additional actions needed for subsequent full and successful commercial exploitation.

The RIGHTSWATCH⁴¹ project (January 2001 – December 2002) looked specifically at the development of a self-regulatory procedure to deal with problems associated with copyright on the Internet. It aimed at building on the common interests of rightholders and intermediaries to provide a safe environment for trade in works protected by intellectual property rights. As a result the project was to take a first step toward developing trust and confidence between the rightholders and intermediaries. Therefore it was to set up an agreed and reliable “notice and take down” procedure, i.e. a fully functioning, financially secure institution which would facilitate a pan-European self-regulatory procedure for the removal of infringing intellectual property.

2.2.6 Projects under the Sixth Framework Programme (2002-2006)

Currently some projects are running under the Sixth Framework Programme. The INTEROP⁴² project (established in November 2003), was set up as a ‘network of excellence’ which aims to create the conditions of an innovative and competitive research in the domain of interoperability for enterprise applications and software. One focus of interest to the INTEROP project is the DRM standardisation. The duration of the project is 3 years.

2.2.7 Projects under the eContent Programme (2001-2005)

The eContent Programme was established to support the development of European cultural and linguistic multimedia content for the Internet. It aimed at facilitating access to the Internet for all. It therefore stimulated the development, use and distribution of European digital content in the information society and promoted linguistic diversity on global networks. The eContent programme supports innovative and viable content projects (involving multinational and cross-sector partnerships), accompanying measures (addressing best practice, concertation, awareness and dissemination) and market studies (for visions, insight, challenges and opportunities). The

⁴⁰ Open components for controlled access to multimedia material (IST-1999-11443), <http://avalon.cseit.it/projects/occam/>.

⁴¹ Rightswatch (IST-1999-10639), <http://www.rightswatch.com/>.

⁴² Interoperability Research for Networked Enterprises Applications and Software (508011), <http://www.interop-noe.org>

eContent Programme contributed to the eEurope 2005 Action Plan, which was designed to bring the benefits of the information society within reach of all European citizens.

One of the accompanying measures currently running under the eContent programme is the INDICARE project. It is scheduled for two years, starting on 1 March 2004. INDICARE was set up to raise awareness and support the emergence of a common European position with regard to consumer and user issues of DRM solutions. One of its main goals is to build consensus among the heterogeneous interests of multiple players in the digital environment. Therefore it intends to establish and maintain a neutral, pre-competitive and pre-regulatory environment for discussion and informative exchange, called Informed Dialogue. Issues regarding consumer and user acceptability of rights management solutions are addressed in this Informed Dialogue. These issues include aspects such as the interface and functionality of DRM systems, policy issues linked to privacy, access to information, the legitimate use of content and business models or ease of access etc.

Table 1: Schematic overview of the projects mentioned

Programme	Project
2nd Framework Programme (1987-1991)	<ul style="list-style-type: none"> • CITED (December 1990 – December 1992)
3rd Framework Programme (1990-1994)	<ul style="list-style-type: none"> • COPICAT (December 1993 – March 1996)
4th Framework Programme (1994-1998)	<ul style="list-style-type: none"> • IMPRIMATUR (December 1995 – February 1999) • COPEARMS (November 1995 – October 1998) • COPYSMART (December 1995 – February 1998) • ARGOS (May 1998 – April 2000)- FILIGRANE (September 1998 – August 2000) • E-CCLUSTER (October 1998 – September 1999)
5th Framework Programme (1998-2002)	<ul style="list-style-type: none"> • CREA NET (January 2000 – September 2002) • OCCAMM (January 2000 – December 2001) • RIGHTSWATCH (January 2001 – December 2002)
6th Framework Programme (2002-2006)	<ul style="list-style-type: none"> • INTEROP (November 2003 - November 2006)
eContent Programme	<ul style="list-style-type: none"> • INDICARE (March 2004 - March 2006)

2.3 Conclusion

There have been various European initiatives during the past decade focusing on the deployment of DRM systems in order to facilitate the management of IPR for digital assets. The topic is high on the European Commission's agenda. Initiatives aimed at adapting legal measures to protect DRM as the basis for many new services and products. Article 6 of the European Copyright Directive, which protects DRM systems from circumvention, is

one example of such an initiative. The Commission also supported a number of projects whose objective it was to refine DRM technologies. But the Commission also initialised consultation rounds on the topic of DRM, and in the more recent past a growing awareness of the role of consumers and the importance of consumer acceptance and acceptability of DRM heralded a new phase in the DRM discussion. During these consultations, however, it also became apparent how little is still known about consumers acceptance and acceptability of DRM, and what the relevant aspects are that have to be taken into account. This is also connected with the low level of awareness about this topic in a broader circle of parties concerned. This is where the EC-financed INDICARE can step in. The objective of the project is to take up the task to initialise an informed dialogue about consumer acceptance and acceptability of DRM.

3 Consumer Concerns

3.1 Introduction

The main objective of this chapter is to provide insights about the acceptability of DRM solutions from the point of view of the individual consumer and society. Public empirical research on actual consumer acceptance of DRM and consumer concerns, i.e. especially consumer surveys, do not exist until now. Our main source are public statements by representatives of consumers at consensus-building events in Europe,⁴³ but – where appropriate and necessary – we also take other international sources into account, in particular:

- The Workshop on Digital Rights Management of the World Wide Web Consortium (W3C), January 2001 (in the following W3C DRM workshop).⁴⁴
- The preparation of the European Committee for Standardization/Information Society Standardisation System (CEN/ISSS) DRM Report, 2003, in the following quoted as CEN/ISSS (2003), produced by selected stakeholders.⁴⁵
- DRM Workshops of European Commission, DG Information Society, and the work of the DRM working groups, as well as the work of the High Level Group on DRM (HLG DRM) and the results of the informal consultation of the Final Report.⁴⁶

⁴³ See for a description of such events Section 2.1.

⁴⁴ See World Wide Web Consortium (W3C): Workshop on Digital Rights Management, 22-23 January 2001, Sophia-Antipolis, France, <http://www.w3.org/2000/12/drm-ws/Overview.html>

⁴⁵ At this effort representatives from Samuelson Law, Technology and Public Policy Clinic, School of Law, University of California, Berkeley, act as advocates of consumers (in the following quoted as Mulligan et al. 2003 in CEN/ISSS, 2003). See CEN/ISSS (2003): http://www.cenorm.be/cenorm/businessdomains/businessdomains/iss/activity/drm_fg.asp

⁴⁶ At the meeting of the DRM Working Group 1 “The User Perspective” 18 July 2002 organised by DG Information Society, European Commission, consumer organisations came together with representatives of media and IT industry as well as collecting societies. The European Consumers’ Organisation/Bureau Européen des Unions de Consommateurs (BEUC), Consumentenbond, Consumer Protection, Housing and Quality of Life/Consommation, Logement et Cadre de Vie (CLCV) were involved (in the following quoted as BEUC, Consumentenbond, and CLCV in European Commission 2002b). BEUC was the only consumer organisation involved in the High Level Group on Digital Rights Management (HLG DRM). The High Level Group was established in March 2004 by the European Commission, DG Information Society. The final report contains three chapters from which only the chapter “DRM and interoperability” is supported by BEUC. In the following we refer to the consumer-relevant statements of this chapter as viewpoints supported by BEUC (in the following quoted as HLG DRM, 2004). See European Commission, DG Information Society: Digital Rights Management: http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/index_en.htm

- Consultation process of the European Commission, DG Internal Market, on the Communication COM(2004)261 by the European Commission on “Management of Copyright and Related Rights”.⁴⁷

Our second type of source are statements by advocacy groups, individual representatives and scientific authors, who deal with consumer concerns. In particular we have analysed statements regarding four customer groups using DRM-based products, i.e. private customers or consumers, consumers with disabilities, libraries as representatives of consumers, scientists and higher education. They are regarded to be the main groups on the demand side of DRM-based products. Other groups that are effected by DRM applications, such as journalists, have more specific concerns, that are worth a closer consideration, but can not adequately addressed here. Some of the concerns of these considered groups overlap, but due to their specific needs, we provide separate descriptions of these groups and their concerns. The collected statements on consumer concerns and expectations are arranged by the issues of:

- access to and use of content,
- privacy,
- transparency and fair contract terms,
- interoperability,
- security and hardware issues,
- flexibility in business models, and finally
- product diversity and pricing.

3.2 Access to and Usages of Content

In the above mentioned consensus-building events many concerns were raised that the employment of DRM systems curtails the accustomed and expected usage options of consumers. This concern is one of the most fiercely debated ones in the United States and Europe.⁴⁸

As a response, the involved consumer organisations called that DRM systems should respect the usage expectations that consumers have or that are given by copyright laws.⁴⁹ The broad range of personal usages includes in particular, private copying (e.g. to make private backup copies), portability,

⁴⁷ The Communication deals with collective rights management and, among other things, with its potentially changed role if DRM systems are widely deployed. In the last consultation round (up to June 2004) 106 statements have been delivered to the Commission from which we have selected the relevant ones. None of the 98 published statements were from a consumer organisation, but representatives of libraries and science were present. See European Commission, DG Internal Market: Consultation procedure on “Management of Copyrights and Related Rights” of the European Commission, http://europa.eu.int/comm/internal_market/copyright/management/management_en.htm

⁴⁸ For the USA, see the arguments by cyberrights activist groups such as the Electronic Frontier Foundation (EFF), DigitalConsumer, or PublicKnowledge.

⁴⁹ For instance, BEUC, Consumentenbond, and CLCV in European Commission (2002b).

lending, excerpting, sampling, or other content modification and reselling (see also Chapter 4).⁵⁰ In this context, portability means the transfer of content to other devices and spaces (space shifting) and to other times (time shifting), especially by recording for later consumption, as well as the lending to other consumers. One particular concern is the restriction of space shifting by the regional code embedded in DVD and DVD players leading to regional market segmentation.⁵¹

The Digital Media Project (DMP), which also commented on the HLG DRM report, is currently working on a comprehensive list of “traditional rights and usages”. They expect that end-users who found a particular use advantageous in the analogue environment are probably interested in the continued exercise of the use in the digital domain.⁵² The DMP identified rights and usages to quote, make personal copy, space or time shift content, choose among playback devices, use content whose copyright has expired, communicate privately, use content anonymously, annotate or edit content for personal use, have continued access, have political freedom (of free speech) and freedom of art (e.g. copying for artistic works), realise the first sale doctrine (including personal loan, reselling or giving away), transcode content (convert to other formats), have freedom from being monitored while using personal property, being accessible for reverse engineering, realise fair use, implement contractual commerce (freedom of contracts), make unpublished recordings (for private use), enjoy exceptions for developing nations, copy for classroom instructions, access content in libraries, have authentication of content guaranteed, be able to choose the service and delivery system, have access to content of their choice, be able to run applications of their choice, be able to attach playback devices of their choice to a network, access information about content (descriptions), share content with members of a group, choose systems for security, create adaptations and derivative works of content (with copyright acknowledgement), stage or broadcast works (with copyright acquisition), and to make a print of a video screen (repurposing).⁵³

Many of the aforementioned usage types are formulated as exceptions in copyright law or, to be realised, need judgements on specific situations if a use is lawful or not. However, critics claimed that DRM systems (as any software coding) are, in general, not able to incorporate such judgements that should take specific situation of use and consumption into account (see also Chapter 4).⁵⁴

⁵⁰ Similarly, the US-based initiative DigitalConsumer formulated a “Bill of Rights”, which calls for the rights to “time-shift” media (e.g. recording and later consumption), to “space shift” media (e.g. porting to other devices), to make backup copies, to use the legally acquired media on any platform of choice, to transform legally acquired media into comparable formats, and the right to use technology to achieve the aforementioned rights.

⁵¹ BEUC (2004), p. 4.

⁵² DMP (2004a,b). The Digital Media Project is a non-profit initiative mainly for standardisation work in the area of digital media. Its intention is to bring interests of creators, rights holders and consumers together. Its participants encompass representatives from business and science. See more details in Chiariglione (2004).

⁵³ DMP (2004b).

⁵⁴ For instance Jackson (2004) in the informal consultation of the HLG DRM report.

Although reselling is a widely accepted and used consumer behaviour for physical products (e.g. of used books), reselling of DRM-based products is a relative new aspect of debate.⁵⁵ Mulligan et al. pointed to the fact that current DRM systems don't allow the reselling of the acquired content or they (will) require the maintenance of data on the history of possession. Thereby, rights holders would have the means to control commercial and non-commercial transactions of the acquired product, even if copyright law dictates otherwise.⁵⁶

While the problem of the fast obsolescence of data formats is a general problem of digital formats, the deployment of DRM systems seems to aggravate the problem since the (often) employed strong encryption technology impedes long-term archiving and hampers conversion to other formats.⁵⁷ It is not clear what happens to private or public collections if DRM systems phase out.⁵⁸

Furthermore, according to consumer organisations and citizens rights advocates, the wide deployment of DRM systems bears the danger that content, which is already in the public domain and which enters the public domain after the termination of the time-limited exclusive copyright, is locked up and commercialised by media companies, disabling legitimate usages of content from the public domain. It is not clear, if DRM protection is released when copyright terms expire.⁵⁹

Consumer organisations also took the perspective on civil rights when they pointed to the risk that DRM systems have the potential to control who gets access to content and how it is used, thereby endangering journalistic investigation, commentary, and other freedom of speech (e.g. parody). Additionally, there were demands that public access to digital (DRM-protected) content should be ensured for informational, educational and cultural purposes, and also discrimination should be avoided, which could result if DRM-protected content is not accessible for elderly people and people with disabilities (see also Section 3.9).⁶⁰

3.3 Privacy

The privacy issue of DRM systems is one of the most intensely discussed concerns in public debates, in particular the concern is raised by cyberrights advocates or citizens' representatives. It is interesting to note that also the IT industry relative early have recognised the urgency of this DRM issue.⁶¹

⁵⁵ See for an analysis Niehüser (2004).

⁵⁶ Mulligan et al. in CEN/ISSS (2003), p. 95.

⁵⁷ NightLabs (2004).

⁵⁸ Stichting Vrijdschrift (2004), p. 2, Rebentisch (2004).

⁵⁹ BEUC (2004), p. 6, Stichting Vrijdschrift (2004), p. 3.

⁶⁰ BEUC (2004), p. 7, 8.

⁶¹ At the W3C DRM consultation workshop, representatives of Hewlett Packard Laboratories, Publishing Systems and Solution Lab, pointed to privacy concerns that are relevant for consumers. They doubt that it is necessary to compromise privacy in order to prevent fraud. Instead they demanded that DRM systems should protect consumer privacy at the same level as the protection of rights of the content providers,

Consumer representatives involved in the CEN/ISSS standardisation work pointed out that DRM systems have the potential to generate, transmit, and store vast quantities of data on personal use of copyrighted works, representing an unprecedented level of monitoring of uses. They demanded that “DRM systems should generate no more data than necessary, and store data for no longer than necessary to execute their rule enforcement functions”.⁶² In fact, in their analysis of existent online services the scientists present evidence for the serious privacy concerns (see Annex I).⁶³ The consumer organisation BEUC put forward that the DRM systems technologically enable content providers to monitor private consumption of content, create reports of consumption, and profile users.⁶⁴ Additionally, another involved group pointed to the privacy problems of the (envisaged) revocation mechanism, that only works with an intensive monitoring of consumers’ usages of devices and contents.⁶⁵ It is also mentioned, that research on privacy impacts of DRM systems is hampered by the inadequate means of data protection or privacy enforcement agencies resulting from anti-circumvention rules.⁶⁶

To cope with that problem, the consumer organisations suggested considering the application of data protection rules to the use of DRM systems, especially for cross-border transactions, avoiding misuse of private information.⁶⁷ The compliance of DRM systems with data protection rules should be verified by data protection or privacy enforcement agencies before they are introduced into markets.⁶⁸ Additionally, consumers should be informed, if applicable, that information about their consumption patterns are gathered, to whom such information is given, and which level of security of the information is ensured. Privacy concerns should be appropriately respected in DRM standards and technology developments as well as by the inclusion of privacy enhancing technologies. However, the key objective of consumer representatives was the maintenance of anonymous access.⁶⁹

Furthermore, representatives of the IT industry pointed to ways to grant anonymity in transactions, such as the involvement of trusted third parties, the use of different identifiers for each merchant, preventing that complete identities are being developed by cooperation of merchants, or the use of tokens that contain the information that is necessary for the transaction. In

especially by the use of standardised and finely granulated expression technology for the access rights to personal profiles. In their view, current DRM systems violate customers’ privacy in the authentication step, where a unique identifier for each customer is established, and also in the tracking step, where usage logs are produced in a very granulated and accurate way, often seen as a more valuable asset than the content itself. Cf. Vora et al. (2001) at W3C DRM workshop.

⁶² Mulligan et al. in CEN/ISSS (2003), p. 114. See also BEUC (2004), p. 6.

⁶³ Mulligan, Han and Burstein (2003).

⁶⁴ BEUC (2004), p. 6.

⁶⁵ Firenze Tecnologia, MIU (2004).

⁶⁶ Privatkopie.net and Bits of Freedom (2004), p. 3.

⁶⁷ BEUC, Consumentenbond, and CLCV in European Commission (2002b).

⁶⁸ Privatkopie.net and Bits of Freedom (2004), p. 3.

⁶⁹ BEUC (2004), p. 7.

general, they demanded that DRM systems should adhere to the following rules:⁷⁰

- personal profiles of customers should be treated as an asset, with associated ownership, access rights, and rights and descriptive metadata,
- identity should be handled as part of the personal profile,
- also the proof of identity should be treated as an asset,
- all transactions of personal profiles should be made explicit with consumer participation,
- customers should be enabled to participate in the determination of tracking,
- customers should be enabled to choose from a range of methods to establish anonymity, and
- there should be explicit mechanisms for the revelation of profile and identity and, further, the consumer should have control of what is acceptable in such revelations.⁷¹

3.4 Transparency and Fair Contract Terms

Important questions are whether consumers are at all aware that DRM systems are applied when buying and consuming DRM-protected products and what details of the underlying DRM systems consumers may recognise. Answers can not easily be given, because consumers' information and behaviour in the context of DRM-based products is hardly analysed by public research. Furthermore, an exemplary tests of music download services revealed weaknesses in adequate consumer information on the services' websites or differences between what is stated as usage options and what is actually possible (see Annex II).

Some of the consumer organisations called for more information about technological protection measures (TPM) and DRM systems made available to consumers, in particular about capabilities and risks of DRM systems. Consumers should be informed when purchasing or accessing "usage impaired works", i.e. – in the opinion of one consumer organisation – that the products lead to a limitation of their rights under copyright law.⁷²

In general, the lack of market guidance would lead to low awareness and confusion among consumers about DRM. The consumer organisations demanded clear information provided by the vendor about the employed protection mechanism and DRM system. Some of the consumer organisations pointed to the negative experiences consumers made with technical protection measures on CDs which could be brought into relation with the evaluation of DRM, such as preventing private copying or the impossibility of shifting between different devices. It was considered as extremely necessary to raise the DRM awareness of consumers. Among other things, they called

⁷⁰ Vora et al. at W3C DRM Workshop.

⁷¹ Similar, Firenze Tecnologia MIU (2004), p. 7, suggested mechanisms for the transparent control of data transmission to third parties by consumers.

⁷² BEUC (2004), p. 4.

for public sector involvement in enhancing legal guidance for both rightholders and consumers of DRM systems.⁷³ Other consumer representatives raise their voice requiring that vendors should be obliged to inform when DRM is applied to the products and to inform that the customers' rights under copyright law might be curtailed.⁷⁴

The complexity of DRM systems not only relates to the visible technical layer at the interface of devices (e.g. the multiple formats and acronyms), but also to the usage rules. The High Level Group stressed the need for "easy to use" systems that would enable consumers to manage the significant complexity of the underlying technologies and procedures. The group is confident that the IT industry will come to appropriate solutions, pointing to the mobile industry as an example.⁷⁵ However, in a different context, Mulligan et al. warned that a reduction of complexity of DRM systems at the visible layer of the user application should not imply that consumers are not informed that they are acquiring DRM-protected products.⁷⁶ It should be mentioned in this context that the complexity of DRM systems together with privacy concerns has been used as argument in favour of levy schemes, since with one payment, consumers have free access and uncontrolled options for easy private uses with no monitoring of use.

A further concern put in by consumer organisations is the unclear relationship between contractual law and copyright law caused by the use of DRM systems. They called for a detailed consideration of this issue.⁷⁷ Regarding the contractual relationship between suppliers and consumers of DRM-based products, a consumer organisation required a mandatory clarity about what is contractually delivered and that the consumer contract rules should be respected in DRM-related agreements.⁷⁸

Additionally, BEUC demanded enforceable consumer rights that can not be overridden by contract terms, DRM systems or other technological measures.⁷⁹ The consumer organisation also pointed to the risk that within private contracts in the sense of click-wrap agreements the imbedded privacy terms may bypass existent privacy regulation.

In cases of conflict – according to consumer organisations – consumers should have access to Alternative Dispute Resolution (ADR) mechanisms to solve disputes that may arise from the use of DRM in particular for cross-border transactions. Since DRM applications are mainly considered for low-value products the use of ADR mechanisms seems especially relevant. Within DRM solutions, there should be clear information for consumers to whom complaints can be addressed.⁸⁰

⁷³ BEUC, Consumentenbond, and CLCV in European Commission (2002b), p. 5.

⁷⁴ Mulligan et al. in CEN/ISSS (2003), p. 106.

⁷⁵ HLG DRM (2004).

⁷⁶ Mulligan et al. in CEN/ISSS (2003).

⁷⁷ BEUC, Consumentenbond, and CLCV at DRM Working Group 1 (2002).

⁷⁸ Consumentenbond at the second DRM workshop of the EC, DG Information Society.

⁷⁹ BEUC (2004), p. 6.

⁸⁰ BEUC, Consumentenbond, and CLCV at DRM Working Group 1 (2002).

3.5 Interoperability

Portability of DRM-based products on different devices and their flexible use depends on the interoperability of infrastructure, concepts, specifications, contracts etc. Also for the realisation of the concept of superdistribution, which means the authorised forwarding of content to other end-users, interoperability between masses of different hardware and software systems is required.⁸¹

The considered consumer organisations emphasised the need for interoperability in order to use content on different platforms and devices⁸², also to avoid vendor lock-in. In general, similar to many other basic software or ICT standards and protocols also DRM systems could be created and established as closed systems and leave competitors with incompatible products.⁸³ Mulligan et al., as mentioned before, demanded that permissions acquired by consumers should be portable to other systems. They rejected ‘vertical’ DRM systems that tie consumers to a specific platform or device.⁸⁴ Also BEUC stresses the need for interoperability to enable space shifting and time shifting of acquired products, otherwise consumers may be tied to specific applications or they may lose their purchases when devices outdate.⁸⁵

In this context, concerns about a potential market dominance of DRM by Microsoft should be mentioned. According to FIPR the company is now widely implementing their DRM systems in their products using a similar approach to gain a monopoly position as in their strategy of browser implementation.⁸⁶ Privatkopie.net and Bits of Freedom have pointed to the European Commission’s action against Microsoft’s intention to bundle the Windows Media Player to the operating system and to acquire a DRM technology company.⁸⁷

Furthermore, in the report by the High Level Group on DRM, interoperability was the main issue.⁸⁸ The group pointed to the benefits of interoperability for consumers who can choose different devices and use them with different services. They advocated open standards, in particular, to gain cross-platform interoperability of services and devices from multiple providers, which would be conducive for consumer convenience and thereby increase mass market acceptance of DRM-based services. In the context of interoperability work on the ‘authorised domain’, ‘personal area network’ or ‘digital home’ concepts was mentioned. The core of these concepts is that within “personal spaces” or personal networks of devices, consumers should be enabled to receive multiple different services and to consume them on

⁸¹ Firenze Tecnologia, Media Innovation Unit (MIU) casted considerable doubts on the achievement of interoperability and assume the emerging of islands of systems (Firenze Tecnologia, Media Innovation Unit, 2004, p. 2). Firenze Tecnologia, MIU, commented to the HLG DRM report.

⁸² BEUC, Consumentenbond, and CLCV in European Commission (2002b).

⁸³ Stichting Vrijdschrift (2004), p. 2.

⁸⁴ Mulligan et al. in CEN/ISSS (2003), p. 100.

⁸⁵ BEUC (2004), p. 4.

⁸⁶ FIPR (2004), p. 1.

⁸⁷ Privatkopie.net and Bits of Freedom (2004), p. 9.

⁸⁸ HLG DRM (2004).

multiple devices in different personal environments, such as the car, the home, etc. To this end, appropriate rules, interfaces and other technologies have to be elaborated.⁸⁹

3.6 Security and Hardware Issues

Security issues of DRM systems are relatively seldom raised in the considered documents. Security issues for consumers may for instance arise when DRM systems are in conflict with other software installed on a PC. Since most DRM systems need an Internet connection, e.g. for registration, they are relatively open for external attacks, but can be hardly controlled by consumers in this respect. Accordingly, consumer organisations demanded that DRM software should not hamper or limit the use of other protection software on consumers' computers.⁹⁰ As a general demand, market players should not confront consumers with immature technology.⁹¹ Also Mulligan et al. stress that DRM systems should not bring new vulnerabilities into customers' computing equipment and that the systems must enable consumers to set their own policies and levels of security for own machines.⁹²

Especially, the relation between DRM and so-called "trusted computing" raises several concerns (see also Section 5.4.2). Operating systems with trusted computing procedures may demand certain "trusted" programmes and products and may alter and deter the security settings of the operating system, without the consent or even the knowledge of the consumer. In the opinion of consumer organisations this is an interference with the integrity of private property of consumers.⁹³ With "trusted computing" implementations every software that consumers want to install has to be certified by the provider of the "trusted computing" equipment, which results in a potential market dominance situation with potentially high barriers to market entrance for other players.⁹⁴

Furthermore, cyberright advocacies pointed to the issue that DRM systems require specific platforms and, by this, some groups of end-users, especially the GNU/Linux users, are excluded from most DRM-protected content.⁹⁵

⁸⁹ See for more details on the "authorised domain", "personal area network", or "digital home" concepts information on the website of the organisations involved in their development, i.e. Digital Living Network Alliance (DLNA) or Digital Video Broadcasting project (DVB).

⁹⁰ BEUC, Consumentenbond, and CLCV at DRM Working Group 1 (2002).

⁹¹ Consumentenbond at the second DRM workshop of the EC, DG Information Society..

⁹² Mulligan et al. CEN/ISSS (2003), p. 112.

⁹³ BEUC (2004), p. 8.

⁹⁴ Austrian Association for the Furthering of Free Software (2004), p. 8.

⁹⁵ Privatkopie.net and Bits of Freedom (2004), p. 5.

3.7 Flexibility in Business Models

The High Level Group on DRM points to the benefits of DRM systems for consumers. In particular flexibility and choice is mentioned, i.e. the group states that DRM would allow different alternative business models in the sense of alternative price-points for the services, such as ‘a la carte’ downloads, subscriptions, rental, preview, or possibly superdistribution. In their opinion, and in contrast to traditional distribution, consumers will gain wider access in the sense that content can be accessed wherever and whenever they choose.⁹⁶ However, an argument should be mentioned in this context, that most of the business models already exist in digital distribution without DRM.⁹⁷

A consumer organisation, i.e. BEUC, mentioned that the employment of DRM will bring a wider choice for consumers to access and use of digital products. However, this flexibility of a wider range of business models is seen by BEUC with some reservation, since they expect that they will alter consumer rights, freedoms and expectations and, in general, a replacement of copyright law with contract law and code is furthered. Because, for instance, reselling is disabled by most DRM systems it is considered by BEUC that industry uses every option of exploitation based on different pricing models and post-purchase control.⁹⁸ Similar arguments are provided by FIPR. In their opinion, DRM may be used for price differentiation or price discrimination, which is often resented by consumers. An example is the region code employed on DVDs. Also the regional price differentiation (e.g. Apple’s higher prices for music downloads in UK) are rejected and regarded as a threat to the Single Market of the EU. As an objective of the Single Market, cross-border trade and reselling normally lower price differentials. However, DRM systems usually impede such trade and (the European equivalent of) the first sale doctrine is not realised.⁹⁹

Additionally, from the perspective of economics, Fetscherin states that consumers in their buying decisions take into account alternative sources to acquire content products, in particular the P2P file sharing networks (with the risk of getting involved in piracy litigations). Therefore, he assumes that products with protection technology (including DRM) impose some disadvantages for the consumer, in particular, limitations to make copies, need for registrations and download of software, inability to share, usage tracking, file expiration, or limited device range. He suggests, among other things, that content providers have to learn to compete with appropriate business models against the pirated versions of their products, in particular by designing their products with more consumer-centric protection technologies.¹⁰⁰

⁹⁶ HLG DRM (2004), p. 5.

⁹⁷ Jackson (2004).

⁹⁸ BEUC (2004).

⁹⁹ FIPR (2004), see also Stichting Vrijschrift.org (2004), p. 2.

¹⁰⁰ Fetscherin (2003).

3.8 Product Diversity and Pricing

A further concern is raised that the protection of DRM systems hinders innovation and research on new technologies and has the potential to foreclose market entrance of new competitors and new distribution technologies.¹⁰¹ In particular, DRM systems embedded in players and electronic devices (e.g. music players, game consoles) may be used to control the complementary products (e.g. pieces of music or games).¹⁰² Such closed distribution channels hinder the market entrance of competitors, competition and, by this, has adverse effects on the price level and product and cultural diversity and choice of consumers.¹⁰³

Product diversity may be also endangered by changes on the side of content creators and the changed allocation of profits along the value chain. One concern is that with the intended phasing out of collecting societies and the only compensation via DRM, many creators will lose substantial parts of their income.¹⁰⁴ Additionally many individual creators and small and medium enterprises are endangered by the high costs of licensing DRM technologies.¹⁰⁵ Both effects decrease their market viability and, by this, the product diversity and choice for consumers.

Furthermore, an interesting issue is raised by BEUC regarding the pricing of DRM-based products. They claim that the price of such online-products should reflect the efficiency of the online-distribution channel,¹⁰⁶ i.e. it should be considerably lower than conventional counterparts.

3.9 Concerns of Consumers with Disabilities

Since the beginning of the 90s the question of the broad and equal use of information technologies has become very important. Due to the reports of the U.S. Department of Commerce “Falling Through the Net”¹⁰⁷, the “digital divide” was defined through social aspects like ethnicity, income, gender, age etc.¹⁰⁸ Therefore at the very beginning, the debate on a digital divide referred much more to social aspects, although another group of society couldn't reap the benefits of technological advance and very often was hindered in

¹⁰¹ BEUC (2004), p. 6.

¹⁰² Campaign for Digital Rights (2004), p. 2.

¹⁰³ The issues of cultural diversity is also stressed by representatives of the independent music companies, cf. IMPALA (2004), p. 2.

¹⁰⁴ EVA (2004).

¹⁰⁵ Privatkopie.net and Bits of Freedom (2004), p. 12.

¹⁰⁶ BEUC (2004). p. 5.

¹⁰⁷ Since the mid of the 90s, the U.S. Department of Commerce commissioned a survey every second year about the access of specific social groups to information technologies and to the web. The data showed a strong 'digital divide' in terms of social aspects like income, race, gender etc. (NTIA 1995, 1998).

¹⁰⁸ NTIA (1998).

using them adequately: disabled people.¹⁰⁹ Within the group of disabled persons the most characteristic are deaf and blind people, people with mobility impairments as well as people with learning disabilities.¹¹⁰

Particularly during the last ten years the technological possibilities of adaptive software and hardware could extremely enrich the life of disabled users. In the case of mobility impairment e.g. switches and scanning software need one reliable action like blinking an eye, flexing a wrist or blowing on a straw to be switched on. But access to the web also offers huge possibilities for services and information for the disabled user. “There are obvious benefits of online banking or online shopping for those with physical access difficulties, and, among other examples, voice-recognition software can greatly enhance the possibility of communication for many”.¹¹¹ Within the European Union there are 37 million¹¹² disabled people for whom the development and use of information technology remains a potential to transform employment capacity as well as a communication tool for a better social integration.

Regarding the introduction of DRM systems there are only a few official statements by consumer organisations, which represent disabled users. But generally the idea of access to both information technology and information/data can be regarded as the central expectation of consumers.¹¹³ To meet the accessibility expectations of disabled consumers, appropriate technical, legal and political strategies are required.

3.9.1 Accessibility as the Central Concern

Disabled People International (DPI) refers in its statements to the paper of the UN-World Summit on the Information Society in 2003, Geneva, where access to information and knowledge is described in Point 4 as: “Access to information and knowledge can be promoted by increasing awareness among all stakeholders of the possibilities offered by different software models, including proprietary, open-source and free software, in order to increase competition, access by users, diversity of choice, and to enable all users to develop solutions which best meet their requirements. Affordable access to software should be considered as an important component of a truly inclusive Information Society.”¹¹⁴

Much more concrete respecting the use of the term “access” is the definition by the World Blind Union (WBU), which represents 180 million blind and partially sighted persons from some 600 different organisations in 158

¹⁰⁹ Obviously the term of 'disabled' is a high controversial issue. According to Clark a person who cannot hear or see or walk clearly does have abilities 'different' from a non disabled person. In accessible Web development the term has been created 'different' or analogous forms. For the following explanation the term 'disabled' is defined as “the loss of opportunities to live a normal life imposed upon people with impairments by social and physical barriers” (Russell, 2003, p. 245, see also Clark, 2002).

¹¹⁰ Clark (2002).

¹¹¹ Russell (2003), p. 238 and additionally Clark (2002).

¹¹² Eurostat (2003) or Russell (2003), p. 238.

¹¹³ The following descriptions also include organisations from the USA, where the discussion has been much more developed as in European countries.

¹¹⁴ DPI (2004).

countries. The WBU also works in close collaboration with the International Disability Alliance (IDA). According to the WBU the right to information and communication should include: “[...] The right to the provision, in a timely manner and without additional cost, of all information in the public domain in formats that are accessible to blind and partially sighted people, such as Braille, audio, large print and electronic text, regardless of any copyright laws. This is to include all correspondence and information from public services, such as hospitals, public utilities and government departments, as well as those providing an essential service such as banks [...].”¹¹⁵

Free access to information is also identified as the most critical issue by The American Foundation for the Blind (AFB), which is the prominent research and information resource for professionals and educators serving blind and low-vision people worldwide. Regarding the discussion of DRM, AFB recognises that intellectual and personal property has to be protected from unauthorised use. However the question is, whether the DRM systems exclude people with disabilities. There are some good experiences with organisations like the Physically Handicapped’s Digital Talking Book Initiative, which showed that these problems can be resolved technically. However very often the systems design is imposed by technologists, who create applications, which discriminate or even exclude disabled consumers.¹¹⁶

In order to lead the Web to its full potential and ensure its interoperability the World Wide Web Consortium (W3C) has developed Corporate Social Responsibility (CSR), which refers to Web Accessibility as one important aspect. It’s the main objective is to guarantee web accessibility for disabled and non disabled people, which is elaborated by the Web Content Accessibility Guidelines Working Group (WCAG WG) of the consortium. Regarding the introduction of DRM systems, the consortium reacts actively to the development of new technologies as well as to legal decisions.¹¹⁷ The main principles of Web Content Accessibility are:¹¹⁸

- Content must be perceivable
- Interface elements in the content must be operable
- Content and controls must be understandable
- Content must be robust enough to work with current and future technologies.

These four principles¹¹⁹ seem very simple, but regarding e.g. the first principle for disabled people an exhaustive list of the variations and types of disabilities and needs has to be considered:

¹¹⁵ WBU (2003).

¹¹⁶ Sajka (2001).

¹¹⁷ Sloan (2001).

¹¹⁸ World Wide Web Consortium (2004).

¹¹⁹ The W3C published the Web Content Accessibility Guidelines 1.0 (WCAG 1.0) as a recommendation in May 1999. The following Working Draft 2.0. builds on WCAG 1.0. It has the same aim: to explain how to make Web content accessible to people with disabilities and to define target levels of accessibility. Incorporating feedback on WCAG 1.0, this Working Draft of version 2.0 focuses on guidelines. It attempts to apply guidelines to a wider range of technologies and to use wording that may be understood by a more varied audience.

- A deaf person will want a visual representation of information presented via sound.
- A blind person will want to hear or feel (via Braille or tactile graphics) an equivalent of the visual information.
- Someone who does not have the strength to move quickly or easily will want to use as little movement as possible and have as much time as needed when operating Web interfaces.
- Someone who does not read well may want to hear the information read aloud.

These four examples show significantly the concerns of the end users with disabilities. In order to react to these concerns technical solutions are of high importance, but the introduction of technical solutions depends strongly on social, legal and political conditions.

3.9.2 Technical Solutions as Response to Consumer Concerns

If Web content employs the design principles described above, then consumers should be able to access the content using adaptive strategies and assisting technologies. The development of DRM systems does very often not include these techniques, which is mainly criticised by blind and/or print disabled groups.

One example of a DRM system for persons who are blind and/or print disabled is the Digital Audio-based Information System (DAISY), which was presented at the Workshop on Digital Rights Management for the Web in France 2001. The DAISY consortium is working on the requirements of the end user who is blind and/or print disabled. The focus of the presentation described issues surrounding the secure delivery of Digital Talking Books (DTB) and the use of mainstream information which is protected through DRM systems by persons with disabilities. Thus the requirements were oriented towards the following topics:¹²⁰

- The DRM systems must support both removable media and Internet distribution.
- DRM solutions must account for extremely large DTB and must not create a burden on playback systems. In many cases the hand held playback devices are slim implementations with limited processing power and memory.
- The distribution mechanism must not place an undue burden on the libraries checking out DTB to end users or schools.

The DAISY example shows significantly that demands of consumers with disabilities refer mainly to technical solutions. There is a general agreement on that point. According to the European Blind Union (EBU) “[...] DRM solutions should always be designed in the light of today’s technology rather than tomorrow’s promises. It should also be remembered that the latest

¹²⁰ Kerscher and Kawamura (2001), p. 3.

technology solutions are not instantly purchased by every consumer.”¹²¹ Thus technical ‘compatibility’ with different users’ equipment could be approached in a variety of ways like conversion of text to tactile presentation, conversion to audio and others.

But – according to the EBU – progress does not only rely on single technical solutions. Progress on accessibility of public web sites as well as of technology will rely upon the development of a universal accessibility standard, the creation of legislation with specific reference to technology and above all a more co-ordinated approach is needed to promote awareness respecting the needs of disabled users. Political and legal strategies toward standardisation still have to be developed. Therefore the public debate is urgently needed.¹²²

3.10 Library Concerns

Libraries are typical intermediaries between the producers and distributors of content and the consumers of such content, mainly readers of books, scientists, and citizens. One of their main tasks is to give open access to all members of a society to intellectual works and to preserve the intellectual memory of society. Technology, i.e. digitisation and telecommunication, has opened a wide array of opportunities for libraries to better serve their customers. But legislation on copyright and implementation of DRM systems may restrict library duties. Hence, it is not surprising that libraries are discussing DRM issues and are lobbying through their associations at policy level. From the considered statements and literature we conclude in advance a dual role of DRM systems for the tasks of libraries:

- on the one hand DRM may hinder their activities, in particular their lending tasks,
- on the other hand DRM systems are regarded as supportive to better define and manage the usages of patrons.

In the following we refer to recent and selected statements and views from the perspective of libraries to present their expectations and concerns with respect to DRM systems. First, we picked up two statements by library associations to the EU consultation process on the Commission’s Communication COM(2004)261, i.e. the European Bureau of Library, Information and Documentation Associations (EBLIDA)¹²³ and the Libraries and Archives

¹²¹ EBU in CEN/ISSS (2003), p. 13.

¹²² EBU in CEN/ISSS (2003) and Russell (2003).

¹²³ EBLIDA (2004). The European Bureau of Library, Information and Documentation Associations, situated in The Hague, is an independent non-governmental and non-commercial umbrella association of national library, information, documentation and archive associations and organisations in Europe. One of the big issues of EBLIDA is copyright in the information society. So EBLIDA lobbied on behalf of libraries on various EU Directives since 1992. Recently EBLIDA is involved in the EU consultation process on DRM. EBLIDA participated in the EU DRM Workshops in 2002 and 2003 but was not a member of the High Level Group on DRM in 2004. In the following the EBLIDA response, dated June 2004, to the European consultation process on the EU

Copyright Alliance (LACA).¹²⁴ Then we take into account two prominent individual statements published by Coyle¹²⁵ and Davis and Lafferty¹²⁶. Finally we take a look at a White Paper published by the American Library Association (together with the Association of American Publishers) on the requirements of consumers (including libraries) to DRM systems in the context of e-books (in the following quoted as Slowinski 2003).

Libraries have not always been participating consultation processes on changes in copyright law and especially on the consequences of the implementation of DRM systems. For example, libraries have had no voice in the High Level Group in DRM appointed by the European Commission in 2004. However, libraries hold the position, that they are one major stakeholder in this debate and that consensus among controversial issues should be reached between all stakeholders.

3.10.1 Balance between Copyright Holders and Consumers

The views of libraries are based on their long tradition in establishing a balance between creators and consumers of content, which is partly copyright protected. In their view they contribute to society's openness, democratic culture, creativity, and innovation. The advent of DRM systems has to be evaluated in line with this tradition. In general, libraries claimed that DRM systems should not set the law but has to be developed, implemented, and run according to law.

All library representatives argued about the balance between copyright holders' rights and fair access of users to copyrighted material. Their main argument against DRM systems is that they do not respect the exceptions granted to consumers of copyright material by their national copyright law. For example, LACA points to existing DRM systems, which are not able to implement UK's exception in copyright law for visually impaired people as far as the delivery of electronic publications is concerned.¹²⁷

In the word of LACA, libraries have always supported the needs of education and research and the needs of private citizens. A well-managed copyright regime has to respect the creator's need to protect his or her copyright

Communication on the Management of Copyright and Related Rights in the Internal Market (Commission of the European Communities 2004) is analysed as relevant statement by European libraries. The EBLIDA response includes an Appendix with its position on DRM Systems dated February 2003, which is also taken into account.

¹²⁴ LACA (2004). LACA is an alliance of the major professional organisations in the UK representing professionals in the fields of librarians, archivist and information science professions, the British Library, the Royal National Institute of the Blind (RNIB) and the Educational Copyright Users Forum (ECUF). The main purpose of LACA is to monitor and lobby on copyright and related rights on behalf of these professions as well as on behalf of all users (or 'consumers') of copyright works through library, archive and information services.

¹²⁵ Coyle (2004). Karen Coyle is an expert in digital library projects for more than 20 years.

¹²⁶ Davis and Lafferty (2002) is not really a statement from the library side. However, this article is directed to libraries and librarians. Denise M. Davis is a member of the U.S. National Commission on Libraries and Information Science (NCLIS), an agency of the federal government in charge of advising the executive and legislative branches on library and information policies. Tim Lafferty is DRM consultant.

¹²⁷ LACA (2004), p. 3.

as well as the needs of users to be able to use them fairly. “The concept of fairness and balance between rights holders and users has long been a major principle of copyright law, which was from the start designed to foster intellectual creativity, which in turn helps to preserve the freedoms upon which our democratic society in Europe has been built”.¹²⁸ While copyright is a monopoly for a limited time and with exceptions in order to encourage intellectual creativity, an imbalance will have serious impact on people’s ability to be creative and on society’s ability to innovate. According to LACA, the last decade has seen a trend in copyright legislation which has strengthened the right owners at the expense of the users’ rights.

Also Coyle states that the discussion on DRM is dominated by the interests of the media and entertainment industry. But these are not the interests of libraries. The “products” of libraries are not in all cases copyright protected content; their aim is not to make profit, but to serve public interest by open access to information and to preserve intellectual works for future generation. In Coyle’s opinion, DRM is not to be confused with copyright law. Libraries rely heavily on copyright law as one may see in the fair use clause. While DRM, from her point of view, is something like a license between two parties, some use of content in libraries needs no specific permission or DRM system, because this is ruled in copyright law. Therefore, “a general requirement for libraries will be that any rights management must not eliminate public, educational, and library user rights that copyright allows.”¹²⁹

She concludes her article: “The question is not whether digital libraries will disseminate materials with rights management information and technological protection measures; the question is whether digital libraries will be able to perform basic library functions like lending, archiving, and protecting the confidentiality of their users of rights-managed content.”

Also Slowinski mentions that (American) libraries operate under a distribution model that emanates from the exceptions provided under copyright law, especially the fair use and the first sale doctrine. Therefore, regarding DRM systems there are two main concerns: How to accommodate fair use and how to facilitate the same kinds of activities that libraries are accustomed to with printed works like lending.¹³⁰

3.10.2 DRM as Support or Obstacle to Library Functions

There are different statements about the usefulness of DRM systems in libraries and their scope of application. Some argue, that DRM systems provide advantages mainly to all of the library’s tasks. Others want DRM systems suitable for libraries to manage digital rights, but do not want systems which are in first place access control systems.

From the perspective of EBLIDA, DRM systems could assist libraries in managing their services. But the focus on DRM systems should not be solely on protection rather than on management, clearance, and delivery. In the

¹²⁸ LACA (2004), p. 2.

¹²⁹ Coyle (2004).

¹³⁰ Slowinski (2003), p. 17.

opinion of EBLIDA DRM technologies drive legislation instead of being driven by the principles behind the legislation.¹³¹

In the opinion of Coyle, current digital library systems control access to their content, but not usage. DRM systems will change this. But it is in the interest of libraries to have access and usage control through DRM only to the extent necessary. “And this means that there may not be a single rights management solution that is appropriate to all materials.”¹³² She states that libraries are interested in having DRM technology based on open standards. This is also a precondition for the long term storage of library resources. Furthermore, lending is a typical kind of task that libraries fulfil, but DRM systems usually do not have this usage type implemented. Thus, it “seems obvious that libraries will want to be able to lend digital materials.”

In a different stance, Davis and Lafferty recommend librarians to embrace the DRM technology. “Digital rights management technology is a friend to libraries and the communities they serve.”¹³³ It is interesting to note that the article deals with some requirements of libraries, e.g. fair use and lending. The authors argue, that DRM technology companies are experimenting with various forms of digital fair use, “but the end result is not clear.” NetLibrary, a division of Online Computer Library Center (OCLC) and distributor of e-books, presents a lending mechanism for libraries. The library patron has to check in the book and if only one licence is available no one else can read this title until the patron had checked out. The general view of the authors is that all library requirements can be technologically implemented in DRM systems.

Others see only a limited application area of DRM systems in libraries, because important parts of their asset are copyright free content. This is not only relevant for old documents, but also for recent content, e.g. for government documents or content explicitly dedicated to the public domain falling under creative commons licence, or published for open access.

In particular, Slowinski points to the fact that librarians perceive DRM in some instance as barriers to their tasks. In his opinion, they fear the risk of purchased e-book titles becoming obsolete if the reading platform becomes outdated. Librarians also dislike the burden of costly and time consuming controls on access to e-books and other rights management tasks.¹³⁴

3.10.3 Further Concerns

It is worthwhile to notice, that there is one statement which welcomes DRM systems for abandoning collective levies of copyright content by collecting societies. LACA considers DRM as advantageous and levies as unfair.¹³⁵ It would be interesting to monitor if this opinion has a consensus in the library community or remains a single voice.

¹³¹ EBLIDA (2004).

¹³² Coyle (2004).

¹³³ Davis and Lafferty (2002), p. 23.

¹³⁴ Slowinski (2003), pp. 28-29.

¹³⁵ LACA (200

From the librarians' perspective, there is a special concern, that data protection, confidentiality and privacy are threatened by DRM systems. "Libraries must insist on providing a privacy barrier between their users and content providers."¹³⁶ Additionally, LACA shares the concerns about the ability of DRM systems to trace the user's behaviour. In any case the user's privacy has to be preserved.

Additionally, representatives of libraries formulate some more general requirements, such as the interoperability and standardisation of DRM systems, an efficient and inexpensive dispute resolution, and lawful circumvention.¹³⁷

3.11 Science and Higher Education Concerns

Statements which declare the interest of the science and research community regarding DRM are hard to find. One indicator for this preliminary observation is the absence of scholarly or scientific associations in the EU consultation processes on DRM systems. We have found only two out of 106 statements delivered to the EU consultation process on the Commission's Communication COM(2004)261 which emphasizes aspects of science, research and higher education. But these two statements are no genuine formulations from and in the interest of academia and scholarly communities: the International Association of Scientific, Technical and Medical Publishers (STM)¹³⁸ formulates statements from the point of view of scientific publishers, and the Berlin Declaration¹³⁹ has a wider perspective than universities and research including also the entertainment sector. Some arguments for the limited involvement of science and research interests could be:

- There has been for years an extensive debate on scientific publishing in the context of the so-called "serial crises" and the advent of electronic publishing. The debate cumulated in recent times in the Open Access Initiative and similar initiatives, which aim to grant scholarly authors more freedom to publish under conditions they choose and to enable free ac-

¹³⁶ Coyle (2004).

¹³⁷ EBLIDA (2004).

¹³⁸ STM (2004). The International Association of Scientific, Technical and Medical Publishers (STM) is based in The Hague, was founded in 1968, and represents professional and scholarly, profit and not-for-profit publishers worldwide with a large number of them from the EU. Also STM is not an academic institution, the STM publishers have strong relationships with universities, research laboratories and scholarly authors.

¹³⁹ Berlin Declaration (2004). In response to the call for comments on the EU Communication Com(2004)261 a declaration of the speakers of the conference "Wizards of OS. The Future of The Digital Commons" (Berlin 10-12 June 2004) was issued at 21 June 2004 and transmitted to the European Commission. The 45 signatories do partly belong to the university or research community and partly to associations of citizens fighting for an equitable information society. The main proposal of this declaration is for an establishment of an Alternative Compensation System (ACS), also called a "content flat-rate". This is derived from the primary goal, that "copyright law-making must be a balance between the rights of creators and those of the public" (p. 1) and from a fundamental critique of DRM.

cess to public funded scholarly publications. This debate has also a relation to copyright but DRM is such a novel topic that it has not found a place in this context until now.¹⁴⁰

- Furthermore access control of online available documents (e.g. from bibliographic or full text databases, electronic journals etc.) is an established institution in universities and research laboratories for years. The technical control mechanisms per se are not an issue like in the DRM debate because normally campus-wide control of users' IP-numbers or control by user password are used. But this situation may change by DRM implementation, for instance, to enable a more sophisticated management of content uses.

In the following we present some more or less typical statements and articles which give special attention to the interests of science and research in the debate on DRM.

3.11.1 Balance of Rights

While STM also supports the view, that interests of stakeholders have to be balanced,¹⁴¹ mainly the signatories of the Berlin Declaration addressed the changes of the balance of rights by applications of DRM systems. The signatories of the Berlin Declaration do not believe, that DRM systems are “the most important tool for rights management in the Internal Market of the new digital services” as the Commission proposed in its Communication. Instead they state that the usefulness of DRM systems is not clear at all.¹⁴² The critique holds, that the few available systems on the market have not yet achieved interoperability. These systems also have the potential to interfere notably with citizens' rights such as privacy, the freedom of research and innovation and others.¹⁴³

In their opinion, as an opposite approach to a wide use of DRM, collecting societies have to become more flexible and open for special interests of authors, e.g. in the light of the open access movement in the scholarly communities. The signatories urge the Commission to work towards reforms of the collecting societies to give choice back to the artists including the right to offer non-commercial licenses.¹⁴⁴

The Berlin Declaration rejects the Commission's view, that DRM systems contribute to the availability of protected digital content and the access of end-users to this content. Protected content, so the signatories, is widely available to end-users, but there is a deficit of compensation schemes for creators. Their solution to this problem is an alternative compensation system based on a content flat-rate, a compensation without control.

On a European level, academia representatives make conceptual efforts how to achieve a balance of rights, which is worthwhile to highlight in this

¹⁴⁰ An exception is Friend (2004).

¹⁴¹ STM (2004), p. 1.

¹⁴² Berlin Declaration (2004), p. 2.

¹⁴³ Berlin Declaration (2004), p. 3-4.

¹⁴⁴ Berlin Declaration (2004), p. 5.

context. The efforts results in the so-called “Zwolle Principles”.¹⁴⁵ The overall objective was formulated as follows: “To assist stakeholders – including authors, publishers, librarians, universities and the public – to achieve maximum access to scholarship without compromising quality or academic freedom and without denying aspects of costs and rewards involved”. To achieve this objective seven principles are developed:

1. optimal management of copyright in scholarly works to secure clear allocation of rights that balance the interests of all stakeholders;
2. this may be achieved through thoughtful development and implementation of policies, contracts, and other tools, as well as processes and educational programs, (collectively “Copyright Management”) that articulate the allocation of rights and responsibilities with respect to scholarly works;
3. but there has to be kept in mind that the interests of various stakeholders will vary according to numerous factors, including the nature of the works which require different treatment;
4. the primary focus should be on the allocation to various stakeholders of specific rights;
5. and should respect the interests of all stakeholders involved in the use and management of scholarly works; those interests may at times diverge, but will in many cases coincide;
6. while all stakeholders have an interest in attaining the highest standards of quality, maximising current and future access, and ensuring preservation;
7. all stakeholders should actively promote an understanding of the important implications of copyright management of scholarly work.¹⁴⁶

3.11.2 Interoperability as Market-Based Solutions

In particular the publisher association STM welcomes market-driven solutions, and points to the interoperability issue as a market priority. The association emphasises that there is a real need for a universally accepted definition of DRM and a link between DRM and technological protection measures enshrined in current and emerging legislation. They stress that there is a real need of international and interoperable standards for digital content

¹⁴⁵ Supported by the Dutch SURF Foundation (a higher education and research partnership organisation in the field of information and communications technology) there have been since June 2001 (Mossink 2001) three working conferences on “copyright and universities” in a little Dutch town, called Zwolle. The international participants consisted of about 50 representatives from different scientific disciplines, university management, libraries, publishers and authors. The “Zwolle Principles” were declared at the second conference in December 2002 (Surf 2002). The third conference “Zwolle 3” (February 2004, now in cooperation with JISC, Joint Information Systems Committee, the British pendant to SURF, see SURF 2004) gave attention to the implementation of the Zwolle Principles, international developments and to tools guiding the stakeholders in their copyright policies and in the establishment of customized agreements. This is, as far as we understand it, the special Zwolle approach. In all the documents we have inspected there is no indication of DRM systems. The different stakeholders agreed instead on an approach based on customized agreements between the diverse stakeholders.

¹⁴⁶ Zwolle Principles (2002).

sharing that supports access to content rather than create obstacles to access. They oppose mandated solutions for the managements of rights i.e. encryption and access control. STM is in favour of the implementation of DRM on a voluntary basis and in consultation with their customers.¹⁴⁷

3.11.3 Supportive Role for Research and Higher Education

In a research project on behalf of Macquarie University, Australia, with support from the Australian Commonwealth Department of Education, Science and Training some statements can be found on the presumed supportive role of DRM systems for the higher education sector.¹⁴⁸ While the report is quite technical in defining DRM requirements for a DRM model in higher education, we concentrate on some more general propositions about the special conditions of the use of DRM systems in higher education.

Iannella states that the needs of the higher education sector for DRM go well beyond the interests on rights enforcements by the software industry. Because of the multitude of stakeholders and the complexity of the usage model of intellectual properties in the university context organisational, political, and cultural issues are as important as the technical issues, which are outlined in the report.¹⁴⁹

In his opinion, there is no question that DRM systems have to be implemented in the higher education context. While the higher education sector is one of the major creators of intellectual property (IP) as well as one of the major consumers of IP, it lacks DRM systems to exploit its commercial value: “The effective development and utilisation of online learning content will require flexible and expressive DRM solutions.”¹⁵⁰

In his view, it is quite typical for the higher education sector that content like courses is adapted and reused in different stages. But an effective reuse of “learning objects” is hampered by the difficulties in finding, negotiating, and integration of these materials. Therefore, one of the unique characteristics of the education sector dealing with DRM is: “Firstly, the creation of content [...] usually evolves over a longer period of time and often involves the re-use of other parts of learning objects. Thus, the management of learning objects requires a long-term strategy and involves both the ‘upstream’ creation and ‘downstream’ use of information. Secondly, the learners (users)

¹⁴⁷ STM (2004), pp. 2-3.

¹⁴⁸ Iannella (2002). The principal investigator, Renato Iannella from IPR Systems (Sydney and Brisbane), is one of the developer of Open Digital Rights Language (ODRL) and well known as one of the leading international DRM activists. The aim of the project was to provide a core set of requirements for DRM systems that have been gathered and analysed from the Australian higher education sector. The requirements are based on a DRM model with the following three core entities: assets, rights, parties. These are differentiated in typical higher education scenarios and compared with existing DRM standards. The report recommends a comprehensive strategy to influence the relevant international standardisation processes and to establish Australia as the centre of expertise for DRM in the global community (p. 27).

¹⁴⁹ Iannella (2002), p. v and vi.

¹⁵⁰ Iannella (2002), p. 27.

have a stronger level of trust being part of an existing infrastructure relationship.”¹⁵¹

Also other authors see several reasons for a growing interest in DRM in research and education. For instance, Martin et al.¹⁵² state that there is a need to support new digital library collections, code and software developments, distance education, and network collaborations. To enable global access to that content will require DRM. There is also an increasing interest in new publishing models such as the Budapest Open Access Initiative (BOAI). These open publishing models require DRM capabilities that emphasize fair use, fee-based and non-fee based access, multiple subscription models, and protection of intellectual property.¹⁵³

The special requirements of DRM in an academic environment can be derived from these grounds and include “accommodating the highly collaborative and distributed aspect of many research and education activities; supporting fair use of copyrighted materials for educational purposes; supporting granular and differential access to resources; preventing misuse of resources; insuring the integrity of resources; and interoperating with existing and emerging infrastructure.”¹⁵⁴

The authors emphasise that there is a distinction between a conventional definition of DRM in an e-commerce model, which solely protects the rights of the owner, and a broader definition emerging in the research and education community. The latter includes access management as well as intellectual property rights management; it is dealing with the rights of owners as well as the rights of users. The authors disagree with the notion, that an accommodation of fair use is beyond the reach of DRM technologies.

The authors illustrate the heterogeneous nature of collaborations in research and education across departments, academic institutions, and national borders. DRM systems have to handle this. They point to the special academic culture of sharing information with respect to intellectual property, academic honesty, and the integrity of the resource. They ask if DRM systems can be designed to support these policies.¹⁵⁵ DRM systems have to be flexible and extensible to new developments like digital libraries and repositories and new scholarly publishing models. The concept of public domain has to be secured also in the context of DRM systems and it has to be discussed what the default access rights should be: no right or all rights to access. In the education and research context the gradation of risk by sharing information has to be taken into account. Information with higher risk (like patient records) has to be secured in other forms than research publication with an interest of a world wide free and open availability.

¹⁵¹ Iannella (2002), p. 10.

¹⁵² Martin et al. (2002a, b). The article (Martin et al. 2002b) originated in the preparation of a workshop organised by the authors in September 2002 called “NSF Middleware Initiative and DRM Workshop”. A discussion paper was also developed for the purpose of the workshop (Martin et al. 2002a).

¹⁵³ See Friend (2004).

¹⁵⁴ Martin et al. (2002a).

¹⁵⁵ Martin et al. (2002a), p. 8.

3.12 Conclusion

While some developments of applied business models seem to head slightly into the direction of consumers expectations (e.g. increased number of burns or copies of DRM-protected products) (see also Chapter 6), the observed statements point to many other consumer concerns that are still insufficiently taken into account, in particular issues of privacy, transparency and contractual fairness, interoperability, security and hardware issues, flexible business models, product diversity and pricing concerns. Additionally, debate and research on issues of customers with special needs, such as consumers with disabilities, libraries, or customers from science and higher education, seem to be right at the beginning.

Furthermore, scientific insights into actual impacts of DRM systems on diverse actors of the content value chain, including end-users or consumers, is still rudimental. Analysing the state of the art, we discovered many knowledge gaps about consumer behaviour, expectations, and conditions of acceptance. Furthermore, knowledge is still very limited about the impacts of a widespread DRM deployment on the structure, competition and other markets conditions which themselves have serious effects on product diversity, choice or market positions and market power of consumers. In view of these gaps we would like to suggest to shed some more light on the following issues both in research and discussions:

- long-term effects of DRM employment with regard to the protection of private and public content collections and archives as well as the transfer of content into the public domain after copyright termination,
- constant monitoring and in-depth research of how DRM systems impact privacy and data protection issues,
- privacy issues of interoperability concepts such as “authorised domain”, “personal area networks”, or “digital home”,
- potentials for the additions to or implementations of privacy enhancing technologies (PET) into DRM systems,
- costs of developing and employing DRM systems in the sense of total costs of ownership (i.e. including training costs, costs for support services etc.), potential of shifting costs to consumers, the total costs of consuming DRM products, including hardware and network prices, in contrast to the actual benefit for consumers, and the potential of open source DRM systems, as well as
- resulting competition, market and industry structure as well as anti-trust issues not only in the original DRM technology market but also in upstream markets of content creation (position of authors, composers, musicians etc.) and downstream markets of content distribution and the implications on product diversity, consumer choice and positions.

While current intensive public debate on DRM circle mainly around the music industry, it seems to be necessary that other sectors of the content industry receive more attention of public debate and research, especially sci-

entific content, education material, news and journalism. In our opinion, they have great importance on how access and usage options of information and knowledge are changed, and thereby how actors of society may learn and innovate, how the conduct of science is changed, or how creativity and freedom of speech is secured. The main focus of the DRM debate on the entertainment industry may neglect the differences and specialities of such sectors which are basic for society's progress.

In any case, further research providing scientific evidence, details and empirical insights about the actual consumer behaviour and expectations in digital products in general and DRM-protected products in special is needed, such as on the actual private copying behaviour or consumer benefits. To grant an unbiased and neutral view – which is in our view seldom in the DRM debate – such research should be conducted by academia. Partly these questions will be treated by the INDICARE consumer survey and within the further progress of the project.

4 Legal Aspects

4.1 Introduction

The legal analysis of this chapter focuses both on DRM as technical copy protection measures and as all-round management solutions. At a general level, the analysis looks, at the legal questions that may figure in the business-to-consumer relationship in a DRM-controlled environment. More specifically, it attempts to provide an overview of the different issues concerning consumers and DRM from a legal perspective. This legal analysis will have two focal points:

- First, possible consumer interests and legitimate expectations are identified. These interests and expectations do not necessarily have to be reflected in the current legal regime. Consumer interests and expectations that have not been translated into legal rules yet are also relevant.
- Second, the different consumer interests and legitimate expectations are discussed in a legal framework of European Law. What rights do consumers have? What is the scope of the legal protection, if at all? Are there any caveats in the current legal framework, and where might further research be needed?

The analysis will distinguish between a number of consumer interests and legitimate expectations and investigate the extent to which they are legally protected. A distinction is made between individual and general interests. The former interest focuses on the individual interests towards the use of information goods in the business-to-consumer (B2C) relationship (e.g. private copying). The latter interest focuses on the more general welfare issues of the consumer as a citizen. This interest involves wider policy goals and civil society concerns, amongst which innovation and creativity and freedom of expression as an enabler of public discourse.

The focus of this chapter will mainly be on the B2C relationship. The analysis in this chapter follows this commercial relationship by identifying and discussing the applicable interests and legal provisions of European consumer protection law for different phases in the relationship. First though, the legal standing of the consumer will be analysed in light of the European Copyright Directive (EUCD), as this Directive provides a more explicit framework for DRM (Section 4.2). Applicable legal provisions of European consumer protection law are then discussed in relation to DRM (Section 4.3). Attention will be given to issues of Transparency (Section 4.3.2) and to the relation between DRM technologies and the contracts that accompany them (Section 4.3.3). These contracts set the business rules for consumers that use content governed by DRM systems.

Privacy issues will be discussed in Section 4.3.4. Standardisation and interoperability come to light in the following Section 4.4. Section 4.5 discusses the levies system as an alternative model to DRM. The possible need

for additional regulation is studied in the concluding Section 4.6. It will also give a brief outlook for the future.

As stated above, the legal analysis is based on Community regulation rather than national legislation of Member States. It should be kept in mind that in so far that this regulation comprises EU Directives, citizens are generally unable to appeal to legal provisions directly. Member States have to implement the provisions into national law before they apply to citizens. The way certain provisions are implemented may depend on the freedom for this implementation given to Member States and the national legal tradition. Consequently there can be differences between the Member States' laws that govern DRM and consumers. While the Directives seek to harmonise the national law regimes within Europe, there is no single answer to what interests are legally protected. However, a legal framework based on European law may give some indication of where to look for answers. If needed, reference will be made to European national law, international law (e.g. WIPO Treaty) or United States law.

4.2 European Copyright Directive

4.2.1 Introduction

Considered legislation:

- European Copyright Directive (EUCD)¹⁵⁶

In the European Union the EUCD provides a legal framework for DRM from a copyright perspective. Recital 31 of the EUCD states that “a fair balance of rights and interests [...] between the different categories of rightsholders and users of protected subject-matter must be safeguarded.” [italics added]

The rightsholders' interests in this balance are protected by copyright law, providing them with the exclusive right to reproduce, distribute and communicate their work to the public.¹⁵⁷ It has to be noted that to date national legislators have refrained from providing rightsholders with an exclusive right of access control. Though DRM systems are often used to restrict access to content, copyright does not entail an access right. The EUCD does however address access control techniques in Article 6(3), which will be analysed later.¹⁵⁸

¹⁵⁶ Directive 2001/29/EC of 22 May 2001 of the European Parliament and of the Council on the Harmonisation of Certain Aspects of Copyright and Related Rights in the Information Society, hereafter EUCD, available at http://europa.eu.int/information_society/topics/multi/digital_rights/doc/directive_copyright_en.pdf.

With the EUCD the EU seeks to fulfil its obligations on the legal protection of technological measures and rights management information under the WIPO Copyright Treaty (article 11 and 12) and the WIPO Performances and Phonograms Treaty (article 18 and 19). WIPO is an abbreviation of the World Intellectual Property Organization.

¹⁵⁷ Art. 2-4 EUCD.

¹⁵⁸ Helberger (2005), pp. 11-12.

The rightsholder's exclusive rights are not absolute, and limited both in time and scope.¹⁵⁹ European countries provide statutory exemptions in their copyright laws, which determine certain uses of the copyrighted work to be non-infringing. For these uses, consumers do not need the permission of the rightsholder to reproduce a work or make it available in its original or altered form. These exemptions form part of the other side of the fair balance, considering the interests of consumers.

4.2.2 Rationales for Copyright Limitations

Two main rationales for the limitations of copyright can be distinguished.¹⁶⁰ The first sees the limitations as necessary to provide a balance between the rightsholders' interests and the interests of users of protected works. Fundamental rights considerations do also play a role here: the property right of the rightsholder on the one hand and the rights of freedom of expression and privacy of the user on the other.

The second rationale is founded in the realm of economics and law. Information is presumed to be a public commodity and as such non-rival and non-excludable. These characteristics would make producing these commodities unprofitable. In order to provide an incentive to produce information goods, rightsholders are granted exclusive (copy)rights. However, these exclusive rights may hinder general social welfare generated by an otherwise non-restricted use. In this rationale copyright limitations are intended to bring a (economic) balance between exclusion of uses and the gains derived from the use of (public) information goods.

4.2.3 Position of Consumers: Copyright Exemptions (Article 5 EUCD)

Consumer interests are reflected in Article 5 of the EUCD, which provides an exhaustive enumeration of copyright exemptions.¹⁶¹ Notable copyright exemptions that are relevant in the framework of this report are use for scientific research (Article 5(3)(a)), uses that benefit people with disabilities (Article 5(3)(b)), reproduction by printed media (Article 5(3)(c)), quotations for criticism and review (Article 5(3)(d)), use for caricature or parody (Article 5(3)(k)), and reproduction for research and private study (Article 5(3)(n)).

For the general consumer the private use exemption (Article 5(2)(b)) may be of greatest interest. It may involve, for example, the private copying of a purchased CD to the hard disk of a personal computer, or printing out an e-book. DRM systems could prevent these exemptions that are traditionally enjoyed. DRM systems might not distinguish between legitimate use and non-infringing practice and infringing practices. A rightsholder may ex-

¹⁵⁹ The time scope of copyright will not be a subject of this chapter, as it is not (necessarily) related to the use of DRMs. However, it does impact consumer interests as it determines the moment a copyrighted work is in the public domain. At that moment consumers may use it without restriction.

¹⁶⁰ Koelman (2001).

¹⁶¹ Recital 32 EUCD.

tend his authority over DRM-protected content beyond the exceptions and limitations provided by copyright law.

4.2.4 Position of Rightsholders: Protection Technological Measures (Article 6 EUCD)

The position of rightsholders is looked after, *inter alia*, by the Directive's support of the use of DRM systems by protecting such technological measures in Article 6 EUCD. It is this legal protection for technical protection measures that raises important questions concerning the use of DRM in relation to consumer interests. One of these questions is what the legal protections laid down in Article 6 EUCD will mean for the enjoyment of the exemptions provided for in Article 5 of EUCD? More generally, this is the question if Article 5 and 6 EUCD safeguard a fair balance of rightsholder and consumer interests? To answer these questions, the scope of the protection provided by Article 6 will be analysed in relation to the copyright exemptions laid down in Article 5 EUCD.

4.2.5 Interplay between Article 5 and Article 6 EUCD

Article 6(1) EUCD offers protection against “the circumvention of any effective technological measure, which the person concerned carries out in the knowledge, or with reasonable grounds to know, that he or she is pursuing that objective.” Technological measures are defined in Article 6(3) EUCD as “any technology, device or component that, in the normal course of its operation, is designed to prevent or restrict acts, in respect of works or other [protected] subject matter, which are not authorised by the rightsholder.”

At least two important elements can be derived from these Articles that determine the scope of protection of the technological measure themselves:

1. Any technology that protects copyrighted material is protected (Article 6(3)): the definition of technological measures implies that any action circumventing any technological measure protecting copyrighted content is prohibited without authorisation of the rightsholder.¹⁶² For a consumer this means that he may not circumvent DRM systems, even if this action would be considered as non-infringing, e.g. because an exemption applies. For example, using a hack to make a private copy of a CD or DVD is not allowed. The private use exemption cannot be enjoyed if the implemented DRM system restricts copying, nor may this restriction be lifted. Arguably, only technological measures that shield copyrighted material are protected. In theory a consumer might legitimately circumvent a DRM that protects non-copyrighted content.¹⁶³ For example, the DRM on an e-book of Alice in Wonderland may be circumvented to print or copy it, since it is in the public domain.¹⁶⁴ However, the manufacturing, import, distribution and sale of circumvention devices is pro-

¹⁶² Anti-circumvention protection of computer programmes is specifically regulated in the Software Directive (Directive 91/250/EEC), notably article 7.

¹⁶³ Koelman; Briët at <http://www.euro-copyrights.org>

¹⁶⁴ This example is derived from Adobe System's well-known use of a DRM system that prevented an e-book of Alice in Wonderland to be read aloud.

hibited by Article 6(2) EUCD. This makes circumvention in practice not very likely.¹⁶⁵

2. Knowledge or reasonable grounds to know that circumvention is pursued: consumers should not be held responsible for acts they are unfamiliar with or for which they do not have reasonable grounds to know that they lead to the circumvention of a technological measure. For example, the EUCD does not intend for a consumer to be prosecuted for using a certain programme he is unfamiliar with or has no reason to know that it circumvents the DRM system on his CDs.

4.2.6 Article 6(4) EUCD: National Copyright Exemption Measures

Article 6(4) EUCD requires Member States to take measures to ensure that rightsholders provide consumers with the means of benefiting from certain exemptions, i.e. if rightsholders do not do this voluntarily. In that case Member States must assure that at least six of the twenty-one exemptions in the EUCD are safeguarded.¹⁶⁶ Fifteen exemptions do not have to be provided, amongst which private use. Member States may assign them, but are not obliged to. The implementation of, for example, a private copying exemption, is not mandatory and Member States are not obliged to intervene if rightsholders fail to accommodate such an exemption. Consequently consumers in different European countries may have varying abilities to pursue their interests due to differences in implementation.¹⁶⁷ Additionally, it must be noted that Article 6 (4) of EUCD does not apply if a work is distributed to the consumer online and on demand and the consumer has agreed by contract not to make an exempted use of the work.¹⁶⁸

Even if a private copying exemption would exist, the issue is what the legal standing of consumers would be. In recent French and Belgium court cases relating to DRM and private copying, it was stressed that consumers have no right to private copying.¹⁶⁹ This is expressly noted in a French court

¹⁶⁵ Notwithstanding the legal prohibitions, people with a more than average technical expertise do circumvent DRMs and make this circumvention available. For example, Jon Lech Johanssen has provided circumventions of the DVD copy control system (DeCSS) and the Apple iTunes DRM (FairPlay) through the Internet. For the average consumer the practice of circumvention, or use thereof, may not be in his reach.

¹⁶⁶ Art. 5 (2) and (3) and 6 (4) EUCD. Also Koelman; Briët at <http://www.euro-copyrights.org>

¹⁶⁷ When it comes to the imposed sanctions for circumvention the differences are also notable. In the UK violators of the anti-circumvention provisions can be subject to fines and imprisonment. In Denmark only fines and no criminal sanctions might be enforced. Gasser et al. (2004), pp. 36-37.

¹⁶⁸ Article 6(4) subparagraph 4, which states that the copyright exemptions “shall not apply to works or subject-matter made available to the public on agreed contractual terms in such a way that members of the public may access them from a place and at a time individually chosen by them.”

¹⁶⁹ Notably Stéphane P., UFC Que Choisir / société Films Alain Sarde et autres, Tribunal de grande instance de Paris 3ème chambre, 2ème section Jugement, 30 avril 2004. Available at http://www.legalis.net/jurisprudence-decision.php3?id_article=722.

And Tribunal Bruxelles (2004): Tribunal de première instance de Bruxelles, L'ASBL Association Belge des Consommateurs TestAchats/SE EMI Recorded Music Belgium, Sony Music Entertainment (Belgium), SA Universal Music, SA Bertelsmann

case, in which the private copying of a DVD was deemed a privilege and not a right under French law.¹⁷⁰ In the Belgium case it was decided that private copying was not considered a right, but a “legally granted immunity against prosecution.”¹⁷¹ These cases underline that consumers do not have a right of private copying under the legal regimes in question. The cases demonstrate that copyright exemptions may not provide consumers with a legal standing to enforce their interests against the user of a DRM system, for example to make a private copy. It is important to note that while it used to be the rightsholder that had to enforce its rights against infringers, under a DRM scheme it has become the consumer who has to secure his interests through an often costly procedure.¹⁷²

4.2.7 Concluding Remarks

As seen above, the legal protection of technological measures in Article 6 of EUCD could strain copyright limitations and exceptions. Acts exempted in Article 5 of EUCD may be deemed unlawful under Article 6 of EUCD. The tension between these two Articles could lead to the impairment of consumer interests in being able to benefit from copyright exemptions. The fair balance of rights and interests between rightsholders and consumers, as propagated in Recital 31, might not be found between Articles 5 and 6.¹⁷³ The EUCD reveals a poignant feature of copyright law: it defines the rights of rightsholders of a work, not the eventual rights of the users of that work.¹⁷⁴ Some balance might be reached through another field of legislation: consumer protection law.

Music Group Belgium, SA IFPI Belgium, Jugement du 25 mai 2004, No 2004/46/A du rôle des référés. Helberger 2004.

¹⁷⁰ “Attendu que la directive n’a donc pas pour effet de reconnaître et encore moins d’instaurer un droit général à la copie privée parce qu’[...] elle a laissé à la seule compétence des Etats membres l’appréciation de la nécessité de la prévoir dans leur droit interne ;” See Stéphane P., UFC Que Choisir / société Films Alain Sarde et autres, compare note 17. Unofficial translation : The court holds that the directive does not have the effect to recognise, and even less, to establish a general right of private copying, because [...] the directive has left the appreciation of the necessity to foresee in private copying in their internal law to the sole competence of the Member States.

¹⁷¹ “En ce sens la copie privée est une simple cause d’immunité garantie par la loi.” See Tribunal Bruxelles (2004), compare note 17. Unofficial translation: In this sense the private copy is a simple cause of immunity guaranteed by the law.

¹⁷² Helberger (2004).

¹⁷³ The concern over the tension between articles 5 and 6 EUCD was expressed in the Statement by the Council’s Reasons (Sept. 2000, no. 43): “Technological measures designed to prevent or inhibit acts followed by law (e.g. by virtue of an exception) were not protectable under Article 6. [T]he exceptions provided for in Article 5 prevailed over the legal protection of technological measures offered in Article 6.”, Lodder (2002), p. 113.

¹⁷⁴ Helberger (2004).

4.3 Consumer Protection Law

4.3.1 Introduction

European consumer protection law has its roots in Article 153 of the Treaty establishing the European Community (EC Treaty).¹⁷⁵ The values provided by this Article – information, education, health, economic and legal - are worked out in more detail in a variety of European Directives. Some of these Directives mainly look at consumer protection, others have an indirect effect on it.

A general set of European consumer protection standards does not yet exist. The basis of European consumer law is formed by a fragmented collection of regulations. None of these regulations are specifically drafted towards the use of DRM system. Protection of consumer interests and expectations towards products and services affected by DRM systems has to be sought in the various Directives that provide a more general framework of consumer protection law. That is, consumer protection law, as laid down in these Directives, might offer protection in the various phases in which a consumer interacts with the provider of products and services.

The first phase can be described as the pre-contractual phase. That is the phase in which the consumer is partly taking his decision to make a purchase on the basis of provided information by the provider of the commodity in question. The provision of some information on the use or working of DRM technology might be required under the relevant Directives. Protection might also be offered during the contractual phase, in which contracts that accompany DRM systems are concluded. In the post-contractual phase provisions that look at product conformity may come into play. This section discusses the following interests and relevant Directives:

- Transparency: the Electronic Commerce Directive, the Distance Contract Directive, the (proposal) Unfair B2C Commercial Practices Directive
- Contracts: Unfair Contract Terms Directive and Directive on the Sale of Consumer Goods and Guarantees
- Privacy: the European Privacy Directive.

It should be noted that this is not a strict division, in the sense that the Directives may cover aspects of more than one topic. The Distance Contract Directive, obviously, addresses aspects of contracting. It is discussed under Transparency for its relation to the Electronic Commerce Directive and the transparency of contract terms it partly addresses (see hereafter Transparency). But before these interests are looked into in greater detail, first a brief distinction is made between products and services, and second the term consumer is examined.

¹⁷⁵ Article 153(1) EC Treaty reads: "In order to promote the interests of consumers and to ensure a high level of consumer protection, the Community shall contribute to protecting the health, safety and economic interests of consumers, as well as to promoting their right to information, education and to organise themselves in order to safeguard their interests."

Product and Service

It is important to make a distinction between products and services, as this may determine the applicability of a specific Directive. Some Directives do not apply to either products or services. Consequently, the protection they might provide is withheld for one of them. Definitions of product and service may vary over the Directives, and it is sometimes questionable if a Directive covers them at all.

Somewhat general definitions are given in the first Article of Directive 98/34/EC as amended by Directive 98/48/EC:¹⁷⁶

- 1(1): “product”: any industrially manufactured product [...] (e.g. CDs)
- 1(2): “service”: any Information Society service, i.e., any service normally provided for remuneration, at a distance, by electronic means and at the individual request of a recipient of services (examples may be the online distribution of music, software and other information goods.)

Consumer

Consumer is defined in throughout different European Directives relatively homogeneously. The core description states that a consumer “shall mean any natural person, who is acting for purposes which are not related to his trade, business or profession.”¹⁷⁷ This definition may exclude small businesses and libraries from protection. Furthermore, in many other European legislation heterogeneous definitions and understandings of “consumer” can be found.

European consumer policy is based on the idea of the average consumer. The applicability of legal provisions, the level of protection an individual consumer may enjoy, is related to and depends on the action an average consumer would and should employ in the circumstances in question. A person who does not even bother to look at the contract terms governing his DRM-implemented e-book, might not get the protection he seeks when he needs it. The image and meaning of the average consumer will be analysed further under the (proposal) Unfair B2C Commercial Practices Directive in the next section.

4.3.2 Transparency

Considered legislation:

- Distance Contract Directive¹⁷⁸

¹⁷⁶ Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations, available at http://europa.eu.int/comm/enterprise/tris/98_34_ec/index_en.pdf. Directive 98/48/EC of the European Parliament and of the Council of 20 July 1998 amending Directive 98/34/EC laying down a procedure for the provision of information in the field of technical standards and regulations, available at http://europa.eu.int/comm/enterprise/tris/98_48_EC/index_en.pdf. Article 2(a) E-commerce Directive.

¹⁷⁷ See for example, article 2(e) Electronic Commerce Directive, or article 2(a) Directive on the Sale of Consumer Goods and Guarantees.

¹⁷⁸ Directive 97/7/EC of the European Parliament and of the Council of 20 May 1997 on the Protection of Consumers in Respect of Distance Contracts (Distance Contracts Directive), OL, L 144, June 4, 1997, available at http://europa.eu.int/comm/consumers/cons_int/safe_shop/dist_sell/dist01_en.pdf.

- Electronic Commerce Directive¹⁷⁹
- Unfair B2C Commercial Practices Directive (proposal)¹⁸⁰

The transparency of information concerning the use of DRM systems is essential for consumers to make an informed and well-balanced decision towards purchases of products and services. The implementation and working of DRM systems may not be clear to consumers. For example, they may be unaware that a DVD purchased overseas cannot be played back home due to region-specific coding, or that their personal data are being processed when using an online service. It is important that consumers are well informed on commercial transactions to protect their interests.

Concerning both products and services four important transparency questions can be asked:

- Are DRM systems used?
- How are DRM systems used: how do they work?
- What are the terms and conditions governing DRM systems?
- Who is the implementer of DRM systems? How to contact this implementer?

The first two questions concern the transparency of the implementation and working of DRM technologies. The legal provisions related to this issues will be analysed in light of the (proposal) “Unfair B2C Commercial Practices” Directive. The provisions of this Directive will be illustrated by a more concrete example in which transparency is at issue: labelling of products that contain DRM systems. European consumer policy and examples of recent national case law will be looked at to see how consumers may be shielded against a lack of clear labelling on packages of CDs that contain DRM technologies, and how the provision of core product information may facilitate greater transparency and more informed consumer choice.

The third question relates to transparency of used contract terms. It will be addressed to some extent in the discussion of the Distance Contract Directive and Electronic Commerce Directive. It will also come back in the following section on Contracts.

The fourth question looks at transparency of information about the user of DRM technology. It is mainly discussed under the already mentioned Distance Contract Directive and Electronic Commerce Directive. First though, attention is given to national legislation in another, familiar field of law that

¹⁷⁹ Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on Certain Legal Aspects of Information Society Services, in Particular Electronic Commerce, in the Internal Market (Electronic Commerce Directive), OL, L 178, 17 July 2000, available at http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=en&numdoc=32000L0031&model=guichett.

¹⁸⁰ Proposal for a Directive of the European Parliament and of the Council concerning unfair business-to-consumer commercial practices in the Internal Market and amending directives 84/450/EEC, 97/7/EC and 98/27/EC (Unfair Commercial Practices Directive), available at http://europa.eu.int/comm/consumers/cons_int/safe_shop/fair_bus_pract/directive_prop_en.pdf.

seeks to answer to most of the transparency questions posed. Not European consumer protection law as such, but an interesting initiative that might offer more protection.

German Transparency Provision in Copyright

A legal provision on the issue of transparency would bring more clarity and security to the consumer. In Germany such a provision on transparency through the use of labelling can be found in Article 95(d) of the German copyright law. It states that content protected by technological measures should be clearly marked and indicate the properties of these measures. Companies that protect their works with technological measures should mark these with their name and postal address to enable claims for certain copyright limitations in Article 95(b)(2).¹⁸¹

The German provision addresses the questions identified earlier: (1) if DRM technologies are used and (2) how they may work (marking the provisions). If a CD can only be played on a certain CD player, this must be clearly stated. The provision also addresses the question (4) who the user of the DRM system is and how he may be contacted (providing name and postal address). The latter question is also covered by the Distance Contract Directive and Electronic Commerce Directive. These Directives, however, seek more information to be provided to the consumer during a commercial transaction.

Distance Contract Directive and Electronic Commerce Directive

The Distance Contract Directive and the Electronic Commerce Directive apply to both products and services and more specifically address online contracting. Both Directives provide transparency provisions that obligate the supplier to give certain information to the consumer. For the consumer this information is intended to make a more well-informed decision. The Directives also look at so called click-wrap contracts that may accompany a DRM scheme: in a clickwrap contract the consumer must agree to the contractual terms that govern software or a site by pressing a button or clicking on a link¹⁸² (see below under Contracts). These contracts are typical for online music sites like Apple's iTunes Music Store.

The Distance Contract Directive requires that before the contract is concluded the consumer is given information on, amongst other things, the supplier's name (Article 4(1)(a)), the main characteristics of the goods or services (Article 4(1)(b) and the total price (Article 4(1)(c). Notably, the consumer has the right to withdraw without penalty or justification (Article 6(1)). It is argued that the right of withdrawal also applies to clickwrap licenses that accompany goods and services on the Internet, such as the online delivery of music.¹⁸³ A consumer who purchases a commodity through an online click-wrap contract and is unaware that the commodity is governed by restrictive DRM, might theoretically withdraw from the trans-

¹⁸¹ Schippan (2004), p. 196.

¹⁸² Gasser et al. (2004), p. 14.

¹⁸³ Guibault (2002), p. 303.

action. However, when it comes to online music services, the right of withdrawal can differ among Member States.¹⁸⁴

The Electronic Commerce Directive also requires certain information to be provided in order to enhance transparency and thus the consumer's ability to make a well-informed decision: the name and geographic and electronic address of the provider of the service (Article 5(1) (a)(b)(c)), a clear indication of the price (Article 5(2)), information on which codes of conduct apply and where to consult them electronically (Article 10(2)) and the obligation to make the contract terms and general conditions available in a way that allows the consumer to store and reproduce them (Article 10(3)). Article 9(1) states that "Member States shall ensure that their legal system allows contracts to be concluded by electronic means."

This sum of conditions, in both Directives, is provided to secure the transparency of the contracting process for the consumer. It is noted that the clickwrap licenses generally adhere to such conditions as the possibility of electronic storage and reproduction, and that its existence and content are known before the sale.¹⁸⁵ However, even if this is the case, and online contracts provide the information requested by the Directives, then the fairness of the contract is not (yet) established.

Unfair B2C Commercial Practices Directive (Proposal)

The protection of consumers in commercial transactions has been the subject of two green papers and resulted in a proposal for a new Directive: the Unfair B2C Commercial Practices Directive. Though not European law as such yet, this Directive reflects much of the current European general consumer protection policy and aims to amend current Directives in this field. It provides a single set of common rules to regulate business-to-consumer practices, both to take down cross-border barriers for companies and give consumers extra protection.

Average Consumer

The draft Unfair B2C Commercial Practices Directive uses the definition of the average consumer, which is laid down in Article 2(b): "average consumer' means the consumer who is reasonably well informed and reasonably observant and circumspect". In Article 5(2) of the Directive this definition is modulated in the event that a specific group is targeted, at which point the characteristics of the average consumer of that group are taken into account.

According to Recital 35 the definition of Article 2(b) incorporates the standard for the average consumer established by the European Court of Justice.¹⁸⁶ Both the definition and the standard reflect a policy based on the image of the consumer as an active and critical information-seeker. This brings a higher threshold of proof for consumers than in some Member States. Nordic countries use the idea of the passive glancer, which presumes

¹⁸⁴ Gasser et al. (2004), p. 21.

¹⁸⁵ Gasser et al. (2004), p. 21.

¹⁸⁶ Unfair B2C Commercial Practices Directive, Recital 35, Note 27.

that consumers make their decision on the basis of an overall impression and not a thorough investigation of the relevant facts.¹⁸⁷

Under the average consumer standard, a consumer is expected to make the best use of the offered labelling on products and investigate the contract terms that are applicable on his transaction.¹⁸⁸ The proposal Directive does not look at contract terms as such (Article 3(2)). It can, however, be applied to questions of legality surrounding the commercial transaction, such as a sufficient and transparent provision of information about a product.

Misleading Practice

A commercial practice, which “[...] omits material information that the average consumer needs, according to the context, to take an informed transactional decision and thereby causes or is likely to cause the average consumer to take a transactional decision that he would not have taken otherwise” is regarded as misleading (Article 7(1)) and as such deemed unfair and prohibited (Articles 5(3)(a) and 5(1)). Recital 30 states that this (Article 7(1)) “provision(s) apply all the same elements as are contained in the general prohibition but function independently of it.”¹⁸⁹ The general prohibition functions as a safety catch, but to be called into action the practice must also be “contrary to the requirements of professional diligence” (Article 5(2)). Professional diligence means that a “measure of special skill and care exercised by a trader commensurate with the requirements of normal market practice towards consumers in his field of activity in the internal market” (Article 2(j)).

A recent French court case, while based on French consumer protection law, may be an example of a misleading practice in the sense of the draft directive.¹⁹⁰ At stake was the insufficient labelling of a CD jacket by EMI Music France. The original text on the label was: This CD contains a technical measure limiting the copying possibilities. This label did not indicate that the CD in question could not be played on certain devices, specifically certain car stereos. The court considered that by not sufficiently informing the public about this, EMI had been guilty of a misleading practice vis-à-vis the scope of playability of the CD. The company should have taken into account questions of compatibility and this scope as part of its professionalism. EMI was ordered to refine the labelling to make it clear what consumers could expect from the offered product. The court mandated a new text for the label on the CD jacket. Referring to the CD it reads: Attention, it cannot be played on all devices or car stereos.

¹⁸⁷ Wilhelmsson (2000), p. 19.

¹⁸⁸ *Idem*, pp. 17-18.

¹⁸⁹ Recital 56 adds: “That means that if a commercial practice is found to be either ‘misleading’ or ‘aggressive’ it will automatically be unfair, without any further reference to the conditions contained in article 5.”

¹⁹⁰ Association CLCV / EMI Music France, Tribunal de Grande Instance de Nanterre 6ème chambre, 24 June 2003. In appeal this decision was affirmed, compare EMI Music France / CLCV, Cour d’appel de Versailles 1ère chambre, 1ère section 30 septembre 2004, available at http://www.legalis.net/jurisprudence-decision.php3?id_article=1344.

Enforcement

Article 11(1) of the draft Directive looks at the enforcement of this legal action against unfair practices, and states that Member States shall ensure that both individual consumers and consumer organisations may bring such action. The possibility for consumer organisations to engage in court procedures is important in the protection of individual consumer rights. It may ensure that financial hurdles do not prevent legal action. Representation by consumer organisation is widely integrated in and recognised by national consumer protection law and laid down in the European Injunction Directive.¹⁹¹

Concluding Remarks

A lack of transparency in the use of DRM and related contracts may make it difficult for the consumer to make an informed decision. This may have a negative influence on the enforcement of his rights and realization of his interests. If European consumer policy takes the information-seeking consumer as a basis for the granted protection, a consumer should have the chance to find information in the first place. The Distance Contract Directive and Electronic Commerce Directive and the current proposal of Unfair B2C Commercial Practices Directive might provide for protection of consumer interests in transparency and enforce of legal action against DRM controllers. Recent French litigation shows that consumers may have some legal standing through (national) consumer protection law vis-à-vis the information provision related to DRM systems (in particular the labelling obligation).

A more DRM specific attempt of legislation in this area, that in part resonates with the previously mentioned German copyright provision, can be found outside Europe. The United States Congress recently held hearings on the Digital Media Consumers' Rights Act (DMCRA).¹⁹² This act would enhance transparency for consumers by requiring manufacturers to put informative labels on copy-protected CDs. These labels would have to show what kinds of uses actually are allowed under the DRM scheme in place, and on which platforms. The proposed act goes further than the German provision in that it additionally seeks to restore the legal use of digital content (e.g. fair use and other copyright limitations) and circumvention of technological measures for scientific purposes. An explicit incentive to label products, and an attempt to restore copyright limitations, might also be beneficial to consumers in the EU community, complementary to existing consumer protection provisions.

¹⁹¹ Directive 98/27/EC of the European Parliament and of the Council on injunctions for the protection of consumer's interests, available at http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=en&numdoc=31998L0027&model=guichett. On the changing role of consumer organisations in the information society, see De Cock Bunning (2001), pp. 326-328.

¹⁹² The draft of the DMCRA can be found at <http://www.house.gov/boucher/docs/dmcrhandout.htm>.

4.3.3 Contracts

Considered legislation:

- Unfair Contract Terms Directive¹⁹³
- Directive on Sale of Consumer Goods and Guarantees¹⁹⁴

Some attention was paid in the previous section to the role of contracts in a DRM scheme. As mentioned, contracts may determine the usage rules of the purchased content. They form the legal part of the exercise of content control, while DRM systems form the technical part. These contracts may not always be fair to consumers, for example because they excessively look after the interests of the rightsholder or user of DRM systems at the cost of the interests of the consumers. The fairness of contract terms will be addressed below in light of the Unfair Contract Terms Directive. This section concludes with an analysis of the Directive on Sale of Consumer Goods and Guarantees. This analysis pays more specific attention to product conformity of copyright protected CDs.

Unfair Contract Terms Directive: Contractual Exclusion of Copyright Exemptions

The issue of fairness of contract terms is indeed connected to the use of DRM, but does not necessarily offer problems unique to DRM. A notable exception is the contractual restriction of copyright limitations.¹⁹⁵ It has been argued that the emergence of DRM will bring more individualised contracts, making it possible to offer more specific content usages and also more influence of consumers on the content of contracts. In practice, however, associated transaction costs often have a prohibitive effect at this moment to realize this individualisation. As a result, many rightsholders still rely on the aforementioned standard clickwrap licenses, with which they may practically exclude legitimate uses of content by consumers (e.g. private use) and cause a significant imbalance between consumer's and rightsholder's interests. The validity of the contractual exclusion of copyright exemptions is still unclear.¹⁹⁶

Article 3(1) of the Unfair Contract Terms Directive states that “a contractual term which has not been individually negotiated shall be regarded as unfair if, contrary to the requirement of good faith, it causes a significant imbalance in the parties’ rights and obligations arising under the contract,

¹⁹³ Directive 93/13/EC of 5 April 1993 on unfair terms in consumer contracts, available at http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=31993L0013&model=guichett.

¹⁹⁴ Directive 1999/44/EC of the European Parliament and of the Council of 25 May 1999 on certain aspects of the sale of consumer goods and associated guarantees, available at http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=en&numdoc=31999L0044&model=guichett.

¹⁹⁵ See extensively Guibault (2002).

¹⁹⁶ Under the Common Law doctrine of copyright misuse a copyright could be rendered unenforceable when the rightsholder attempts to expand his copyright beyond the lawful scope or acts contrary to the public policy as laid out in the copyright statute. Shum (2002), p. 6. Also Guibault (2002), pp. 283-289.

to the detriment of the consumer.”¹⁹⁷ Article 4(2) adds that “the definition of the main subject matter of the contract [...]” or the adequacy of the price or remuneration shall not determine whether a term is unfair. Whether a service or commodity implemented with a DRM system is sold for a price that is excessive in the eyes of the consumer (e.g. 1 euro for a downloaded song), does not fall within the jurisdiction of the Directive. However, it can be argued that contract terms that look at the implementation of cookies or other monitoring applications on a consumer’s PC, negatively affect a consumer’s privacy rights and that these terms do not affect the definition of the main subject matter. It is unclear whether the contractual restriction of normally enjoyed uses of copyrighted material by consumers belongs to the main subject matter. This has possibly to be decided in the courts.

Only when taken as a premise that such contractual exclusions do not affect the essence of the contract, the question arises whether a not individually negotiated term may cause a significant imbalance between the rightsholder and consumer and thus can be considered unfair. The directive provides a list of terms that may be deemed unfair, but copyright license terms restricting consumers do not seem to fall within its realm.¹⁹⁸ This leaves the open norm of good faith, for which it must be said that when a term is presented to a consumer in the context of a pre-formulated standard contract, it is more readily regarded as unfair.¹⁹⁹ In the case that a restricting contract term is deemed unfair, the contract may be declared not to be binding for the consumer (Article 6(1)).

Directive: Sale of Consumer Goods and Guarantees

The Directive on Sale of Consumer Goods and Guarantees states in Article 2(1) that “the seller must deliver goods to the consumer which are in conformity with the contract of sale”.²⁰⁰ If there is a lack of conformity the seller can be held liable (Article 3(1)) and is the consumer entitled to a variety of actions (Article 3(2)-(6)).²⁰¹

¹⁹⁷ In principle, the definition of consumer in article 2(b) of the Directive, is not applicable to libraries, or educational institutions. Guibault (2002), p. 252.

¹⁹⁸ Examples of terms deemed unfair on this list as referred to in article 3(3) of the Directive are terms excluding or limiting the liability of the seller (a), requiring the consumer to pay a disproportionately high compensation sum when he fails to fulfil an obligation (e), irrevocably binding the consumer to terms with which he has no real opportunity to get acquainted with before concluding the contract (i).

¹⁹⁹ Guibault (2002), pp. 252-260.

²⁰⁰ Directive 1999/44/EC of the European Parliament and of the Council of 25 May 1999 on certain aspects of the sale of consumer goods and associated guarantees, available at http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=en&numdoc=31999L0044&model=guichett.

²⁰¹ Article 3(2) of the Directive reads: In the case of a lack of conformity, the consumer shall be entitled to have the goods brought into conformity free of charge by repair or replacement, in accordance with paragraph 3, or to have an appropriate reduction made in the price or the contract rescinded with regard to those goods, in accordance with paragraphs 5 and 6.

Scope

Article 1(2)(b) of the Directive states that “consumer goods: shall mean any tangible movable item with the exception of [...]” water and gas and electricity. While products such as CDs with a DRM fall within the scope of this definition, it is not certain that the online sale of music, software or information does too. The specific use of the word tangible and the exclusion of electricity makes it more than likely that it does not. As a result, the directive probably does not apply to e.g. the provider of software or music files that contain a DRM, which restricts their access or usage.²⁰²

Product Conformity

A purchased CD is a tangible item and thus falls within the scope of the Directive. Its rules consequently apply to the sale of CDs. Article 2 of the Directive presumes that goods are in conformity if they are, amongst other things, Article 2(c) fit for the purposes for which goods of the same type are normally used, and Article 2(d) show the quality and performance which are normal in goods of the same type and which the consumer can reasonably expect [...]. Normal use, normal quality and performance, reasonable expectation: these three central elements will be analysed in light of the familiar example of the DRM-protected CD.

Example: CD – Playability and Copyability

When purchasing a CD the consumer can be considered to enter into a tacit agreement (contract) with the retailer regarding the main characteristics of the product and the expected uses. The access to, or playability of a CD, and the subsequent use of its content (e.g. copying) are two related uses. It may be questioned if they should both be considered normal uses.

If a CD is not playable due to (incompatibility of) the implemented DRM system, this might be referred to as a lack of conformity. The CD is not fit for the purpose it is normally used, and the reasonable expectation a consumer had regarding its performance has not been met. The seller of the CD might be held liable (see Article 3(1) of the Directive). For the consumer the possibility to seek liability may eventually lead to a refund of the CD’s price.

This was at least the interpretation of the *Tribunale de Grande Instance de Nanterre*.²⁰³ It concerned the playability of a CD, or better the lack thereof, on a car stereo (a Renault Clio, to be precise). The French court considered that: Françoise M. (the consumer) established that the CD in question was not playable on all her devices, that this anomaly restricted its usage and constituted a hidden defect within the sense of Article 1641 of the French Civil Code. The French court confirmed that Françoise M. was entitled to cancel the sale against the distributor. The company EMI Music

²⁰² De Cock Bunning (2001), pp. 307-308, more specifically on the wording of Recital 11 of the Electronic Commerce Directive, which adds additional confusion about the scope.

²⁰³ Françoise M. / EMI France, Auchan France, Tribunal de Grande Instance de Nanterre 6ème chambre, 2 September 2003, available at http://www.legalis.net/cgi-iddn/french/affiche-jnet.cgi?droite=internet_dtauteur.htm.

France was ordered to refund the sum of 9.50 euros to Françoise M. (the CD's purchase price).²⁰⁴

The opinion that the facility of private copying is not an essential characteristic of the product has been suggested and used in the French lawsuit on the copyability of DVDs mentioned before.²⁰⁵ While it was determined that consumers should be able to know the substantial condition of a product, private copying was not considered as part thereof. In this litigation a consumer buying a CD or a DVD containing a DRM, cannot claim that the implemented copy restriction leads to non-conformity.

The reasonable expectation a consumer has regarding the performance of a CD are is formed in part by previous experiences. If private copying had been such an expectation in the past, it may continue to be so in the present. This expectation may, however, be adjusted in and for the future. The continued use of DRM technology on CDs may shift the expectation to non-copyability and away from private use.²⁰⁶

Concluding Remarks

While the legal standing of consumers under copyright law is comparatively weak, consumer protection law might provide some help. As seen above, these provisions can offer protection in relation to such consumer interests as transparency, fair commercial practice and product conformity. However, the analysis shows that the scope of this protection may not always be clear. Moreover, the enforcement of applicable provisions in the judiciary may not be so easy for individual consumers in practice. Further research needs to be carried out in the extent to which consumer protection legislation may really provide consumers with an adequate level of protection in the field of DRM. More specifically the possible protection of the rationale behind copyright limitations might be investigated. Private copying has already received considerable attention, also in relation to consumer protection law. More general public policy interests, such as the freedom of information as an enabler of the public discourse, deserve more research. A deeper investigation into the role of contract terms in the exclusion of copyright exemptions and other rights, such as privacy rights, is also called for.

4.3.4 Privacy

Considered legislation:

- European Data Protection Directive (EDPD)²⁰⁷

²⁰⁴ Unofficial translation, original: '[L]e CD litigieux n'est pas audible sur tout ses supports, cette anomalie restreint son utilisation et constitue un vice caché au sens de l'article 1641 du code civil. En conséquence Françoise M. est fondée à exercer son action rédhibitoire à l'encontre du distributeur. Il convient de condamner la société EMI Music France à restituer à Françoise M. la somme de 9.50 euros.'

²⁰⁵ Helberger (2004).

²⁰⁶ Wiegand (2004), p. 724, 727-728.

²⁰⁷ Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and the free movement of such data, hereafter Data Protection Directive. Available at http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=31995L0046&model=guichett.

- Art. 8 European Convention on Human Rights

Example: Sunncomm

An early example concerning the alleged violation of consumers' privacy rights by the use of DRM was a lawsuit in the U.S. against the producer of a DRM, Sunncomm, and the record company that implemented it on a CD.²⁰⁸ The lawsuit claimed that the DRM technology directed consumers to Sunncomm's website when they inserted the CD in their computer. At the website they were asked for personal details, including their full name and e-mail address. It was also alleged that the defending party made use of a "cookie", web bug and Digital Rights Management Technology to track specific consumer musical habits and clickstream data, combined it with personal details, and provided such data and information to parties outside of the knowledge and control of the specific consumer".²⁰⁹ The lawsuit was eventually settled, and forced the defendants to address the concerns and restructure their privacy policy. In this example the collection of personal data was reasonably visible to the consumers involved, as was the collector of the data. This, however, will often not be the case.

The example underlines that DRM not only focus on copy control (digital management of rights), but can also be employed as an all-round content management solution (management of digital rights). DRM technology can identify and track consumers, and monitor and register what content they read, watch or listen to in "privacy".²¹⁰ Controllers of DRM systems can use this information for marketing purposes and apply price discrimination between consumers. Some consumers may benefit from resulting lower prices and from an increased personalization of the service.²¹¹ However, the processing of personal data may intrude on individual information privacy.²¹² Consumers may not even know that they are monitored and profiled, nor be aware of the use of their personal data.²¹³ If they are aware of this practice, the fear of privacy intrusion may still hinder the acceptability of DRM.

²⁰⁸ DeLise v. Fahrenheit Entertainment, Music City Records, and Sunncomm. The full complaint, filed at the Superior Court of California, can be found at: <http://www.techfirm.com/mccomp.pdf>. The settlement can be found at <http://www.techfirm.com/sunnk.pdf>.

²⁰⁹ *Idem*, paragraph 37.

²¹⁰ Bechtold (2003), p. 617. Also Cohen (1996).

²¹¹ Bechtold (2003), pp. 617-618.

²¹² Odlyzko (2003). In this context notable critique has been given on the (draft of the) IP Enforcement Directive: Directive 2004/48/EC of the European Parliament and of the Council of 29 April 2004 on the enforcement of intellectual property rights, http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/l_195/l_19520040602en00160025.pdf. Andersson 2003.

²¹³ Article 2(a) EDPD defines personal data as "any information relating to an identified or identifiable natural person ("data subject"); an identifiable person is one who can be identified, directly or indirectly, in particular by reference to an identification number or to one or more factors specific to his physical, physiological, mental, economic, cultural or social identity;"

Privacy Interest

Consumers have a privacy interest in the protection against the use of their personal information by private parties.²¹⁴ The European Court of Human Rights speaks of a “reasonable expectation of privacy”.²¹⁵ Article 8 of the European Convention on Human Rights (ECHR) is generally seen as providing protection against government intrusion in the personal sphere.²¹⁶ The use of DRM in the business-to-consumer relationship refers to the protection of consumers’ privacy against intrusions by private, commercial parties. There is a considerable system of national laws concerning the protection of personal data against interference from private parties. The aspect of privacy is no part of the provisions of the EUCD and only mentioned in Recital 57 EUCD.²¹⁷ It states that systems which process these data, especially by tracing online behaviour, “should incorporate privacy safeguards in accordance with” the European Data Protection Directive (EDPD).²¹⁸ How these safeguards should be incorporated is not elaborated upon. The EDPD seeks to provide a general legal safeguard, not specific to DRM.²¹⁹

Personal Data

According to Article 6 and 7 EDPD personal data can only be collected and processed if this is necessary for (Article 6b) a specific lawful purpose and based on legitimate grounds such as: (Article 7a) the unambiguously received the consumer’s consent; (Article 7b) a necessity for the performance of a contract to which the consumer is a party; (Article 7c) compliance with a legal obligation of the data controller; (Article 7d) necessity for the protection of a vital interest of the consumer; (Article 7e) necessity for the performance of a task in the public interest or exercise of official authority by the data controller; (Article 7f) necessity for the purposes of the legitimate interests pursued by the data controller, except when overridden by the fundamental rights of the consumer.

This means that unless the consumer has unambiguously given his consent, the data controller (usually the implementer of the DRM) needs to have a specific justification for the collection and processing of the consumer’s personal data by a DRM. Additionally, according to Article 10 EDPD the consumer must be informed about (Article 10a) the identity of the data

²¹⁴ Besides a privacy interest in the use of personal information through monitoring, consumers may also have a privacy interest in the restriction of intellectual consumption and the individual choice in shaping one’s own self-fulfilment. Cohen (2003), pp. 576-586.

²¹⁵ *Lüdi v. Switzerland*, ECHR 15 June 1992, Series A. no. 238.

²¹⁶ Article 8(2) of the Convention states that “There shall be no interference by a public authority with the exercise of this [privacy] right...” (Italics added).

²¹⁷ Text Recital 57: “Any such rights-management information systems referred to above may, depending on their design, at the same time process personal data about the consumption patterns of protected subject-matter by individuals and allow for tracing of online behaviour. These technical means, in their technical functions, should incorporate privacy safeguards in accordance with” the European Data Protection Directive.

²¹⁸ Bechtold 2003, p. 617. Also Cohen (1996).

²¹⁹ The European Consumers’ Organisation BEUC (2003) has sought an explanation on how to interpret the European Data protection rules in light of DRMs. BEUC (2003), p. 4.

controller (Article 10b); the purpose of the processing and (Article 10c) all other information that is necessary to guarantee a fair processing of the consumer's personal data.

The Commission Staff Working Paper on Digital Rights notes that as a consequence of these provisions the need of DRM systems to process personal data should be demonstrated and clearly explained to the consumer.²²⁰ If a DRM collects and processes personal data for profiling or marketing purposes, for example, the purpose of the DRM and the conditions under which the data are processed should be brought to the attention of the consumer.

Article 14b EDPD provides a right to object to processing a consumer's personal data for the purpose of direct marketing. A right, which may be hard to enforce, since it can be complicated for consumers to find out where, under which terms and especially against whom to object. Moreover, the costs of filing a complaint will often be considerable and outweigh the costs suffered.²²¹ This also holds true for the more general liability rule of Article 23 (1) EDPD, providing entitlement to compensation for damages resulting from the unlawful processing of data.

Concluding Remarks

The EDPD offers a general framework for the protection of personal data, and does not specifically focus on the protection of privacy rights under a DRM scheme. While this Directive offers some legal provisions that take into consideration the protection of consumer privacy, and the EUCD notes in Recital 57 that DRM systems should incorporate privacy safeguards accordingly, in practice there is a lack of transparency regarding which personal data are collected and by whom.²²² This might arise with invisible data collection applications on the Internet that are part of DRM solutions, including electronic monitoring. While unambiguously giving consent is often required, data processing may be an integral part of the DRM system and as such accepted unconsciously by the consumer as part of the application. Consent is given, while it is unclear to the consumer exactly what data are processed and how.

It has been noted that more attention might be given to technological solutions for a stronger protection of consumer privacy: Privacy Enhancing Technologies (PETs). By building privacy interests into the design of the DRM, privacy rights may be enforced more effectively.²²³ The European Consumer Organisation BEUC clearly points in this direction in its position paper on DRM: "The process of setting DRM standards [therefore] must ensure that privacy is addressed as an important layer in its design. We believe that privacy is an added value in DRM design and insist on DRM standards

²²⁰ European Commission (2002a), p. 14.

²²¹ Also De Cock Bunning (2001), p. 308.

²²² De Cock Bunning (2001), pp. 311-312.

²²³ Kenny; Korba (2002), on the adaptation of DRMs to provide privacy right management systems (PRMs). Also Tóth (2004a). For a critique on PETs, see Feigenbaum et al. (2002), Paragraph 3.1.

that take account of privacy enhancing technology for consumers.”²²⁴ The EUCD seems to hint to this solution in Recital 57.

4.4 Interoperability and Standardisation

Considered Legislation:

- European Copyright Directive

Consumers may have an interest in the interoperability of different technology platforms and services. This interoperability entails the use of acquired content in different devices and transmission over networks. Interoperability may increase the ease of use for consumers, provide a more open market for consumer goods and may lead to an increase in consumer choice and decrease in consumer costs²²⁵ (see also Chapter 6).

4.4.1 Product and Service Integration

Interoperability is not necessarily in the interest of platform developers. Moreover, DRM can be used to thwart competition. By using a DRM system, a platform owner can prevent third parties to access and use his technology platform. This way he may prevent them from developing competitive applications for his platform. An example that reflects such an anti-interoperable practice, is the use of DRM techniques by printer manufacturers to prevent third-party cartridges being used in their products.²²⁶ Prevention of interoperability can allow manufacturers to control complementary markets and enables interdependent pricing and price discrimination. Printers can be offered at low prices, while cartridges can be sold at relatively high prices. Individuals who consume large quantities of cartridges will eventually pay higher prices for the product combination than low-volume consumers. This integration of products is a well-known business model.

4.4.2 Example: Apple versus RealNetworks

A recent example of the aforementioned business model is the service integration of Apple’s iTunes Music Store and iPod. Relying on proprietary protection through its FairPlay DRM, Apple effectively creates entry barriers to its portable players and download market.²²⁷ Competitors, both through technological and legal means, have recently challenged this practice. VirginMega, Virgin’s French online music venture, accused Apple of anti-competitive behaviour by not licensing its FairPlay DRM technology. It filed a complaint with the French Competition Council and a hearing is expected somewhere around October/November 2004.²²⁸ Since the iPod is not com-

²²⁴ BEUC (2004), p. 7.

²²⁵ Gasser et al. (2004), p. 44.

²²⁶ Bechtold (2002), pp. 623-626. Also Gasser (2004), p. 43.

²²⁷ For an extensive overview of this particular case, see Gasser et al. (2004).

²²⁸ See http://www.theregister.co.uk/2004/08/06/apple_vs_virgin/.

patible with the DRM and WMA format Virgin uses for its songs, Virgin has asked Apple to license FairPlay so they can code it into their songs and enable compatibility that way. As earlier with RealNetworks, Apple has refused licensing so far. Real eventually tried to reach compatibility with the creation of Harmony, a technical fix that allows RealNetworks' songs to be played on the iPod. In a new move, it has also cut the prices of songs with 50 percent, which may bring some temporary price competition. Additionally RealNetworks launched a marketing campaign that presents their drive for market share as a consumer choice issue.²²⁹

4.4.3 Interoperability and Competition

These examples show a tension between a consumer interest in interoperability and a possible interest of hardware and software manufacturers to prevent interoperability because exclusive control over a dominant technology platform by using DRM systems would give them a competitive advantage. As noted above, this may be the restriction of competition on complementary markets, but anti-competitive measures may also have the effect of foreclosing competing platforms to enter the market.²³⁰ Manufacturers may want to prevent competitors creating platforms that are interoperable with their own platforms in order to support their business models and secure their market share. This goal might be reached by creating proprietary DRM systems such as FairPlay, which technically prevent interoperability, and by relying on legislation that protects the integrity of these systems. The anti-circumvention provisions of the EU CD, for which no clear exemptions for interoperability or reverse engineering of the technology platform are granted, provide such legislation. As a result, the creation of compatible platforms by competing manufacturers is restricted by both technological and legal measures.

4.4.4 Interoperability and Standardisation

Recital 54 EU CD states that “compatibility and interoperability of different systems should be encouraged.” Both the Commission Staff Working paper on Digital Rights and the High Level Group on DRM, which consists mainly of industry representatives, stress the importance of interoperability to consumer acceptability of DRM.²³¹ Interoperability and compatibility could be achieved if common standards for the different systems did exist (see also Section 5.6).

More than the suggestion in Recital 54, the EU CD does not mandate standardisation. From a legal perspective one of the most controversial issues is if governments should mandate standards or leave this to market

²²⁹ See <http://www.freedomofmusicchoice.org/>.

²³⁰ Bechtold (2002), pp. 619-630.

²³¹ European Commission (2002a), p. 9. Also HLG DRM (2004), pp. 4-13. The Final Report of the HLG notes that of its three focal points (DRM and Interoperability, Private copying levies and DRM, Migration to legal services) only the paper on DRM and Interoperability was supported by the representative body for consumers, the European Consumers' Organisation BEUC (2003). See for an explanation Kutterer (2004).

parties.²³² The issue of government-mandated standardisation will be illustrated below with the example of the U.S. broadcast flag. It is relevant for European consumers, since the broadcast flag might inspire European legislators. This possibility is highlighted by the current WIPO initiatives in this field.²³³

4.4.5 Governmental Mandated Standardisation: the Broadcast Flag

Both the American Digital Millennium Copyright Act and the European Copyright Directive contain so-called no-mandate clauses, which state that hardware and software manufacturers are not required to implement any DRM technology in their products.²³⁴ Past attempts to do the opposite have been minimal and failed.²³⁵ However, the American regulator of the telecommunication and media sector, the Federal Communication Commission (FCC), made another attempt. To prevent the unauthorised redistribution of digital over-the-air television content, specifically via P2P systems, the FCC ordered the implementation of a so-called broadcast flag on any device capable of receiving digital television signals, starting 1st July 2005.²³⁶ The broadcast flag is part of a DRM system that seeks to provide secure channels between different devices and prevent unauthorized copying.²³⁷

The result of a broadcast flag mandate will be that consumers may only use electronic equipment, television sets and computers, of which the hardware is designed to allow the control of content. Such a mandate can conflict with consumer interests on several levels.²³⁸

The introduction of new technologies to the market place, also DRM systems, is made subject to permission beforehand by an organisation like the FCC. The FCC may function as a gatekeeper in deciding that a certain technology is in line with the broadcast flag and narrow the development of al-

²³² An analysis of private standardisation issues and the related trusted computing is provided by, Bechtold et al (2003). Also Schoen (2003).

²³³ The WIPO Standing Committee on Copyright and Related Rights has recently held hearings on a consolidated text on a Treaty on the Protection of Broadcasting Organizations, which looked at protecting encrypted broadcasting signals against circumvention (Article 16) and other things. Current proposal available at http://www.wipo.int/documents/en/meetings/2004/sccr/pdf/sccr_11_3.pdf.

²³⁴ See 17 U.S.C. § 1201 (c) (3) and Recital 48 European Copyright Directive.

²³⁵ For example, the requirement of the U.S. Audio Home Recording Act of 1992 (17 U.S.C. § 10002 (a)) to implement the Serial Copy Management System (SCMS) into digital audio recording devices and digital audio interfaces was deemed inapplicable to MP3 players and computer hard disks in *RIAA v. Diamond Multimedia*, 180 F.3d 1072 (9th Cir. 1999). In Europe an attempt to mandate SCMS failed, compare Bechtold (2003), p. 651, note 2067.

²³⁶ Federal Communications Commission 4 November 2003, Report and Order and Further Notice of Proposed Rulemaking, No. MB 02-230, p. 18: "We further note that we intend our redistribution control regulations to apply to any device or piece of equipment whether it be consumer electronics, PC or IT device that contains a tuner capable of receiving over-the-air television broadcast signals."

²³⁷ The broadcast flag consists of metadata and is transmitted with the digital television signal to "tell" a receiver of these signals whether it may redistribute the content or not. To be effective the architecture of this receiver must facilitate a trusted environment, which can guarantee that the tagged content is only distributed when the broadcast flag allows it.

²³⁸ Lambers (2005).

ternative technologies in the process. The broadcast flag partly restricts the “freedom to tamper” with the open architecture of the PC and this way come to new, innovative solutions from which consumers may benefit.²³⁹ Consumer choice could be hampered, and previous enjoyed uses of television signals (time shifting, platform shifting) may be prevented by the DRM system.²⁴⁰

4.4.6 Concluding Remarks

While manufactures may have (anti-competitive) incentives to sustain a lack of interoperability with their own systems, they also are aware that this may seriously hinder the acceptability of DRM by consumers. A consumer who buys a CD, only to find out that he cannot play it on his preferred platform due to a lack of interoperability, will hardly be discouraged to stop using file-sharing networks.

However, standardisation, both private and public, may also have a negative impact on consumer interests. The broadcast flag example has shown some of the problems of government-mandated standard setting. A quite substantive problem in this example is that the forced implementation of DRM technology could herald the end of the general-purpose computer. This affects consumers through a negative impact on innovation and the development in the computer industry, as well as the possible loss of less expensive hardware and software solutions.²⁴¹

In what form the standardisation process will develop, under a private and public influence, remains to be seen. Voluntary standardisation by private parties might be preferred above government-mandated standardisation, which may stifle innovation. The extent to which consumer interests are and should be represented in standardisation negotiations will be important questions. The European Association for the Co-ordination for Consumer Representation in Standardisation (ANEC), which seeks to represent the consumer voice in the standardisation process, has taken steps in the right direction. Noting that consumer representation in national standardisation efforts is far from satisfactory, it has called for a revision of the European standardisation system.²⁴²

²³⁹ An example is the creation of Gnuradio, a digital radio application developed under an open source license. This license may conflict with the restriction of tampering under the broadcast flag rule. <http://www.gnu.org/software/gnuradio/gnuradio.html>.

²⁴⁰ Time shifting: reproducing the broadcast to view it on later time. Space shifting: moving content from one medium to another. Mitchell (2004), pp. 32-38.

²⁴¹ For example see note above: Gnuradio.

²⁴² ANEC (2003), p. 1. The report to which this note refers, does not provide any legal approach to the subject of standardisation, but is meant as a more general guideline, p. 5.

4.5 Alternative Model: DRM and Levies

There may be different, legal alternatives to DRM. One could be contractual solutions, another Creative Commons.²⁴³ Another could be levies; it is the latter that will be discussed here more in depth. The rationale behind copyright levies systems has been the idea that private copying cannot be controlled and exploited on an individual basis. Instead, collecting societies may collect a small amount of money from the sale of devices and storage media, the levies, and redistribute this to the rightsholders. With the advance of technology, the notion that content cannot be controlled and exploited on an individual basis has changed: through DRM consumers could be controlled and charged individually for their use of content through individual licensing schemes. Private copying may be prevented altogether or offered only subject to certain conditions by the rightsholder (see also Section 6.5).

4.5.1 Private Copying and Levies

Private copying falls under the private use exemption on copyright as laid down in Article 5(2)(b) EUCD. Consumers may reproduce copyrighted content for private, non-commercial use on the condition that rightsholders receive a fair compensation for this use. According to Recital 38 EUCD this fair compensation can be achieved through “the introduction or continuation of remuneration schemes”. Recital 35 EUCD states that “...[In] certain situations where the prejudice to the rightsholder would be minimal, no obligation for payment may arise.”

4.5.2 Consumers Double Charged

The EUCD seeks to gradually phase out levies systems. In Article 5(2)(b) it proscribes that for the time levies and DRM solutions co-exist the ‘application or non-application of technological measures’ has to be taken into account when calculating ‘fair compensation’ for acts of private copying. This Article addresses the problem that consumers may be double charged for a work they buy: first when paying the levies, and a second time when paying the controller of DRM for the authorisation to make a private copy.²⁴⁴ Moreover, consumers may end up paying levies for content they cannot copy due to DRM protection. This is a friction in the co-existence of levies systems and DRM. The Directive suggests with Article 5(2)(b) that a fair compensation would not be justified when technical measures like DRM systems prevent private copying.²⁴⁵

4.5.3 Levies, DRM and Privacy

Compared to levy systems the use of DRM heightens the intrusion on consumer privacy. DRM systems may monitor and register individual behav-

²⁴³ Dreier (2004).

²⁴⁴ Hugenholtz; Guibault; Van Geffen (2003), p. ii.

²⁴⁵ Hugenholtz; Guibault; Van Geffen (2003), p. 37.

ior. The issue of privacy has been one of the considerations in the landmark German Personalausweise case, which led to the initial introduction of the levy system.²⁴⁶ As seen in Section 4.3 of this Chapter, the monitoring and identification of users by DRM systems may be subject to a proportionality test as laid down in Article 7(b) EDPD.²⁴⁷

4.5.4 Levies: Compensation Private Copying, Not Copyright Infringement

It should be noted that levies seek compensation for the private copying of content, and not for copyright infringement, for example through file-sharing. DRM may prevent the former, and certainly seek to put a stop to the latter. Though current lack of effective DRM systems may prompt Member States to choose to keep the levy system in place for the time being. This might change with future technological advances, and could result in the above-mentioned phasing out.²⁴⁸

A suggestion that is presently subject to heated debate is the application of alternative compensation systems in the digital environment, (partly) inspired by levies.²⁴⁹ The suggestion was made by some U.S. academics and interest groups. A prime example is the payment of a flat fee by consumers, charging a certain amount for general, unrestricted use of digital content. However, it should be stressed that this scheme would not just seek compensation for private copying, but also for copyright infringing practices. In their compensation for non-authorized use of protected works, these proposed systems differ from existing levying systems in Europe. They do not just try to tackle the restrictions DRM may impose on consumers, but also for acts considered illegal under current copyright law. The Electronic Frontier Foundation, for example, has proposed a possible solution for copyright infringing file-sharing: “The concept is simple: the music industry forms a collecting society, which then offers file-sharing music fans the opportunity to “get legit” in exchange for a reasonable regular payment, say \$5 per month. [...] The money collected gets divided among rights-holders based on the popularity of their music.”²⁵⁰

²⁴⁶ BGH, 29 May 1964. Also Hugenholtz; Guibault; Van Geffen (2003), pp. 10-11 and 35.

²⁴⁷ Hugenholtz; Guibault; Van Geffen (2003), p. 34.

²⁴⁸ European Commission (2002a), pp. 15-16. An illustrative example is provided by comments of the German Minister of Justice in the German Bundestag in 2002: “The time has not yet come to replace our system of global compensations [...] by a system of per-use payment, of individual licensing in the digital domain. [...] I know of course that there is an important pressure group that sets a high value on these individual payments being part of the next package. We will have to negotiate this, and we will also have to see how far technical developments will have gone by then.” Source (English translation): <http://www.fipr.org/copyright/guide/germany.htm>. Also, <http://dip.bundestag.de/btp/15/15010.pdf>, p. 626.

²⁴⁹ Bechtold (2002), p. 616. Also Fisher (2004), chapter 6.

²⁵⁰ EFF (2004).

4.6 Conclusion and Outlook

Technology and law are not stand-alone entities in the case of DRM. As seen in the previous sections, rightsholders rely on an interplay of technological and legal measures to exercise control over content under a DRM scheme. Legal measures may consist of anti-circumvention regulation, usage contracts and license agreements.²⁵¹ Both technological and legal measures are used supplementary and strengthen each other to form an interactive environment of content control.

In practice, consumers may be confronted by regulation through technology, but this often finds a basis in and is backed by traditional law. When the first fails, the second may provide the user of DRM systems an additional measure to protect his rights and interests. For example, even if a consumer successfully circumvents a technological protection he may still be prosecuted under anti-circumvention legislation or be liable by terms of contract and copyright law.

As a result a consumer who seeks to secure his interests and rights, finds both technological and legal barriers in his path. Both these technological and legal means may restrict the “rights” provided to consumers under law. For example, the provider of a commercial music download service may use a DRM system that limits legitimate private copying. The provider may also use contract terms under which a consumer signs away copyright exemptions, such as private use. These contract terms can be written in an unintelligible form, so that the consumer may not be aware of his actions.

The interplay creates a situation, which leaves the consumer with, amongst other things:

- DRM systems that prevent consumptive uses
- Lack of workable provisions to exercise legal exemptions
- Contractual restrictions on legal exemptions

The EUCD is most commonly seen as the legal framework for DRM. This Directive, however, focuses largely on the interests and rights of rightsholders. It provides little realistic consumer protection, which has to be found in other fields of law and technology itself.

As to the latter, consumer interests traditionally protected by law are not necessarily reflected by, or better, translated into DRM systems. Translation is an applicable term here, since the Rights Expression Language (REL) largely determines the extent to which consumer interests are expressed.²⁵² It is noted that the growing sophistication of DRM systems and their RELs might provide an increased variety of graded usage rules by rightsholders.²⁵³ But, as Stefan Bechtold writes: “[I]t is of utmost importance that RELs include semantics to express not only the interests of creators and rights holders (as all current RELs do), but also of information users (as no current

²⁵¹ Bechtold (2002), pp. 609-612, specifically on license agreements.

²⁵² For a definition and analysis of RELs see Chapter 5. Also Rump; Barlas 2004.

²⁵³ Chen; Burnstein (2003), p. 488.

REs do).”²⁵⁴ Otherwise a balance between the interests of rightsholders and service providers on the one hand and consumer interests on the other, might not be reflected within DRM systems (see also Chapter 5).

Consumer protection law may give consumers some protection when DRM systems are used, with a view to transparency of information, contracting and privacy. However, the protective provisions are fragmented over several Directives, and it may be unclear at times to what extent these Directives apply to the use of DRM systems. Clarity towards the applicability of provisions is important for the consumer to determine his legal standing and secure his interests. The future discussion around DRM should therefore pay greater attention to consumer protection law.

No less important than legal consumer protection is the enforcement of these provisions in a legal procedure. Individual action is frequently too costly for consumers. Consumer organisations can play a role in the enforcement of individual interests by bringing collective actions to court. In the field of standards setting and the implementation of consumer interests in DRM themselves, consumer representatives might be given a more active role than recently reflected.

²⁵⁴ See Bechtold (2003), p. 608.

5 Technical Aspects

5.1 Introduction

Technology can be used to achieve two goals: firstly, it provides the background for the realisation of ideas emerging from real world needs. Secondly, as Lawrence Lessig makes clear in “Code and Other Laws of Cyberspace”²⁵⁵, technology can restrict both legal and illegal use. Technology makes solutions possible, but it also places restrictions upon us.

The same conflict is present in DRM. Initially they were no more than technological restrictions on content copying, but now, as symmetric rights expression languages²⁵⁶ are emerging, DRM as a means of managing digital content and associated usage rights might become more acceptable to consumers.

DRM was not originally motivated by consumer needs, it was the invention of the content industry. Ever since the invention of photocopiers, people have wanted to copy parts of books, and on video recorders (VCRs), consumers not only recorded live TV shows to watch them later, but also copied movies rented for one night. Though in some cases – e.g. original video cassettes – there was some sort of copy protection built in, people could always find ways to circumvent these measures. However, this was not a huge problem, since in the analogue world, every act of copying meant loss of quality, and the source had to be physically present to be able to make copies of it. This meant that whenever someone wanted to copy a video tape, they had to have two cassettes at hand: the original one and a blank tape.

When compact discs (CDs) heralded the arrival of the digital era, loss of quality was no longer an issue, and an unlimited number of exact copies could be produced easily. Thus, many people chose the cheaper solution and asked their friends to duplicate discs for them. However, someone still had to obtain – probably buy – the original CD in a store, and a blank recordable disc also had to be bought. This way, payment for either the content or the carrier was not entirely eliminated. Of course levies built into the price of recordable media (e.g. audio or video tapes, CDs), and sometimes of reproduction-capable devices (e.g. copiers) also aimed to compensate for lost license fees. Another drawback of early digital copying for the consumer was that the original media still had to be physically present at the point of copying.

The big problem for the content industry came with the spread of the Internet: consumers did not have to rely any more on a friend in the neighbourhood buying material, because it was enough if someone – possibly on the other side of the world – put it on the Internet. In addition, today consumers do not have to buy recordable CDs either, since they have com-

²⁵⁵ Lessig (1999).

²⁵⁶ See also Section 5.2.3.

puters and portable MP3²⁵⁷ players which can store music equivalent to five hundred albums or more. And still there is more to come, with DAB and DVB (digital audio and video broadcasting), and the automatic digital recorders of the near future.

So what have consumers got in the past thirty years, during the evolution from VCRs to portable MP3 players? They have got used to obtaining content conveniently – they do not even have to stand up from their chairs any more – and having other (in many cases cheaper) ways to obtain content than buying it in shops.

The content industry, of course, wants to obtain revenue. Thus it has to enforce rules and restrictions, so that its content does not spread around the globe, free of charge. This is why the industry came up with the idea of DRM. However, since this process was driven by the content industry's needs, DRM solutions nowadays usually protect the content provider, rather than the consumer. In DRM, restrictions are enforced by technology, whereas users still want to exploit the full potential of future solutions – to use (watch, read, listen, share) content more conveniently.

In what manner can users really expect that their expectations will be fulfilled? Naturally, everything comes at a price. This price is either measured in money (which consumers are very sensitive about), or in less convenience, ease of use and flexibility. It seems that users will sacrifice much (i.e. “to pay” without money) to satisfy their need for two requirements: a lower price and more convenience.

Many people confuse technology with applications. Just as buildings are “applications” of bricks and mortar, music download services usually apply DRM systems to manage usage rights and protect content. In this chapter we will focus on the technology of DRM rather than the applications which employ DRM solutions. Thus user friendliness and interaction with certain groups of consumers, like disabled or elderly people, is not a topic of this chapter: it is an application design question rather than a technological question.

In this chapter the current technological trends and futures of DRM solutions will be introduced. In the first section DRM functionality will be discussed. First, the main components of DRM systems will be described, then Rights Expression Languages and the different means of content distribution will be detailed. Next the report will move on to usage control and the security of DRM solutions, and then DRM's relation to Privacy Enhancing Technologies and payment solutions. In the second part of this chapter standards will be introduced, with the standardisation bodies and the current leading DRM standards. Finally, a brief appraisal of the future of DRM will be provided.

²⁵⁷ MP3 is the first popular – and perhaps the most well known – audio compression standard, invented by Fraunhofer IIS.

5.2 DRM Functionality

5.2.1 Introduction

DRM was the requirement of content providers, and to them represented a response to a “real-world” problem. Technology, as in many cases, simply provides the background for DRM solutions. Somewhat confusingly, the three letters, standing for Digital Rights Management, can mean two different things: the “Management of Digital Rights” or the “Digital Management of Rights”. Of the two, the latter is what is more important from the technology point of view.

Many people think that, for example, streaming access and superdistribution²⁵⁸ are the fruits of DRM technologies. On the contrary, they existed long before DRM was introduced, and in fact they created the problems for which DRM could be the answer.

5.2.2 Main Components of DRM

From the technology point of view, the Open Mobile Alliance distinguishes three main elements in its DRM specification²⁵⁹:

- Rights Expression Languages (RELs) provide a concise mechanism for expressing rights over DRM content. They address requirements such as enabling preview of content – possibly prior to purchasing – and express a range of different permissions (e.g. the consumer may play the song, but not forward it) and constraints (e.g. the consumer can play the song only ten times). RELs are independent of the content being distributed, the mechanisms used for distributing the content, and the billing mechanisms used to handle payments.
- Content Formats define the content encoding for DRM-protected encrypted media objects and associated metadata. Their role is important both when transferring and when storing the content on the consumer’s device. In fact, content is usually stored in encrypted format to protect it from unauthorised use.
- Metadata is used to describe DRM-protected content in the media object: one type of such metadata exists to identify the content (location information, e.g. a Uniform Resource Identifier (URI), similar to a web address), while the other type helps the user understand what the media object actually is (descriptive metadata, e.g. the artist and title of a song).

²⁵⁸ Both streaming access (i.e. continuous download and presentation of multimedia content without storage on the consumer’s side) and superdistribution (i.e. legal distribution of DRM-protected content among consumers) will be covered later in Section 5.3.2.

²⁵⁹ Publicly available at <http://www.openmobilealliance.org>.

5.2.3 Rights Expression Languages

Overview

Today's rights expression languages, such as Open Digital Rights Language (ODRL) and Extensible Rights Markup Language (XrML)²⁶⁰, have their origins in earlier principles, in which content providers sought to restrict the user as much as possible. The basic rules were in the nature of “do not copy”, “do not print” or “do not show”. Of course consumers disliked the idea of such unnecessarily rigid restrictions. If consumers purchased CDs, why could they not listen to them both in their cars and at home without always having to take discs with them?

For this reason, in newer RELs more focus has been given to user expectations. Consumers wanted ease of use, just as in the CD era, and also automatic procedures which guaranteed that technical glitches would not hinder them in using their rightfully obtained content. Some of the provisions from the OMA DRM 2.0 specification are presented below.²⁶¹

- Using obtained content on multiple devices – export of protected content and rights objects (i.e. permissions and constraints, together with authorisation information) to other DRM systems, or transfer to other copy-protected devices or storage media.
- Backup and restoration of rights objects (usage permissions) and content from the provider's server using a secure and portable user identity – when a device gets lost or damaged, the consumer can restore all previous data to the new one.
- Local backup of content and rights objects – when a storage medium is lost or damaged, the consumer can restore all previous data.
- Export of protected content and rights objects to other DRM systems, or transfer to other copy-protected devices or storage media.
- Streaming/multicast streaming/conditional access – essentially the basis for Rights Locker Architecture and secure broadcasting.
- Content preview – the consumer's freedom to sample content before buying it.
- Superdistribution – the same as peer-to-peer file sharing today, but in a DRM controlled manner.
- Revoking permission on hacked or insecure devices – when a device is compromised or tampered with, the service provider can revoke permission to use any content on that device.
- Auto-renewal of rights objects – for example, if a consumer has subscribed to a service or has purchased content with a time limit on its use, and it is planned to use the content after this expiry date, the permissions are automatically renewed.

Symmetric Rights Expression Languages

One can see that while there have been many relaxations of the originally stringent copy protection measures, rights expression languages still serve

²⁶⁰ See Section 5.6.3.

²⁶¹ New notions (e.g. streaming or superdistribution) will be covered later in this chapter.

the interests of content providers. In some cases they do it to such an extent, that they override the exceptions within copyright law and prohibit legitimate uses, thus harming the interests of consumers. Since RELs are the key elements of DRM, they must be designed not only to express the rights and interests of rights holders, but also those of consumers.

Symmetric rights expression languages can be created from traditional RELs by adding semantics that express to DRM enforcement engines the requests of end-users for special exemption. They are called symmetric because they not only take into account the expectations of content providers, but also those of consumers.

Fair use is often based on the context or locality in which DRM-protected content is used. In copyright law there are special provisions for whether something is presented in private or public, for educational purposes or in libraries, or for disabled people. The law also renders copyrighted material free from the control of its owner, in the context of fair use. If a clip is short enough, or if its use is sufficiently transformative or critical, then the law allows its use, whether permission has been granted or not.

Deirdre Mulligan and Aaron Burstein have proposed changes to an existing rights expression language²⁶² (XrML) to create a symmetric rights expression language as described above. Technically, there are many difficulties in expressing special circumstances in RELs – for example context, intent or locality – since the consumer’s device cannot detect the nature of its surroundings. Therefore, symmetric RELs are increasingly exposed to abuse. While harmonising law and DRM systems might not be the perfect solution, it would certainly be a step towards overcoming much of the criticism related to fair use.

5.2.4 Concluding Remarks

From a technology point of view the rights expression language which is used is the component that concerns consumers the most. This is what grants or withholds permission to use content in certain ways. Therefore, in order to make DRM more acceptable to consumers, RELs must be well-designed and balanced so that they not only represent content owners’ interests, but also those of consumers. Much research needs to be done in this field in the coming years.

5.3 Content Distribution

With content providers’ intentions expressed via RELs, the next step in the DRM lifecycle is the distribution of DRM-protected content to consumers. This section gives an overview of the most popular distribution techniques in use.

Two fundamentally different ways exist for distributing protected content: together with some kind of bearing media, or over a “networked” con-

²⁶² Mulligan; Burstein (2002).

nection. In each case, different DRM protection methods exist for different carriers.

5.3.1 Distribution on Media

CD

CDs are perhaps the oldest widespread digital content carriers still in use today. They were also the first which could be copied at home, with relatively cheap CD burners. Currently, several initiatives are attempting to equip them with copy protection measures, but so far none of these has been able to satisfy the expectations and needs of consumers. A common technique is to prevent computer CD-ROM drives reading data, thus ensuring that content cannot be “grabbed” (the tech-savvy word for obtaining raw data from a disc or other medium) and distributed over the Internet. When users complained that they wanted to play the music not only on their music centres but also on their computers, publishers put tracks in digitised (but copy-protected) form as files on the CD, so that consumers could “make a backup” of their legally obtained content, though not in its original form. Other solutions used tricks similar to the original VHS video cassette copy protection: the signals were disrupted in a manner that was not audible on the original CD, but in MP3 compressed form these disruptions rendered the track virtually unlistenable.

DVD

DVDs, or Digital Versatile Discs (sometimes referred to as Digital Video Discs), are the successors of CDs, and from the beginning were designed to be copy-protected. First, CSS, the Content Scrambling System, is designed to prevent video data being ripped from a DVD (ripping is an unofficial term for obtaining raw data from a disc or other medium, a synonym of grabbing). CSS is basically an encrypted form of a standard compressed video format. Unfortunately for the motion picture industry, the encryption has proved to be too weak, and it was “cracked” within a relatively short time. Now, since the DVD format is standard and there is already a huge number of DVD player on the market, it is not possible to convert to a more secure encryption method. In addition, DVDs come with a region code, which is also a kind of content protection. The world is divided into six regions, and a DVD players is usually “locked into” the region in which it was purchased. Thus it cannot read DVDs which carry a different region number. This prevents, for example, a European DVD player playing a DVD intended for the American market. However, nowadays multiple-region DVD players are on the market. On the other hand, DVD players in computers are limited in the number of times they can switch zones, and can actually lock a user out from their own legally bought machine if that number is exceeded.

Memory Card

Flash memory cards are carriers for computer games, for example. Nokia provides games on MMC (MultiMedia Card) format for its N-Gage game deck platform. These cards have unique serial numbers, which can be read

from them. The serial number of a card is digitally signed by the provider and this signature is stored in a file on the card. When a copy-protected game is started, it checks whether a valid signature can be found on the card. In this way the authenticity of the carrier can be guaranteed, and the game will only start on original cards.

Another type of memory card is the SD (Secure Digital) card. Basically this is an extension to the aforementioned MMC card, and since almost every parameter has been improved, it is also capable of storing digital content securely. The SD card is designed to comply with all three levels of SDMI (Secure Digital Music Initiative²⁶³) security requirements. Both non-protected (category 1) and copy-protected (categories 2 and 3) material can be stored on the card. The copy-protected material can be secured either by a unique card-bound identification (category 2) or by an active cryptography algorithm (category 3), that involves challenge/response protocols against a private key. The SD card security features also have the capability to revoke non-compliant SDMI components using a “media key block” if security is breached. Under this security scheme, content providers’ data (music, books, software applications, maps, schedules, etc.) can be checked in (moved to the card), checked out (moved from the card) or copied to other SDMI compliant cards with the required copy restriction. The check-in/check-out feature provides content owners with the assurance that their content is protected.

New Generation Media

Sony uses the “always one step ahead” approach when it comes to copy protection. When it launched the PlayStation 2 (PS2, launched in 2000) game deck, games were distributed on DVDs (at that time home copying of DVDs was not common). PS3, scheduled for 2005, will use Blu-ray Discs (BD-ROM) as media, again a format which will not be easy to copy. The PlayStation Portable (PSP, coming out in 2005) will use Sony’s proprietary Universal Media Disc to store media. This approach is an interesting example of technology successfully enforcing copyright: it does not try to combat illegal copying with software-based protection, but instead relies on the prohibitively high cost of hardware needed to make copies of protected content.

5.3.2 Distribution Over Wire or Over the Air

As mentioned before, there are also means of content distribution which do not involve a physical medium. The two most common methods of content distribution are downloading via the Internet and reception via broadcast.

Network Download

Network download can occur in two ways. The first is the typical Apple iTunes²⁶⁴ scenario, where the consumer buys songs for a relatively low sum – in most cases less than one Euro – and is then allowed to download it

²⁶³ See <http://www.sdmi.org>.

²⁶⁴ iTunes is the first Internet music download service, created by Apple.

from the music store. If the content is copy-protected, then the music file is encrypted with a key, specific to that service and the unique identifier of the player – be it the Windows Media Player or the iPod.²⁶⁵ However, there are also services which provide non-copy-protected files. The reason is that so far it has proved possible to circumvent every protection measure, so there is no point in spending good money on implementing restriction enforcement, when consumers can use relatively simple tricks to do whatever they want with the content.

Streaming

The other way content is provided over the Internet is streaming media. In this scenario, the content – audio or video – is not downloaded in its entirety to the end computer, but is played back on-the-fly upon arrival at the player software. It is then the task of the player to dispose of the content once it has been presented to the consumer. This usually means that the player software either does not store the downloaded data in the computer, or it deletes the file immediately after the player has been closed, thus preventing the consumer copying and storing audio or video data. This way pay-per-use accounting can be realised.

Rights Locker

Rights Locker Architecture is a new initiative for distributing digital content over networks. The main idea is that with ever-growing network bandwidth it is not necessary to store digital content locally on user devices. Instead, data is stored on central content servers, and the user only purchases the right to access the digital data. Whenever a consumer wants to access content, the relevant device (PDA, laptop, mobile jukebox, cell phone) makes a request to the server, and if authorised (i.e. the user has purchased the content), the server streams the media to the consumer's device. This solution has all the advantages of both streaming media (no need to store content on multiple devices, no need to transform and transfer them, no need to backup), and traditional pay-per-content-object systems (rather than pay-per-use, as is usual with streamed distribution). However, it will still be some time before we have broadband network connections which are cheap and widely accessible enough to be used for the rights locker.

Broadcast

Traditional, analogue audio and video broadcasting systems have for decades been relatively free of piracy, since the analogue signals received by the TV or the radio receiver are of relatively low quality. Of course it is possible to digitise and record them to digital media, but in many cases it does not make much sense, because the same content can be obtained in “perfect” quality on CDs or DVDs. However, DAB and DVB pose another risk for content providers, because using these systems consumers can get the same high quality content, and with digital recorders there is no need to convert the content to analogue and back to digital. They would then be able to

²⁶⁵ iPod is Apple's popular portable music player device, now also manufactured by HP.

automatically record DVD movies from TV broadcasts with their next generation “video recorders”, and redistribute them via file sharing services (e.g. peer-to-peer networks²⁶⁶). The content industry has recognised this threat, and has created the so called Broadcast Flag²⁶⁷ (to be introduced in mid-2005). With this, copyrighted materials will be flagged, and while they will still be able to record these programmes, consumers will not be able to transfer the digital content to unauthorised third parties. This will not render existing digital recorders unusable, but it will prevent the unauthorised redistribution of copyrighted content. Here, the protection will be built into digital-capable TV sets and video recorders rather than the content itself. Any digital TV tuner manufactured after 1st July 2005 must refuse to allow broadcast-flagged programmes to be recorded in such a way that they can be redistributed in their high-definition format.

Superdistribution

Superdistribution is a new approach to spreading content over existing and future networks. It is based on the idea of peer-to-peer networks, which are prevalent nowadays, and often used to obtain copyrighted content without the permission of the author. Advocates of superdistribution see this model as a very efficient way to spread content, and want to see it regulated: copy-protected content could be transferred directly from consumers to their friends, who in turn would buy rights objects (i.e. permissions) from the provider in order to be able to use the content. Current DRM systems (e.g. OMA DRM 2.0) support superdistribution, but there are no widely used applications yet.

5.3.3 Concluding Remarks

We can see that there are as many types of DRM solutions as there are carriers for digital media. Additionally, they are not usually designed to be compatible with each other, since to shorten pre-launch schedules, developers only take their own interests into account, and do not consult with other interest groups. On the other hand, content providers are interested in providing services compatible with other providers. For example RealNetworks’ “Real Harmony” system makes it possible to convert virtually any content format used by competing music stores to their own format, and they also make it possible to play music purchased from them on competing devices. Thus, the convergence of multiple platforms is slowly becoming a reality.²⁶⁸

5.4 Usage Control

It is only when the content reaches the consumer’s device that the most important aspects of DRM technologies become relevant. Under what condi-

²⁶⁶ Kerényi (2004b).

²⁶⁷ See also Section 4.4. To learn more about the Broadcast Flag see <http://www.cdt.org/copyright/broadcastflag/>.

²⁶⁸ Tóth (2004b).

tions should a user be allowed to access content? Rights expression languages describe the exact terms, but the device has to enforce the restrictions. If consumers can circumvent restriction enforcement then no business model or REL can recoup the content provider's loss of revenue. Additionally, if someone can disengage content from the protection measures applied, that person can release the unprotected content on "underground" networks.

Therefore, from the technology point of view content protection is perhaps the most important aspect of DRM. In fact, technologists often see copy protection as the foundation to DRM, with everything following on, and building on it. If a building has inadequate foundations, it may provide the necessary accommodation and be aesthetically pleasing, but it will not be structurally sound.

Today's working DRM solutions are mostly implementations of copy protection. The following are a few examples: CDs which cannot be grabbed on computers, and thus cannot be copied; DVDs, which from their introduction have been copy-protected – with varying degrees of success; games, which are supposed to run only when the original CD-ROM, DVD, memory card or other media of distribution is inserted into the device, meaning these cannot be copied easily. Another interesting method applied with computer games is that all legally purchased copies have a unique unlocking number. Of course, a game may be played on two different computers – since neither knows that there is another one using the same key. However, when players want to play online against each other (and this is when the real fun begins), the computers try to authenticate themselves with the unlocking number, and when the central game server detects the same number on more than one machine, the connection is denied. A quite differentiated DRM solution is implemented in PDF files, where the creator can set security settings which determine if the content may be presented without authorisation (password), printed, modified, parts of it extracted, etc.

On the other hand there will be some kind of penalty imposed on the consumer when the device detects an unauthorised attempt to use content. Various methods are used, but nowadays none of them cause damage to the consumer's device, nor do they block the device's basic services. Usually computer programmes mostly will not start when they detect unauthorised use, or they start but periodically present nag screens to disturb the user. Sometimes computer programmes will attempt to connect to the manufacturer's central server to check whether their activation key was obtained legally. Other measures include the removal of certain features from applications, or with games, setting the difficulty to a very high level. With CDs, the penalty for illegal copying or grabbing is very bad audio quality, but there has been at least one example of a CD causing computers to freeze.

Proposed solutions for the future include more drastic methods, whereby devices, which have been identified as compromised, would be locked out of the DRM system. This would mean that if there were too many attempts at fraudulent use on a particular device, all permissions to play content on that equipment would be revoked.

5.4.1 Tracking Unlawful Use

There is another solution which tries to restrict unauthorised redistribution by law (sometimes called the forensic DRM model). In this, tagging, watermarking and fingerprinting are used. This involves labelling copyrighted content with unique identifiers. These do not affect the content of the digital media, so they can spread on the Internet, and can be used by anyone, just like untagged content. However, since these tags are uniquely associated with the authorised customer who purchased the content, such media can be tracked, and traced back to that customer. If technical copy protection applies to the content, then it is clear that this person has illegally circumvented these measures, and has broken the law.²⁶⁹ Thus, illegal content distribution can be reduced by traditional law enforcement.

5.4.2 How Secure are DRM Systems?

The penalty imposed when a device detects unauthorised use can be mild or severe, but first the device has to detect deception; but how secure are DRM systems in reality? How reliable can the protection applied to digital content actually be?

The Analogue Hole and Other Phenomena

Storing and transferring content in digital format is very popular. Among its many advantages are its durability and integrity over distance. Moreover, it is easier to store and process digital data with computers. The unfortunate thing is that humans are not equipped to automatically decode digital representation – the series of zeros and ones – of the media. Therefore, there must be some way by which the device presents the content to the user – through sound or pictures. In this state, when the content leaves the digital domain and begins its new life in the analogue world, the signals can be captured, processed, redigitised, and thus the content can be stripped of any protection measures, since usually DRM techniques exist only in the digital domain. Some experts might disagree, but we must accept that ultimately the signals will somehow reach our brains (through our eyes or ears), and if they were captured there and later replayed, it would mean that we could separate the protection from the content. This might sound futuristic, but the analogue hole will certainly make its appearance in the future.

In addition, we do not have to travel so far into the technological future, as crackers have already found an easier option. If the task is deciphering content, crackers do not necessarily have to break the code, since the legitimate device – the audio or video player – decrypts the content for them, ultimately to present it to the user. In the very last phase, just before the (already deciphered) digital signal is converted into its analogue form, data can be captured and stored, illegally circumventing protection measures. Thus crackers can avoid having to redigitise the content, and any resultant loss of quality.

²⁶⁹ An example for such technologies is LWDRM (Light Weight DRM), from Fraunhofer Institute, the inventor of MP3. To learn more visit <http://www.lwdrm.com>.

Trusted Computing

Today's personal computers (PCs) are open platforms. This is the main driver of their development, since anyone can write applications for computers. This, however, has a negative effect on device security: as long as programmers, enthusiasts, “freedom fighters” – hackers – can freely write and also analyse programmes on devices, there can be no protection secure enough to prevent content copying. In the opinion of some experts, the solution would lay in closed platforms, which implement DRM and content protection on trusted hardware and software solutions. Rights management, device and identification management, authentication and authorisation should be intrinsic parts of a device's operating system and they should rely on secure information stored in tamper-proof hardware components. This means that it should be a basic service supported by both hardware and low level software of the device to store sensitive data needed to provide the abovementioned services. Apple's iPod was intended as such a closed²⁷⁰ hardware-software combination. However, some months after its debut on the market, an enthusiast allegedly managed to boot Linux²⁷¹ on it.²⁷² Next generation mobile phones and PDAs (Personal Digital Assistant, a handheld computer) might be such trusted devices in the future, but the current trend is towards opening these platforms.

Cryptographic Background

Both content protection and watermarking employ cryptographic solutions. Digital signatures are used for the non-repudiation of rights issuing. One-way hash functions are used for integrity protection of rights objects. For content protection, symmetric and asymmetric²⁷³ encryption methods are used, which have a very solid and proven theoretical background. Regardless of how secure these methods are, the weak point of the system is always in the protected handling of keys – even the strongest lock can be opened if the key is easy to obtain. This is what should be supported by the trusted hardware-software combination.

A different issue is that systems which support content-preview and superdistribution are architecturally vulnerable to attacks against keys. If it is permissible for a “foreign device” (i.e. not the device of the customer who purchased the content) to display or play the content, then it cannot be locked to any particular device, this means there are no device-specific keys applied in copy protection. So all content must be protected by the same

²⁷⁰ There is no publicly available documentation or information about internal architecture, and there are no supported development tools.

²⁷¹ Linux is the market leading free operating system.

²⁷² To learn more about Linux on iPod, go to <http://ipodlinux.sourceforge.net>.

²⁷³ Symmetric key cryptography applies the same key for encryption and decryption, while asymmetric key cryptography uses different (so called public and private) keys, which cannot be computed from each other. This makes different architectures possible, but from the cracker's point of view there is no difference when unapplying copy protection to content. However, asymmetric key cryptography can make issuing fake rights impossible, while symmetric key cryptography cannot be used for that purpose.

key, which in turn means that it is enough to obtain the key once, and with that all content can be decrypted. Not only would one track or one device be cracked, but the whole system.

Digital watermarking, on the other hand, is not yet mature enough for commercial use. The reason is, that unlike cryptographic algorithms, current watermarks cannot withstand most attacks. Therefore the robustness of watermarks is not adequate.

Market leaders in the content industry do research and implement their own protection measures. Smaller companies do not have much experience and resources in cryptography, and so there are off-the-shelf third party cryptography solutions and robustness kits that any newcomer to the market can apply to strengthen their protection. But is it really important to have a perfectly secure device? Users are more attracted to easy-to-use devices which do not restrict their freedom to use their content in whatever way they want.

Is 100 Percent Security Really Desirable?

From the above we can see that DRM content protection will not be extremely secure in the near future. But this is not the most important issue. As seen from a number of online music stores, successful business models can be built around selling unprotected content.²⁷⁴ Why put effort into protecting content, if people can circumvent measures taken to prevent media distribution? So far everything has been cracked, and it is very likely that this will remain the case in the future. What really matters is that new business models in the future should make legally purchased goods more attractive to customers than pirated content (see Chapter 6).

Until that time we have to look at how to protect valuable digital content. From this point we can divide content to be protected into two groups: content which can be “experienced” (e.g. audio, video, text) and content which “works” (e.g. computer programmes such as applications or games). We should state that it is very hard, if not impossible, to protect “experiencable” content (cf. the analogue hole), while it is much easier to do so with computer programmes. There are certain techniques, like software watermarking and obfuscation (scrambling the code so that no human can understand it), which if applied, make it immensely hard to separate a programme from its copy protection measures.

However, it is not exactly in the interest of software vendors to apply immensely strong protection to make their software “unpiratable”. Below are two extracts from Bruce Schneier’s famous book, *Secrets and Lies*²⁷⁵:

What’s really interesting about the problem of copy protection and software piracy is that the solution is to pretend that there’s not a problem. There is little to no copy protection in business software. In the competitive software application industry, market share and product loyalty – no matter how they are achieved – are crucial. Many companies reason as follows: People who pirate my software

²⁷⁴ E.g. eMusic and Audio Lunchbox both sell music in traditional, unprotected MP3 form.

²⁷⁵ Schneier (2000).

cost my company next to nothing, since my marginal cost of goods is zero. It's not like they are stealing televisions off my assembly line. Almost all people who pirate my software can't afford to pay for it, so I'm not losing many sales. And, when these pirates eventually get into a situation where they need to buy the software legitimately, they will already be hooked on my software, not my competitors'. Piracy is just another way of boosting market share.²⁷⁶

Microsoft had exactly this in mind when they made a big push to get their products translated into Chinese and distributed across that country. They knew they would be pirated; they knew that they would make less than one sale for every ten copies used. Microsoft's Steve Ballmer has been quoted as saying: "If you're going to get pirated, you want them to pirate your stuff, not your competitors' stuff. In developing countries, it is important to have a high share of the piracy software." When China enters the free world, they will already be Microsoft compatible. Until then, Microsoft isn't losing anything. It's a perceptive business strategy.²⁷⁷

From these thoughts one can see that business considerations are in many cases more important than technical protection. Moreover, although very secure copy protection could be applied to software in theory, there are no good practical solutions yet. On the other hand, copy protection is usually achieved at the cost of software speed – the stronger the protection, the slower the programme.

5.4.3 Concluding Remarks

To sum up, while copyright owners would like to have the most secure protection possible to stop piracy, it is often not desirable to apply near 100 percent protection measures. The first reason is that security and convenience are two opposing concepts, and many consumers choose convenience over security. The other reason is that certain business considerations militate against unpiratable content.

5.5 Privacy

When talking about DRM, the aspect of privacy does not usually come up. DRM mainly deals with content, usage rights (restrictions), payment or piracy. However, in recent years consumers have become increasingly privacy-aware, and as DRM systems need to deal with privacy issues as well (e.g. storage of personal information, such as contact data), the connection between DRM and privacy will become more important in the near future.

5.5.1 Privacy Enhancing Technologies

The main problem in the online world is that anything consumers do updates their trails, which are recorded by service providers and put to various uses – good or bad. Although on the Internet people have other identities (in many cases false ones), they are identified by their computer's network address or their e-mail. These can be relatively easily linked to a consumer's

²⁷⁶ Schneier (2000), p. 252.

²⁷⁷ Schneier (2000), p. 253.

real identity. Privacy Enhancing Technologies (PETs) are technical means which help increase the privacy of consumers by making the link between their real and electronic identities weaker. Anonymous remailers²⁷⁸ or proxies²⁷⁹ are examples of such systems. These basically act like trusted third parties, providing the link between the two identities, but not delivering this information to anyone.

Other solutions, based on David Chaum's work (e.g. mixes²⁸⁰ and Chaumian blinding²⁸¹) provide greater security with the help of cryptography and do not depend on single entities acting as proxies. Instead they use trust networks with many relaying nodes, in which the real identity of consumers is practically untraceable. These solutions, though, are not widely used.²⁸²

5.5.2 Privacy and Payment

One of the main problems in DRM is that although consumers can hide their real identity while browsing on the Internet or using content, when it comes to payment, consumers often need to identify themselves in order to guarantee legitimacy. When providing credit card numbers or billing addresses, the privacy – at least towards the service provider – is automatically lost. Below we describe two solutions which eliminate this shortcoming.

Digicash

There have been several attempts to create an electronic equivalent to cash to overcome the cost overhead of credit card merchant fees. Whilst some have been theoretically achievable, none have survived or flourished commercially. The first and best-known was Digicash, which is still available through some banks. Digicash uses cryptographic solutions to effect anonymous payment: one can buy money-like objects from the bank, which are certified to be authentic, but cannot be associated to the consumer who paid for them with his bank card. Digicash can even be handed over to a third party. This means that at the point of acceptance, the payer can remain anonymous, and thus it is clear that using Digicash is a privacy enhancing technique – although unfortunately now an almost unknown one.

Coupons

Besides the traditional credit card method, many service providers give away coupons, electronic gift certificates and physical gift cards. These can be purchased in high street shops – anonymously, as consumers buy goods with cash – and spent in online stores. This method may be straightforward, but because it uses traditional ways to achieve anonymity, we pay for it with less convenience.

²⁷⁸ Remailers forward e-mails anonymously by stripping them of all information that could identify the sender. For a list of remailers see <http://anon.efga.org>

²⁷⁹ Proxies tunnel web traffic (typically in the World Wide Web) so that servers cannot identify the users browsing. E.g. <http://www.anonymizer.com>

²⁸⁰ See Chaum's article at <http://world.std.com/~franl/crypto/chaum-acm-1981.html>

²⁸¹ See for a bibliography of blind signatures:
<http://www.i2r.a-star.edu.sg/icsd/staff/guilin/bible/blind-sign.htm>

²⁸² To learn more about PETs, see http://www.cbpweb.nl/downloads_av/AV11.PDF

5.5.3 Privacy Rights Management

Finally, in this section we will draw the reader's attention to a surprising similarity between DRM and the concept of privacy, first examined in depth by Korba and Kenny²⁸³: this is the new principle of Privacy Rights Management²⁸⁴ (PRM). The following paragraphs define the three main aspects of PRM shared by both DRM and privacy:

- **Management by third parties.** In the DRM scenario control over the intellectual property of rights holders is entrusted to the distributors operating DRM systems. The aim is to distribute the property in a controlled fashion (i.e. use only if paid for). With privacy the scheme is similar. Personal information owned by a data subject is entrusted to data controllers (and indirectly to data processors). Data controllers need to comply with the privacy principles set out in the legislative environment and with consumers' intentions.
- **Protection.** With DRM systems, assets are protected by several means: on the server side secured databases and controlled environments are used, whereas on the client side (i.e. the consumer), special hardware and software techniques ensure that only legitimate use is possible. On the other hand, with regard to privacy, data controllers are obliged to protect managed personal information. Bearing in mind the common requirements, it is a simple matter to use the same DRM protection measures (e.g. encryption, protected content formats, controlled environment etc.) for personal information as well. For instance, record stores offer songs in encrypted format that can only be decoded by special devices and only if certain required keys are incorporated. The same technique could be used for personal information as well: data controllers should also store data in such DRM-protected formats, where access can be effectively restricted.
- **Access rights.** To complete the picture, in the DRM environment, rights expression languages are used to express what a consumer may perform with the asset accessed (e.g. the REL may stipulate that a song can only be accessed for thirty days). Such rights information is usually closely bound to the protected format used to store the information. In the same manner, access to managed personal information must be controlled (by both the law and the consumer). For example, a consumer may specify using RELs that prevent the data controller handing over their e-mail address to third parties (cf. the same restriction preventing purchased songs being shared with others).

5.5.4 Concluding Remarks

Although there are already some privacy enhancing technologies with which consumers can reduce the chance of their personal data being used without their permission, these are at the moment not very widespread, not even in

²⁸³ Korba; Kenny (2002).

²⁸⁴ Tóth (2004a).

the more traditional online world of web browsing and e-mail. DRM systems pose another risk to consumer data, because the electronic processing of orders and usage patterns provides a means for content vendors to retain statistical data relating to consumers. Although privacy considerations are a matter of concern, technological measures like PETs are not currently being employed to protect consumers. Therefore in the near future further debate will be needed to guarantee consumers' rights to privacy.

5.6 Interoperability

5.6.1 Introduction

The online world – the main focus of attention on digital content and DRM – is extremely diverse. Countless vendors provide products and services and standards are of the utmost importance when developing new products. In fact, standardisation of solutions is the only way to maintain interoperability of products and services.

As with CDs, consumers can rightly expect that a purchased album will be playable on their music centres, portable players, car stereos, and indeed on their friends' devices. Just as with content encoding formats, standard procedures and descriptions are needed for DRM solutions also.

On the Internet there are three ways standards can emerge: independent standards organisations which create standards (e.g. W3C); alliances of numerous interested parties who decide to agree on a common approach (e.g. OMA); single media and technology giants (e.g. Apple) who invent something on their own and then push it through to become a *de facto* standard, just to make a profit from selling licenses to competitors. In the case of DRM we can see examples of all three, but fortunately many players understand the importance of open standards. From a standards point of view there is no difference as to whether they are open or licensed. However, it makes a huge difference to manufacturers whether they have to pay to be compatible or not.

On open standards (like ODRL) versus proprietary licensed DRM technologies (like CSS, which is necessary to build DVD players), there is one more key issue: patents which might prevent the free implementation of standards. This can be so important that early proponents of a standard may choose one hosting organisation over another primarily on this basis. In the following a list of standardisation bodies with their main characteristics is presented which license or promote technologies (adapted from Gord Larose²⁸⁵).

5.6.2 Standardisation Bodies

The 4C/5C Entity

A consortium of five computer technology companies (IBM, Intel, Matsushita, and Toshiba – the 4C Entity – plus Hitachi) which fosters the produc-

²⁸⁵ See <http://www.info-mech.com>.

tion of, and subsequently licenses, intellectual property associated with content control. The 5C Entity emphasises secure transmission, for example over domestic IEEE 1394 (also known as i.Link, Firewire) links, while the 4C Entity emphasises secure storage.

CPTWG

The Copy Protection Technical Working Group is an industry consortium, supported by the MPAA, which promotes copy protection technology. They created the current Broadcast Flag proposal and are also investigating ways to close the analogue hole.

The Digital Video Broadcasting Project (DVB)

The DVB is an industry consortium concerned with several aspects of digital television technology, including Conditional Access (used for controlling the viewing of television signals in a broadcast television system with the help of proprietary, tamper-resistant, uniquely addressable terminals, and often Smart Cards).

The DVD Copy Control Association

This is the exclusive (and expensive) club that manufacturers must belong to if they want to build DVD players. In other words, they are the key-holders for CSS.

Smarright

A consortium of mostly European companies, which supports a smart card based “copy protection system for digital home networks”, which seems to be gaining momentum.

Some more traditional – Internet style – standards bodies:

Internet Engineering Task Force

The Internet Engineering Task Force (IETF) is considered as the “grand-fathers” of the Internet, and the primary managers of core Internet technology such as routing, switching, etc. From the IETF point of view, DRM is an “application” which is outside their scope. They did convene a working group on Internet DRM, but it was dissolved in early 2003.

MPEG

The Moving Picture Experts Group, a working group of ISO/IEC (International Organization for Standardization) is in charge of the development of standards for the coded representation of digital audio and video. The organisation is actually something of a hybrid – democratic and non-proprietary, but with a controlled membership and licensed technologies. MPEG is non-commercial, has quite a few members from academia, and is based in Europe. Some of their standards, such as MP3 audio and MPEG-2 video as used on DVDs, are highly successful, and their vendor neutrality is a big plus with content owners who don’t want to get locked into proprietary solutions.

They have also begun to address DRM issues, with MPEG-4 IPMP (Intellectual Property Management & Protection), MPEG-21 Part 5 defining an XrML-based (see later) Rights Expression Language and Part 6, defining a Rights Data Dictionary.

OASIS

The Organization for the Advancement of Structured Information Standards, OASIS, started life in the early 90s and followed the evolution of XML and its applications. It used to include XrML, but as of summer 2004 OASIS is no longer in that business, so for better or worse this is now largely in the hands of MPEG.

Open Mobile Alliance (OMA)

The Open Mobile Alliance – formerly known as The WAP Forum – was formed in June 2002 by nearly 200 companies, including the world’s leading mobile operators, device and network suppliers, information technology companies and content and service providers. OMA cooperates with other existing standards organisations and industry forums. Its focus is on the development of mobile service enabler specifications, which support the creation of market driven, interoperable end-to-end mobile services. Notably, their efforts include a comprehensive DRM framework based on, among other things, ODRL (see the following Section 5.6.3). In terms of both the breadth of the standards and the number of participants, this is an impressive effort.

5.6.3 Leading Standards

Although there are quite a lot of deployed DRM solutions, only a few have reached a state where they could be called standards. Below are the most important ones.²⁸⁶

Open Digital Rights Language Initiative

The Open Digital Rights Language Initiative is an international initiative aimed at developing an open standard for rights expression in the DRM sector and promoting the Open Digital Rights Language (ODRL) within standards bodies. ODRL, as suggested by the name, is an open standard, which does not specifically target one platform or another, but is a general rights expression language. The ODRL specification supports an extensible language and vocabulary (data dictionary) for the expression of terms and conditions for any content, including permissions, conditions, constraints, requirements, and offers and agreements with rights holders. ODRL is intended to provide flexible and interoperable mechanisms to support transparent and innovative use of digital resources in publishing, distributing and consuming digital media content across many sectors, including publishing, education, entertainment, mobile and software. ODRL also supports pro-

²⁸⁶ Kerényi (2004a).

tected digital content and honours the rights, conditions and fees specified for digital content. It is important to mention that ODRL has been officially accepted by the Open Mobile Alliance as the standard rights expression language for all mobile content. ODRL is co-published with W3C (World Wide Web Consortium).

OMA DRM Enabler

In 2001 OMA started a Mobile DRM initiative.²⁸⁷ As a result, in 2002, the first version of the DRM enabler release was published. This set of specifications allows the expression of three interesting types of usage rights: the freedom to preview DRM content, the ability to prevent DRM content from being illegally forwarded to other consumers, and the enabling of superdistribution of DRM content

Partial implementation of this first specification is to be found in some mobile phones by Motorola, Siemens, Nokia and Sony Ericsson, while the latter two also have full implementation, incorporating all of the specified methods in their most recent top-of-the-range phones. Naturally several vendors support the server side of OMA DRM 1.0 with middleware solutions. In 2004, OMA released the DRM 2.0 specification. The major difference is that while the earlier version provided basic protection functionalities for limited value content (e.g. ring tones, black and white logos, screensavers and Java games), the new specification adds trust and security mechanisms to enable protected distribution of high-value content (e.g. video clips, music and animated colour screensavers). The new enabler release is designed for future phones with enhanced device features and multimedia capabilities.

XrML – eXtensible Rights Markup Language

XrML is a completely different breed compared to OMA specifications. Based on years of research at the Xerox Palo Alto Research Center, where the digital rights language concept was invented, and backed by patented technology, XrML is currently governed by ContentGuard. The eXtensible rights Markup Language provides a universal method for securely specifying and managing rights and conditions associated with all kinds of resource, including digital content as well as services. In XrML, rights and conditions can be securely assigned at varying levels of granularity to individuals as well as groups of individuals and the parties can be authenticated.

XrML is extensible and fully compliant with XML²⁸⁸, and supports XML Signature and XML Encryption for authentication and protection of its rights expressions. Although currently controlled by a private company, XrML was to be governed by the international standards community. Lately, however, the most powerful user of ContentGuard's XrML technology, Microsoft, has declared an interest in acquiring the company, together with its

²⁸⁷ Buhse (2004b).

²⁸⁸ XML (the eXtensible Markup Language) is now viewed as the standard way information will be exchanged in environments that do not share common platforms.

highly valuable patents. Currently the European Commission is considering blocking Microsoft's acquisition of such an influential DRM patent holder.

5.6.4 Concluding Remarks

With ODRL and XrML as the two most promising general purpose rights expression languages (others are Intellectual Property Management & Protection (IPMP) by MPEG and eXtensible Media Commerce Language (XMCL) by RealNetworks), there are already a number of emerging standards. A key difference between ODRL and XrML is that ODRL seems more applicable to actual transactions in the media and publishing world, whereas XrML is more abstract and has designs for a broader spectrum of applications. At present there is a race of sorts between the two large scale standardisation initiatives: XrML is implemented in a number of commercially available solutions, including the DRM solutions from Microsoft. ODRL is also in the game, notably with gains in the wireless world, where OMA has adopted it as a rights management language for mobile content. Both XrML and ODRL, although freely available, are using patented technologies.

New standards are emerging, whether developed by an organisation explicitly aiming to create specifications, or by a company in need of a new service creating its own solution to a particular problem. Since the many application areas of DRM (mobile telephony, pay-TV, Internet, etc.) require different solutions, each field seeks to implement a solution as fast as possible, without cooperating with other fields. The result is several incompatible standards on the different transmission platforms. However, in the near future these standards will inevitably start to merge, since consumers expect interoperability among their various devices.

5.7 Conclusion

DRM technologies are becoming more common and more widely used nowadays. Perhaps the first attempt to protect digital data was the protection of computer programmes more than two decades ago. Since then, with the evolution of the Internet, new problems have emerged, and different solutions have been found – usually independent of each other; this is why standards play an important role. Standardisation must be decisive in future DRM systems in order to satisfy one of the basic needs of consumers: interoperability of the different systems.

This is even more important if we look at the different ways content is distributed. Whether on media or over the air, different methods are used for the copy protection of valuable intellectual property. This protection can take place via cryptographic protection of the digitised data, or forensic models, like tagging and watermarking pieces of content. In any case, cryptographic methods and other technical protection measures today have many problems: on one hand, it is very difficult to make absolutely hacker-

proof implementations; on the other hand, content providers do not even intend to achieve 100 percent secure protection.

Two other very important consumer concerns are present in the current dialogue. Firstly, DRM systems must achieve a balance in the protection of both consumers' and the content industry's interests. To this end, more balanced rights expression languages must be created – emerging symmetric RELs are a positive step towards achieving this. Secondly, privacy issues must be handled legitimately, and technical means must support the legislative measures taken to protect consumers' personal data. To attain this, privacy enhancing technologies should be used, or even privacy rights management could be developed.

In conclusion, it could be stated that while the basic technological measures, such as metadata description, content formats, cryptographic protection or privacy enhancing technologies, have not improved greatly as a result of DRM systems, the biggest challenge of the future will be merging the abovementioned technologies into widely accepted standard solution packages in order to be more acceptable to consumers.

6 Business Aspects

6.1 Introduction

“The ultimate solutions to the problem of digital piracy are new business models.”

This statement by the Committee of Economic Development summarizes very well the central role that business models play for the development of a prosperous digital content market.

“The best protection of commercial distribution plans against the forces of digitization – perfect copies, freely distributed—are business plans that recognize these characteristics and employ them to better serve customer needs. [...] The best way to combat piracy is to remove the incentive by providing a better alternative”²⁸⁹

This chapter analyses these “better alternatives”, i.e. business models on the European digital content markets, and evaluates in how far these actually can serve customer needs. In Section 6.2 we first give an overview over possible DRM-based business models and – where available – illustrate these with real life examples. We then look at the costs and benefits of DRM-based business models for consumers (Section 6.3). We analyse what role standards play for increasing the value of DRM-based products for consumers (Section 6.4). However, successful business models for digital content do not necessarily have to rely on DRM systems alone. As we show in Section 6.5, alternative business models exist that enable content providers to monetise digital content without the use of DRM systems.

We conclude that for a high-quality digital content market to prosper in Europe, content providers have to develop attractive business models that focus on consumer demands and expectations. Such business models do not necessarily have to be DRM-based. Combinations of both, traditional and digital business models, DRM-based and not, need to be developed and tested on the market.

6.2 DRM-based Business Models

While content that is displayed freely on the Internet or broadcasted freely over other media has a public good character, DRM systems allow content providers to privatise digital content. It enables them to control the copying of content and to generate revenues from digital content offerings.²⁹⁰

However, DRM technologies not only allow content providers to protect copyrighted content but also – and maybe more importantly – provide them with the ability to develop differentiated business models for paid content.

²⁸⁹ Committee for Economic Development (2002).

²⁹⁰ Buhse (2004 a).

This is to say that copy protection is and should not be the only reason for implementing a DRM system. More important should be the goal to develop business models on the basis of DRM that offer a true added value to customers. A variety of forms to monetise content on the basis of DRM is presented below.

6.2.1 Pay per Download

Pay per download is currently the most common form of DRM-based content offerings. Consumers pay for downloading a track or a movie, and the DRM system attaches particular usage rights to the content object.

A prominent example for this business model is the iTunes music store²⁹¹: Consumers pay 0,99 € per song and 9,99 € per album for the usage right to burn individual songs onto an unlimited number of CDs and playlists on up to seven CDs for personal use, listen to songs on an unlimited number of iPods and play songs on up to five Macintosh computers or Windows PCs.

For consumers the pay per download model regularly implies that usage rights are limited as specified in the licensing terms. These might be in contradiction to their legitimate expectations of personal usage rights. For example, a user might expect to be able to play a song he paid for on various devices he owns. This, however, can be technically restricted by the DRM system.

6.2.2 Pay per Use

In the pay per use model, the usage right is restricted to just one single use of the content. In this case, the content object is often streamed rather than downloaded to the user's device, e.g. over a wireless network or the Internet. The pay per use model is usually much cheaper for a small number of uses than the pay per download model. For example, at the MSN Music Club streamed tracks cost 0,01 £, while downloads cost 0,99 £.

In the pay per use model consumers do not “own”²⁹² the content, but only have the right to access it for immediate consumption. It is yet to be seen if streaming models will be broadly accepted by consumers or if the wish to own content dominates. Some customers might value the owning of content higher than others. This would require different offerings targeted at different groups of customers. One factor that will determine the future success of pay per use models is the availability and pricing structure (flat fees) of high bandwidth connections.

6.2.3 Subscription

When consumers subscribe to a DRM-based content service, they acquire a usage license with clearly defined start and end dates. If the subscription is not renewed, the license expires and the content cannot be accessed further. Various forms of subscriptions are possible, such as full repertoire, thematic

²⁹¹ See <http://www.apple.com/itunes>

²⁹² “Owning” is understood here as having usage rights that do not expire.

subscriptions, artist subscriptions, etc. Subscription models can include either downloading or streaming of content.

For heavy consumers, subscriptions are often cheaper than pay per use or pay per download models. In addition, pricing is more transparent. The MSN Music Club, for example, offers a subscription package where users pay 10 £ per month for 13 £ of credit. They can download up to 17 tracks or listen to 1300 streams, the subscription credit expires after 30 days.

However, usage rights of subscription services can be limited as well. At Napster, for example, subscribers can stream and download as many songs as they want for 9,95 £ per month and copy them to two PCs. If, however, they want to burn a track on CD or to a portable device they have to pay extra per track.²⁹³

6.2.4 Rental

DRM systems also enable the renting of digital content. In rental models, content can be used for a limited time period after purchase or after first use. Such services are often called “...on demand”.

T-online-vision is offering a video-on-demand service where consumers can stream a movie and watch it as often as they want within 24 hours. Similarly, T-Online offers a games-on-demand service, where e.g. the game “Tomb Raider” can be rented for four days at a cost of 5,90 €.²⁹⁴

As rental models are usually based on content streams, the same success factors as for pay per use models apply: Repeated streaming of large content files only makes sense for customers with broadband connections and flat-rate fee contracts. It also requires that the consumer does not wish to own and store the content.

6.2.5 Bundling

Digital content can also be offered in bundles, which contain a number of content objects. For example, the German pay-TV channel Premiere offers various bundles consisting of packages such as “Premiere Film” or “Premiere Sport”.²⁹⁵

Particularly bundling of low-value digital content implies a cost advantage for providers as it reduces billing costs per transaction. For consumers, bundles can lower search and information costs and increase convenience. This is specifically true if bundles can satisfy individual consumer preferences.

6.2.6 Price and Product Differentiation

DRM systems allow content providers to offer alternative market offerings at different prices. This gives the content industry the chance to develop new and innovative products and services according to customer needs that have not been available in the analogue world.

²⁹³ See <http://www.napster.co.uk>

²⁹⁴ See <http://www.t-online-vision.de>

²⁹⁵ See <http://www.premiere.de>

Price and product differentiation is possible in various forms. Windowing, for example, makes sense if consumers' willingness to pay varies across different time spans. In this case, DRM technologies allow providers to price access to a recently released song or movie differently than access to the same piece of content when it is several months old. It also allows a variation of usage rights in time, e.g. with usage restrictions becoming more relaxed, the longer the content has been on the market. Similarly, versioning can be license-based, where consumers can choose different product versions with different usage rights at different prices.

Consumers might profit from the offering of different DRM-based versions if versions are better able to meet their individual demands. A problem that arises, though, is that pricing and licenses can become highly intransparent to the user. So far, content providers have not yet used DRM extensively to offer differentiated products to their clients.

6.2.7 Superdistribution and Viral marketing

Superdistribution is a business model enabled by DRM, which allows users to forward digital content to others. The recipient is limited in the use of the content until he obtains the full license to use it.

The Open Mobile Alliance²⁹⁶ (OMA) has developed a set of standards that support superdistribution through the concept of separate delivery: DRM content and the rights to use the content are transmitted separately. The receiving device may forward the content object to another device. The second device cannot use the content, since it is encrypted. However, the content object contains some metadata, including a URL where the rights to use the content can be acquired.²⁹⁷

The concept of superdistribution has the advantage that it satisfies the obvious demand of consumers to share interesting content and to make recommendations on the basis of legal business models. This concept, however, requires interoperability of content formats and DRM systems – which has not been realized yet (see below).

6.2.8 Preview and Sampling

DRM systems can also be used to enforce special promotional licenses, in order to promote physical or digital goods via digital channels. Customers can be allowed to listen to a song once or twice, but if they try to access the content a third time, they have to pay.

The music download distributor OD2²⁹⁸, for example, supports pre-release promotion: Restricted licences are timed to coincide with release schedules. On the day of release the license ends and customers are automatically redirected to e-retailers where they can buy the physical product.

²⁹⁶ See <http://www.openmobilealliance.org>

²⁹⁷ Buhse (2004 b).

²⁹⁸ See <http://www.od2.com>

6.2.9 Forensic DRM Models

So-called “forensic DRM” models do not intend to restrict the usage for consumers. They rather aim at preventing copyright infringements on a large scale. To prevent this, digital content files are watermarked or fingerprinted so that illegal copies on the Internet can be traced back (see also Chapter 5).

One example is the Light Weight DRM (LWDRM) concept. The aim of this system is not to prevent occasional copying of content, but to prevent large scale abuse. A digital user certificate is attached to content, which can easily trace back the origin of the copied content. In case of illegitimate copying, the originator can be traced back and faces the risk of prosecution.²⁹⁹

Business models that are based on forensic DRM systems can profit from the fact that consumers do not feel restricted in their usage rights. However, for many large content suppliers (e.g. major music labels) forensic DRM models do not offer a sufficient degree of control over the content. Many do not even consider these models as DRM.

From the consumer’s point of view, most forensic DRM models rely on storing user data, which raises privacy issues. Furthermore, identity theft could become a major “black business” and seriously restrict the use of forensic DRM systems. “How can it be ensured that contents owned by someone won’t be stolen when marked as their property and be held responsible for them?”³⁰⁰

6.2.10 Concluding Remarks

Many different business models can be developed on the basis of DRM systems. The above list is surely not complete. However, content providers have not yet made extensive use of all the possibilities. So far DRM systems mainly aim at preventing illegitimate copying by restricting usage rights rather than offering customers a wide variety of differentiated digital content products. But as we have seen in the technical Chapter 5 of this report, no DRM system will be able to offer complete protection from piracy. DRM systems, therefore, have to be seen as a tool to develop innovative products and services that serve consumers’ needs. To date, only simple business models have been realized, and providers only start experimenting with more creative ones that give consumers a strong value proposition.

6.3 Benefits and Costs of DRM Systems for Consumers

While DRM systems allow content providers to monetise their content offerings, they bring along only few benefits for consumers – at least at the current state of the market. But as we have seen in Chapter 3 “Consumer Concerns”, consumers at present are also faced with a variety of disadvan-

²⁹⁹ See <http://www.lwdrm.com>

³⁰⁰ Tóth (2004b).

tages of DRM systems. Therefore, an overview of benefits and costs of DRM systems from the consumers' perspective is presented below.

6.3.1 Benefits

Increased Selection of Valuable Content

One of the most important arguments in favour of DRM systems is that for a wide variety of high-quality content to be made available by creators, the latter need to be compensated for their creative work. Consumers and the society as a whole will profit from flourishing markets for information and creative works. At the same time, DRM allows for new business models, which in turn will result in new and innovative ways for consumers to use content services, e.g. over different devices and networks.

While it is true that content creators and providers need monetary incentives to provide high quality and innovative services, this does not necessarily imply that digital content business models need to rely on DRM systems. As we will show below, there are also alternative business models that allow creators and providers to monetise their content offerings without technically restricting the consumers' usage rights.

Higher Quality of Secure, Legal Content

Another important argument in favour of DRM systems is that legal DRM-based content offerings have a higher quality and are more secure for consumers than illegal offerings. Downloads and encoding of files obtained over a peer-to-peer network can be unreliable, files might be incomplete, sound quality can vary, P2P networks usually do not offer previews or cover art, and the user faces the risk of spoofs or viruses.

However, as history has shown, it is not primarily higher quality that makes a new medium attractive and successful, but rather additional, innovative features. "New media don't succeed because they're like the old media, only better: they succeed because they're worse than the old media at the stuff the old media is good at, and better at the stuff the old media are bad at".³⁰¹

As long as illegal offerings allow customers to use features that are not available in legal offerings, they will continue to use them. Legal business models have to take this into account and try to include features into their offerings that offer added value to consumers. They have to be aware of the fact that they are competing with a wide variety of digital content services without a legal basis.

Flexible Use of Content

Another argument is that consumers will profit from DRM, because it enables them to legally use content very flexibly. This argument relies on the presumption that ultimately users will be able to consume purchased content anywhere, over any network, and on any device. The flexible use of content is possible with DRM technologies that are not tied to a special device

³⁰¹ Doctorow (2004).

but tied to a content object that can be used on various platforms. One example are so-called rights locker architectures where content is not stored on one device but on a network server that can be accessed via various devices (see also Section 5.3.2).³⁰²

However, current DRM solutions are not yet enabling the flexible use of content over various devices and networks. Not least the lack of standards is preventing interoperability of different content types on different devices and platforms. Due to this lack of interoperability, consumers are missing an important value proposition of DRM-based content.

6.3.2 Costs

Usage Restrictions

From a consumer's perspective, the most important disadvantage of a DRM system is that it limits what consumers can do with the content they paid for. DRM systems do not only limit illegal forms of usage, such as large-scale commercial copying, but also forms of usage that consumers have always been accustomed to, such as:

- private copying (most music stores only allow a limited number of private copies),
- using content on various devices that the user owns (certain copy-protected CDs cannot be used on PCs),
- using content at various locations (DVDs bought in European countries cannot be played in the US).

However, currently one can observe that online music providers start to relax their usage restrictions. This trend is probably resulting from the experience that costumer do not accept strong usage limitations as well as from increasing competition among music providers.

Reduced Ease of Use

In addition, DRM systems often diminish the user experience and the ease of use of content products for the consumer. Different, incompatible file formats make using DRM-protected content from different suppliers a difficult task for consumers. Particularly if consumers want to use content on different devices and/or share content with others, DRM in its current form strongly reduces the ease of use – especially when compared to unprotected content files. Many DRM systems also require that a certain client software is installed on the device, on which the content is used. Often, a different client software has to be installed for each supplier; as the different systems are not compatible.

Intransparent Usage Rules

DRM-based content products and services often have various complicated usage terms and conditions attached to them. For consumers, it is usually very difficult to understand, how different DRM systems work and to keep

³⁰² Bechthold (2003).

track of different usage rights provided by different suppliers. On the online music market, for example, usage rights sometimes even differ for different tracks from the same supplier, as the rights depend on the respective license agreements with music labels. Consumers cannot always easily see what they can do with their purchased content. Detailed information on usage rights is often hidden deep in the terms and conditions pages of the supplier. E.g. the terms and conditions of online music provider Napster³⁰³ consist of six pages small print. In addition, it is not always clear, whether online terms and conditions are legally binding.

Privacy Restrictions

DRM systems often involve the collection and processing of personal data to monitor and track the use of content. E.g. at Napster users agree to terms and conditions including “The Client will count the number of times that you play a download, including while you are offline, for royalty accounting and analysis purposes”. To consumers it is usually difficult to monitor, whether their private data is used according to legal provisions and whether their privacy rights are violated (see also Section 3.3, Section 4.3.4, Section 5.5 or Annex I).

Price

Last but not least, DRM systems are expensive, and ultimately consumers will have to bear these costs. DRM costs include:

- Technology costs for developing, building, deploying and maintaining a DRM infrastructure and for the integration of all parties involved,
- Licensing costs of DRM technology for content providers, payment service providers, device manufacturers, etc.
- According to Fetscherin and Schmid (2003), companies from the music industry spend on average 245.000 USD on the implementation of a DRM system.³⁰⁴

6.3.3 Concluding Remarks

The above list of costs and benefits of DRM systems for consumers shows that currently costs seem to outweigh the benefits of DRM from a consumer point of view. Many arguments in favour of DRM do either not bear a closer examination or need time and a further development until they become valid to consumers.

Providers that base their business models on DRM systems have to understand that DRM systems impose heavy costs on consumers. These costs come on top of the price consumers have to pay for the use of DRM-protected content. This can lead to a reduction in demand for digital content products. A balance between the interest of copyright owners to control their work and the legitimate interests of consumers therefore needs to be

³⁰³ See <http://www.napster.co.uk>

³⁰⁴ These numbers have only indicative character, since the number of observations is very low.

found as a prerequisite for a healthy development of a paid content market. Only if DRM-protected content products and services can offer real added value, will consumers accept them and be willing to pay for them. And customer acceptance and willingness to pay are some of the most important prerequisites for profitable businesses.

6.4 The Role of Standards for Consumers

Many of the above mentioned costs for consumers could be reduced and benefits could be realized if common DRM standards would exist. However, no common DRM-standards, neither open nor proprietary, have emerged yet. While some systems are widely used for certain media types, e.g. Microsoft's Windows Media System (WMS) with DRM for Internet-based video and audio content, Adobe's DRM solution for text content, or the OMA standards for mobile content, no single technology has emerged as the dominant DRM system to date. Similarly, no common standards for an encoding format such as WMA, AAC, AAC+ or MP3 have been accepted yet. A major reason for this lack of common DRM standards is that the requirements for a DRM system vary strongly across different distribution channels, end devices and content products. Accordingly, the various stakeholders involved in the standardisation process have differing views on DRM requirements.³⁰⁵

6.4.1 Benefits of Standards for Consumers

While standards have a number of advantages and disadvantages from the point of view of providers, from a consumer's perspective the following advantages apply:

Positive End-User Experience

Standards strongly contribute to a positive end-user experience by allowing easy compatibility of content that has been acquired from various providers. Interoperability also enhances the ease of use for consumers, since content from various sources can easily be used on different devices and over different networks. In addition, standards form the basis for easy content sharing between users.

Higher Quality and Reliability

Particularly in new markets, consumers need to be sure that the quality of a service can be counted on and that content or devices purchased today will be usable in the future. If customers are not sure, whether a new technology will be able to survive on the market in the long term, demand will be limited. Widely accepted standards that are maintained and continuously updated, give customers the secure environment that is needed for growing demand.

³⁰⁵ Bremer; Buhse (2003).

Faster Dissemination

Widely used standards also allow for a faster dissemination of new digital content services, when positive network effects exist. The more consumers are using a standardised DRM system and are sharing content based on this system, the faster will adoption spread among content and technology providers and consumers, increasing the value of the services offered.

Lower Prices

Standards that are widely used enable providers to exploit economies of scale, i.e. decrease costs per unit due to larger quantities produced. Economies of scale do not only make content distribution a viable and profitable business but also result in lower prices for consumers.³⁰⁶ This also applies for technology providers and device manufacturers, which can offer their products to consumers at lower prices.

6.4.2 Open versus Proprietary Standards

The above stated benefits of standards for consumers apply to open standards as well as to de-facto proprietary standards – sometimes to different degrees, though.

Open Standards

Open standards are developed by a large number of market players and are used to jointly grow markets. They limit the extent to which a dominant player can control new markets and prices. With open standards, the number of technology providers tends to be higher, which leads to lower costs also for components and related technologies.

Proprietary Standards

Proprietary standards are created by market force through one or a few stakeholders trying to establish a proprietary product as de-facto standard. The dominant provider is able to gain a considerable market share based on superior quality of his technology and/or a previous dominant position that allows him to “force” others in the value chain to adopt his proprietary technology. Incumbents might be able to hinder competition, which can result in higher prices and limited choice for consumers.

Nevertheless, proprietary de-facto standards can fulfil the beneficial duties of a standard from the consumer’s point of view as well. This is to say, a proprietary standard might be better than no standard from a consumer’s perspective. It is important, though, that the technology allows for a certain degree of compatibility and interoperability with other technologies and is licensed to other providers in the value chain, so that they can develop further technologies and services on this basis.

³⁰⁶ Cheng; Rambhia (2003)

Concluding Remarks

The development of standards to enable interoperability and compatibility is important for DRM systems to become attractive to consumers. However, the lack of standards is a normal – and maybe a necessary – feature of immature markets. The development of standards – de-facto or proprietary – is a process that takes time. This time is needed to test what users accept, like and dislike and to leave room for competition between different emerging technologies and services.

Ultimately, market forces will either lead to a dominance of the superior technologies that best serve customer needs or market players will have to start joint standardisation efforts to meet the expectations of their customers. The development of standards should, accordingly, primarily be a market-driven process that does not require immediate policy intervention. Standardisation processes that are pushed too fast might suppress innovative ideas from being tested on the market.

6.5 Alternative Business Models

According to the content industries, DRM systems are a precondition for the further development of a functioning paid content market. “DRMs are key to the fight against piracy and the development of new online services and new formats.”³⁰⁷ While it is true that alternative business models cannot offer a protection against large scale commercial piracy, they can very well form the basis for the development of new, innovative digital content services. At the same time, they can help to limit illegitimate copying of private consumers, by offering attractive alternatives.

As we will show below, there exist various alternative possibilities that enable the monetising of content and are not based on the use of DRM technologies. While the below listed business models are neither new nor revolutionary, the list intends to illustrate that business models for digital content do not necessarily have to restrict consumers technically in their usage of digital content. Other business models are possible, either as stand-alone models or as additional revenue sources in combination with DRM-based offerings.

6.5.1 Open Licensing Schemes

Usage licenses for digital content do not necessarily need to be enforced by DRM technologies. Access can, for example, also be restricted by simple password authentication of the user. Password-based subscriptions, i.e. subscriptions that are not enforced by a DRM system, are currently used for several digital information services. The Economist, for example, offers yearly and monthly subscriptions as well as per view modes for its website content. After the user has paid for its subscription, he gets a password to

³⁰⁷ HLG DRM (2004).

access the content and enters an agreement not to infringe copyright and not to share the password.³⁰⁸

Usage licenses that are not enforced by a DRM system require a certain trust relationship between provider and customer. They are probably only applicable to certain types of content. For providers, the losses from “content leakage” have to be smaller than costs for implementing a DRM system and losses from losing customers due to annoying DRM systems. These prerequisites might not be given for high-value mass market content. For other types of content, such as specialist informational services and content that loses topicality quickly, password subscriptions can be a sufficient protection against copyright infringements.

6.5.2 Sponsorship and Advertising

DRM-based business models aim at privatising digital content, the private good character of content is enforced by a DRM technology. In other business models, content remains a public good, as it is the case at publicly broadcasted media such as TV, radio, or websites without access restrictions. When the private good character of digital content cannot or is not intended to be enforced, revenues have to come from other sources.³⁰⁹ Most traditional media derive at least part of their revenues from advertising or sponsorship. Similar possibilities exist to finance at least part of digital content offerings through advertising and sponsorship.

For example, digital media consultancy Unanimis Consulting has announced a commercial video channel on UK mobile operator O2’s Active portal. Content will be viewable for free, is funded by advertising and will thus be based on the same business model as commercial television.³¹⁰

The most common form of Internet advertisement are banners, increasingly coupled with prospect fees, where advertisement revenues depend on the number of customers that have been redirected to an advertised page (pay per click), or on the number of orders that have resulted from the advertisement (pay per order). Advertisement can also be tied to digital content by being embedded in the content file, e.g. audio spots in MP3 files or DVDs (“Digital Payloads”).³¹¹ Sponsorship is another possibility to obtain revenues from digital content. In 2000, for example, Microsoft sponsored the live streaming of a Madonna concert to promote the Microsoft Media Player.

For consumers, advertising and less so sponsorship can be somewhat annoying. But it is the “price” they have to pay for being able to access content without payment. In times of decreasing advertising budgets, revenues might not be enough to support a broad variety of high quality content. However, they can always form an additional revenue stream.

³⁰⁸ See <http://www.economist.com>

³⁰⁹ Buhse (2003).

³¹⁰ Phillips (2004).

³¹¹ However, a DRM-like software system might be needed to prevent consumers from detaching ads from the content.

6.5.3 Marketing and Promotion

New media can also be used as marketing channel for promotion purposes. In this case, content is provided for free (or at a price below market) to promote a physical product or a new service. The positive network effects of new media can be used very efficiently for either sampling to promote the content itself or for promoting complementary offerings.

6.5.4 Content Promotion

The Internet is frequently used by new or less known artists to become better known. Special platforms for free music downloads and promotion of new pieces of work exist. One example is Besonic³¹², where artists can upload music for free download. Consumers can search for music or publish playlists, scouts recommend new songs, and new artists can use various tools to promote their work. Similarly, new movie tracks or mobile content services can be efficiently promoted over new media channels. As we have seen above, for-free models can be combined with DRM-based models, e.g. within the concept of superdistribution.

6.5.5 Promotion of Complementary Products and Services

In addition to promoting the content itself, digital content services are also used to promote other products and services, such as:

- Complementary services, e.g. mobile content services to promote mobile phone connections.
- Complementary hardware, e.g. the iTunes music store to promote the iPod.
- Other complementary products, e.g. concert tickets, merchandising etc.

For consumers, the usage of new media for promotion purposes can be regarded as very positive. It allows them to access and use a broad variety of new digital content and to base further purchase decisions on the samples provided. However, in this case, new media are not the distribution channel but only the marketing channel. They do not provide direct revenues to the content creators and providers. This limits not only the amount of content that is available, but also the creativity from the side of providers to develop new business and usage models. Naturally, promotion and marketing will only form an addition to other business models.

6.5.6 Syndication

Syndicating content to various channels is a concept that has been significantly facilitated by the Internet. Content creators are commonly selling online content to other providers, such as portals, ISPs, telcos etc. ISPs or mobile operators often make the content available to their customers for free (or at a low service fee), using it as an added value to promote their primary services.

³¹² See <http://www.besonic.com>

6.5.7 Levies

Content creators and providers can also be remunerated for their work by imposing levies on devices and storage media, which are collected by collecting societies. Today, levies are primarily meant as a compensation for copyright exemptions like private copying, not for compensation of copies distributed over digital networks (see also Section 4.5). Accordingly, levies are only used to support other business models, not as the primary source of income.

At present, 12 countries in Europe have imposed levies in various forms and at various levels. Levies can be imposed on storage media, recording equipment and copying devices, IT equipment (PCs, printers, hard disks etc.) and on bandwidth.

It is currently discussed in many European countries, whether levies should be increased and additional fees should be imposed on digital devices like MP3-players, to compensate rightsholders for their losses from copied content.³¹³

A frequently discussed problem is that DRM systems and copyright levies could overlap, forcing consumers to pay double, e.g. for a song they legally acquired in an online music store and by paying a levy on the playing device.³¹⁴ As a result, it is presumed, that the coexistence of levies and DRM systems should be avoided in the long term.

However, first of all it is questionable if DRM systems will be so widely used in the foreseeable future that the largest part of digital content will be distributed on the basis of DRM systems. Second, even if DRM are widely applied, there will continue to be areas that cannot – and often should not – be governed by DRM systems (e.g. the transferring of content from a purchased CD to a portable music player). Such areas can continue to be efficiently covered by levies.

It has to be prevented, though, that consumers have to pay ever higher levies to compensate rights holders not only for legitimate private copying but also for losses from wide-scale illegal copying of content.³¹⁵ This is not and should not be the intention of levies.

6.5.8 Concluding Remarks

Content revenue models do not necessarily have to enforce the private good character of digital content by technically restricting the usage rights of consumers. There is not one alternative business model. Rather many alternative revenue sources exist for monetising content. While some are only applicable for certain market segments, others can as well be used as stand-alone business models.

³¹³ E.g. in Germany the ministry of justice is currently discussing to impose additional levies on printers, PCs and MP3 players.

³¹⁴ Hugenholtz; Guibault; Geffen (2003).

³¹⁵ Schenker (2004).

With some creativity from the side of the providers, other new revenue models might be developed that can fulfil the demand and expectations of consumers and take into account new forms of using digital content. Combinations of traditional and digital business models, DRM-based and not, are possible and need to be tested on the market.

This is to say that DRM systems are not an absolute necessity for a healthy and innovative digital content market. We could as well imagine a marketplace without DRM, where, for example, digital content is sold without the application of a draconic DRM system but with copy detection enforcement. Losses from private copying would be compensated through levy payments, additional revenue streams would come from advertising and new media channels would be used for promotional purposes.

6.6 Conclusion and Outlook

DRM systems offer content providers the ability to develop a wide variety of new business models. However, if at all, providers are only just starting to experiment with promising new DRM-based business models such as superdistribution or product differentiation. Instead of using DRM primarily to lock up content, providers have to apply DRM systems increasingly to unlock alternative market offerings at different prices.³¹⁶

In this regard it will be essential how DRM solutions will respect the rights and particularly the expectations of consumers, who are the ultimate arbiters of DRM technology. Since DRM systems currently imply a variety of costs for consumers, DRM-based content offerings need to have a strong value-proposition for consumers, e.g. on the basis of new and innovative features. This is particularly true because legal content offerings have to compete with a large variety of illegal offerings. Neglecting consumer acceptance of DRM systems and consumers' expectations of digital content services could have serious negative implications on the European content industry.

While interoperability and compatibility are important prerequisites for consumer acceptance of DRM, the development of standards – open or proprietary – is a time-consuming process. Time is needed, though, to allow for competition between rivaling technologies and services. Ultimately, market-forces will either force providers to react to the users' demand for interoperability and compatibility by developing joint open standards or lead to a de-facto proprietary standard of a superior technology.

Industry often suggests that for the content market to flourish, the widespread application of DRM systems is mandatory. We have shown that successful content offerings do not have to rely on DRM alone. There are alternative business models that can monetise content offerings without technically restricting the usage rights of consumers. Content providers have to make use of the various possibilities and start to develop creative new business models. They have to understand how digitisation changes the way

³¹⁶ Gooch (2003).

content is consumed, and they have to develop attractive new services for consumers – whether built on DRM systems or not.

7 Summary and Overall Conclusions

The notion of the ‘consumer acceptability of DRM’ is still new. In the beginning, representatives of the digital content industry, legislators, policymakers and academics discussed DRM as a long-awaited solution to many of the troublesome problems caused by the Internet. One of these problems was the protection and enforcement of intellectual property rights in a savage, virtual world. Legislators were quick to embrace this new tool and give it a place in the legal order. Technology developers have designed a broad variety of different DRM solutions for different means of content distribution, and the digital content industry has invested a great deal of effort in implementing these technologies and imposing them on the market.

The sector then experienced an extension of the rights of rights-holders from single to triple protection (copyright protection & technological protection & legal protection of the technological protection), ever newer, more sophisticated and securer means to encapsulate digital content and control all kinds of usage, and the increasing popularity of the ‘dark net’. Soon, the digital industry realised that in its effort to force DRM on the market it had underestimated the ‘other side’ – the consumer. The problem of piracy was probably more present than ever, and instead of buying the new electronically protected products and services, a new resistance emerged among consumers: the non-acceptance of DRM.

7.1 Content Industry versus Consumers

The development gradually escalated into a fairly bizarre situation: customers turned into ‘pirates’, and the representatives of the digital content industry became their enemies. A blog posted this summer in response to EMI’s launch of the new Beastie Boys CD with DRM protection gives an impression of how many consumers feel:

“The Beastie Boy’s new CD, *To the Five Boroughs*, has DRM on it that prevents you from ripping it or making a copy for your car. I got the MP3 last week - it’s a great album - and was going to buy the CD while I’m in the US this week, but now I think I’ll just erase the MP3s and not bother. If the Beasties wanna treat me like a crook, I don’t want to be their customer.

Note that the only thing that this DRM is doing here is pissing off the honest fans who want open CDs; the DRM on the CD didn’t stop my source from making me a set of MP3s. In other words, if you plan on listening to the new disc on your iPod or laptop, you’re better off downloading a copy made by a cracker and posted on Kazaa - if you buy it in a shop you’re going to have to go through the lawbreaking rigmarole of breaking the DRM yourself.

I always hear record execs whining that they ‘can’t compete with free’ - but maybe the real competitive disadvantage is that they’re selling a product that’s less useful than the one being served up on P2P networks.”³¹⁷

³¹⁷ Posted on <http://www.boingboing.net> on 11 June 2004.

The Beastie Boys – of all bands! Ironically, the Beastie Boys themselves had apparently little influence on the DRM implementation. According to the group, they would have preferred not to have the copy protection, but were not allowed to go against EMI policy.³¹⁸

7.2 What DRM Is Not About

It is high time to remember what DRM is not about: it is not and cannot be about content protection at any price. The technical chapter (Chapter 5) raised considerable doubts about whether it will ever be possible to design uncrackable DRM systems, and whether DRM systems have a future as the sole protectors of content. As the case of software protection demonstrated, it might not always be desirable to implement strong content protection. Most importantly, increased security usually comes at the expense of the ease of use, the flexibility and the mobility of digital content. There is a trade-off between the benefits of DRM and the costs for their implementers, but also for consumers.

DRM solutions are not and should not be about perfecting usage control *ad infinitum*. DRM systems make it possible to exercise far-reaching control over forms of activities that, for technical reasons, could not be controlled before. Examples are the control over access to digital contents, private copying, making excerpts, the portability of digital content, as well as the possibility to identify individual consumers and monitor their behaviour in great detail. In practice, consumers are confronted with increased electronic control over how they use and experience digital content: uses that formerly were possible and often also perfectly legitimate are no longer possible. The question is: what could consumers be offered to make the loss of usability acceptable to them? Consumers might be willing to accept technological usage restrictions if they were accompanied by cheaper prices – after all, a song that cannot be copied is cheaper than a song that can be copied ten or unlimited times – or enhanced features. But so far, this choice is not or only seldom on offer. Copy-protected CDs with perhaps only limited portability and usability are still offered at the same or even a higher price than non-electronically protected CDs; after all, DRM solutions are expensive and ultimately it is consumers who are expected to bear the costs.

In other words, often DRM implementers do not so much seek to meet consumer expectations as expect consumers to follow DRM developments. At first sight, this may sound rather surprising: to the extent that DRM development is an industry-driven process, one might expect consumer expectations and concerns to take a more prominent role in the design and implementation of DRM systems. And to some extent, the process of rethinking has already begun. Ultimately, the success of new, DRM-based business models depends on acceptability and consumer acceptance. Forcing a technology on the market carries the risk that consumers will embrace alternatives offering them better value, such as unprotected content, ser-

³¹⁸ See <http://www.beastieboys.com/bbs/showthread.php?t=20219>

vices that offer them better conditions, or even peer-to-peer file sharing. This is why it is in the utmost interest of the digital content industry to learn more about choice and behaviour with respect to digital content, about consumers' attitudes towards new usage and consumption patterns, and their willingness to accept and pay for them. Two possible explanations for the fact that DRM lack consumer responsiveness are: a) a critical lack of knowledge about how consumers perceive DRM and what new content distribution models and business models consumers would regard as practical, fair and balanced, and b) a no less critical weakness in the legal standing of consumers and advocates of consumer interests.

7.3 Informed Dialogue

INDICARE's task is to increase the level of awareness of consumers' concerns when they are confronted with DRM. Learning more about the consumer side is vital for all stakeholders involved, namely DRM users, policymakers, legislators, courts and interest groups. To stimulate this process, INDICARE is undertaking several activities, including the INDICARE website as a platform for an informed dialogue, workshops, guides, consumer surveys and this state-of-the-art report. The purpose of this report is to identify the state of the discussion concerning consumer expectations and concerns, and to analyse the extent to which they play a role in legal, market and technological developments. The intention is also to identify areas requiring more attention and where INDICARE can contribute to improve the situation.

Earlier chapters examined the issue of DRM and consumer acceptability from a social, legal, technical and economic perspective. The aim of this last chapter is to summarise the main findings and to draw some preliminary conclusions.

7.4 The "Consumer"

Although this report speaks of the 'consumer', we pointed out that it should be kept in mind that the 'consumer' is not one coherent group of individuals with similar characteristics and preferences.³¹⁹ When talking about 'consumers', we should distinguish between a variety of different groups of consumers with their own particularities. To make matters even more complicated, the notion of 'consumer' can be used differently among the different disciplines or even within one discipline, as was demonstrated in the legal chapter. In general, this report made a selective choice and distinguished between consumers as end-users of services with the main goal being consumption, end-users with disabilities, and academic institutions. Li-

³¹⁹ In the following, the text talks about 'consumers' if consumers are meant in general, and refers to particular consumer categories if particularities, preferences, etc. of this specific group are discussed.

libraries were included, too, as the representatives of important consumer interests. Each of these groups uses digital content differently and for different purposes. And each of these groups has distinct expectations and concerns regarding DRM.

For example, while end-users in general are interested in getting as much functionality as possible from digital content, disabled end-users also have more specialised requirements regarding the accessibility and user-friendliness of digital content and content-protection schemes. Unlike individual end-users, libraries act as intermediaries between content distributors and consumers. The concerns and expectations of libraries centre on aspects related to their activity of making digital content accessible to end-users, and to some extent libraries can be seen as representatives of consumers.

At the same time, libraries can also be users of DRM systems, as DRM could assist libraries in the management, clearance and delivery of digital content. But in so doing, their non-profit-oriented motives (preservation, public interest objectives) differ from the motives of the commercial content industry.

Academic and higher education institutions are, on the one hand, consumers of digital content and as such are interested in ease of use and accessibility. On the other hand, they are also producers of content. DRM could support academics, as producers of content, to make available their research and to prevent misuse and unauthorised changes. At the same time, however, DRM technologies would have to respect the special academic culture of honesty, informing the public domain and sharing information.

The various consumer groups differ not only in the way they use digital content and are affected by or profit from DRM, but also in the form in and intensity with which they are represented in discussions, preparatory legislative proceedings, workshops and think-tanks. To begin with, consumer concerns can be presented by a range of different groups, including consumers themselves (e.g. in blogs or discussion forums), academics, consumer organisations and, last but not least, representatives of the digital industry. Naturally, the focus and the perspective of the various groups differ.

There are also differences in their level of expertise and engagement. For example, as the overview in Chapter 3 ('Consumer Concerns') demonstrated, libraries and disabled end-users' representatives have been particularly active in national and international law-making procedures over the last few years. They are prominent not only because of their level of expertise and experience, but also because of their engagement. One example is the formation of the DAISY consortium, which developed a DRM solution suitable for persons who are blind and/or print disabled.

Conversely, many consumer organisations that represent the individual consumer are organised as general purpose organisations that deal with a whole range of difficult topics, DRM being only one of many. The consequence is that such institutions often must cope with less specialised expertise and with fewer resources than more specialised representative groups. That this does not necessarily prevent institutions from actively representing consumer interests is evidenced by the Electronic Frontier Foundation, the Consumers Project on Technology and the European Consumer Organi-

sation (BEUC), to name just three. These organisations have made the representation of consumer interests in national, regional and international law-making and policymaking one of their priorities. There are, however, also indications that certain consumer groups – such as libraries and scientific institutions – are more successful than others at making a public interest claim heard. It is unclear whether the reason for this is their level of expertise and involvement, or whether they represent arguments that fit well within the political discussion at that time. However, in general the level of political involvement and the level of active representation of consumer groups in national and international law-making and policymaking are still very modest.

The low level of involvement of consumer representatives, and the lack of research and experience in general, make it difficult to analyse consumer concerns and expectations with respect to DRM. This is also an observation of this report. So far, only a few research studies have dealt with the consumer perspective of DRM and have looked at what customers expect from DRM or are willing to accept. In this context, the Mulligan/Burnstein study and the Digital Media Project should be mentioned (see also Section 3.2).

7.5 Consumer Concerns

The evaluation of recent statements by representatives of the different consumer groups (Chapter 3) gave an initial indication of some major consumer concerns and expectations. A rough distinction can be made between concerns related to the balance in copyright law and those related to matters that are not specifically related to copyright law.

The first category comprises concerns regarding whether the use of technological measures will distort the copyright balance between exclusive exploitation rights and copyright limitations for private use, research purposes, consumers with disabilities, educational uses, etc. One major controversy in this discussion is the delineation between public and private rule-making, namely the extent to which technological measures must respect existing limitations in copyright law, which are designed to promote freedom of expression, science, education, etc. Technological measures enable controllers to make their own, private rules ('code as code'). In so doing, the controllers of technological measures can overrule electronically not only their own country's legislation, but also the legislation of other countries that are designed to safeguard freedom of expression, public interests and cultural particularities.

The second category comprises concerns about how DRM solutions are used and what the effect will be on consumer rights and protected interests in general. The more DRM solutions move from copyright protection in the narrow sense to management of digital contents in the broader sense, the more likely it is that DRM will touch upon other, non-copyright-law-related interests of consumers. One example is privacy issues, namely that DRM systems are used to collect personal and/or sensitive data on user behaviour

and preferences, and the extent to which this complies with privacy laws. Interoperability, or rather the lack thereof, is another concern, and this issue will possibly be addressed in telecommunications law. Then there is the issue of consumer protection and contract law, and the applicability of the latter to such issues as transparency, validity and fairness of contractual usage conditions.

A category of consumer concerns that has received little attention so far is the impact of DRM on how consumers are accustomed to using or expect to be able to use digital content. This category is on the borderline between legally defined forms of usage (e.g. copying for personal purposes) and forms of usage that are not subject to any rights or limitations but concern the customary features of, for example, a CD. Examples include the ability to play a CD on different devices, for example a CD player, a car audio system or a computer (consumptive use). From the perspective of consumers, digitisation adds new possibilities of usage, for example, the improved quality of digital copies or the possibility to transform digital music into MP3 files. It should be noted that the content industry itself stimulated this ‘digital optimism’, for example by advertising CD quality as superior and by marketing MP3 players. Consumers now expect certain customary features of digital products. Consumers become concerned when they experience that DRM, and the contractual conditions they enforce, restrict these forms of usage.

User-friendliness also belongs in this category. Different user groups have different requirements regarding ease of use, understandability and functionality. For example, a librarian who wants to perform a quick check before ordering a particular book will have different ideas about user-friendliness than somebody who just wants to listen to music; a person who cannot read will have an interest that DRM systems do not disable programmes that can translate written words into speech; and a scientist might want a DRM to permit the sharing of digital content or to protect a document’s integrity.

More generally, different groups have different, often very specific concerns: libraries are concerned that DRM systems could be used to prevent the archiving of material; representatives of disabled consumers fear the exclusion of people with disabilities, either because DRM-controlled services are not user-friendly or because they do not respect the specific copyright limitations that protect the interests of disabled people; and scientific and educational institutions are concerned that DRM use could result in blocking access to content and preventing the sharing of scientific expertise and educational material.

There follows a discussion of the major findings and conclusions related to four of the major consumer concerns from a social, legal, technical and economic perspective, namely fair conditions of use of/access to digital content, privacy, interoperability and transparency.

7.5.1 Fair Conditions of Use and Access to Digital Content

Consumer expectations regarding access to/use of digital content can be influenced by law or by custom, or by a combination of both. As mentioned in

Chapter 3, Mulligan, Han and Burstein distinguish between ‘personal use rights’ and ‘personal use expectations’ – although, as shown in the legal chapter (Chapter 4), the notion of ‘rights’ can be misleading in this context as it seems to indicate a legal standing consumers do not have under copyright law. Mulligan, Han and Burstein make a helpful distinction into forms of use that relate to 1) the portability of content, 2) the ability to excerpt and 3) the relationship between consumer and content provider (privacy protection, transparency, complexity of information transaction). The advantage of this distinction is that it is oriented towards what consumers do or expect to be able to do with digital content; it also makes clear that consumer expectations regarding access to/the use of content often are related to the usability or functionality of digital products and services (e.g. a CD or DVD), and are not necessarily a reflection of copyright law.

The distinction also shows that what the law states this functionality should be (if the law states anything at all, that is) and what consumers expect, can be two very different things. Concerns expressed by consumer representatives about the portability of content include such aspects as time shift, transformation to MP3, sharing and lending, and interoperability.

The second category is concerned with, *inter alia*, the creative use of digital works by, for example, sampling, excerpting or otherwise modifying the content. From the perspective of information policy, as well as from that of consumers, these activities are principally desirable and partly even legally permitted (e.g. copyright limitations). Concerns have been expressed that the use of DRM systems can prevent these sorts of uses.

Regarding the third category – namely the relationship between consumer and content provider – the concerns mentioned ranged from the fairness, transparency and adequacy of contractual conditions (including pricing), via the consistency of basic user features (also among different providers) and user-friendliness (also *vis-à-vis* disabled users), to security concerns related to consumer privacy or the security of their hardware.

7.5.2 Costs and Benefits

Arguably, DRM can also benefit consumer use of/access to digital content. This can be particularly true for those end-users that also act as the implementers of DRM systems. For example, libraries appear to see DRM also as a potential tool to manage, clear and deliver digital content. For disabled consumers, the proliferation of DRM-supported e-commerce could have additional advantages, allowing, for example, people with walking difficulties to choose from a range of e-books. And academic and educational institutions have already indicated that DRM solutions might be able to facilitate new scholarly publishing models (including fee-based and non-fee-based models), prevent the misuse of resources and their integrity, and – and this might come as a surprise to some – create new possibilities for sharing contents.

More generally, the use of DRM solutions could promote the availability of a wide range of alternative business and pricing models and more choice. The business chapter (Chapter 6) provided an overview of different business

models that implement DRM solutions, including pay-per-content services (e.g. iTunes), pay-per-use models (e.g. the MSN Music Club), subscription services (e.g. Napster, pay-TV) and rental services (e.g. video-on-demand services). Another important aspect is service and price differentiation (as offered by e.g. iTunes). Services could allow consumers to choose between being able to fully benefit from all possible uses of content and, at a lower price, being able to copy a digital content only twice or being able to play it only on two devices instead of on all devices. Bundling is another example, as in the case of pay-TV platforms. The result could be that access to single channels in the bundle is relatively cheaper and that consumers can be offered more convenience. Other examples mentioned were superdistribution, sampling and forensic DRM models, which concentrate on monitoring rather than restricting uses.

Whether or not DRM systems are absolutely necessary to realise these business models is another question. This is to say, the commodification and commercialisation of digital content does not necessarily require technical solutions to control access to and the uses of digital content. New technical distribution methods could make the use of DRM systems superfluous. But also such legal solutions as contractual solutions and Creative Commons should be discussed as possible alternatives. In other words, in a functioning, competitive market, DRM users will require very good arguments to convince consumers that DRM-protected content is preferable to non-protected content. One argument could be added value and diversification; the balance and fairness of DRM could be another.

From an economic perspective, there is clearly a need to weight the disadvantages – or ‘costs’ (e.g. usage restrictions, reduced ease of use, lack of transparency, privacy restrictions, higher prices) – and benefits of DRM, also for consumers. Consumer acceptance of DRM significantly depends on whether there is a balance between costs and benefits. The popularity of P2P networks shows that at least some consumers are prepared to reject DRM-based products that they feel restrict them unfairly and turn to alternative sources. More surprising is that the content industry is still showing little interest in identifying which forms of DRM use would be acceptable from the consumer perspective. As Chapter 6 concluded, experimentation with more sophisticated, consumer-oriented business models is still in its infancy.

7.5.3 What the Law Says (and Does Not Say) about Fair DRM Use

A closer analysis of the present relationship between DRM and copyright law limitations reveals that private electronic rule-making sometimes competes with public rule-making. Rightsholders can override legitimate limitations meant to protect consumers’ interests in the use of digital content. They can do so in the form of contracts (DRM technologies are often accompanied by contracts that lay down the conditions of access/use) or in the form of factual, electronic control. Examples are copy-protection technologies that prevent private copying or the copying of works in the public domain; encryption that prevents access to texts for the purpose of parody or criticism; and the electronic control of consumptive use. Control over

consumer behaviour is shifting into the hands of private parties, and so far there are no (or at best, only a few) explicit rules that outline the autonomy of the controllers of DRM systems to shape new rules and the need to respect formally codified choices representing the public interest. For the time being, rightsholders benefit from a generous interpretation of their contractual freedoms. Experts correctly warned about possible negative consequences of such a policy.

The situation for consumers is made more difficult by the lack of transparency: the lack of information about the fact that DRM systems are used, what conditions they enforce and who uses the DRM (often, it is not the artists who use DRM systems (e.g. the Beastie Boys), but the label, the production company (e.g. EMI) or the distributor (e.g. iTunes)). The situation is also made difficult by the structure of copyright law itself. Recent court decisions have confirmed that copyright limitations, such as personal copying, are drafted as privileges not as rights. For consumers this means there is no 'right to private copying' that they could enforce before the courts, not even if national copyright laws were to grant such a limitation. Nor do the anti-circumvention rules in the EC Copyright Directive shed light on this issue.

Moreover, copyright-law limitations reflect the kinds of uses the legislator considers desirable from an information policy perspective: in certain situations it is not desirable that the exercise of exclusive rights hinders or discourage certain activities, such as the use of works for educational purposes or media criticism. Limitations in copyright law do not address the whole range of different uses to which consumers can put/are used to putting the content. For example, copyright law does not deal with consumptive uses, such as listening to a CD and the choice of devices on which to play it. In other words, copyright limitations do not necessarily reflect how consumers expect to be able to use digital content.

This is why the legal chapter (Chapter 4) paid close attention to consumer protection law. Consumer protection law could offer some help as it protects the legitimate expectations of consumers when buying a product, such as a CD. A consumer may expect a product to have certain substantial characteristics that either are contractually agreed upon or are in conformity with what can be customarily expected from a product. It is interesting to note that consumer protection law has already been successfully invoked in court cases in France and Belgium. There, courts decided that the ability to play a CD on different devices (computer, car audio system, etc.) is such a legitimate expectation. The consequence is that where the distributor of the CD fails to indicate that the DRM might prevent the CD from playing on, for example, a car stereo, consumers have certain rights, namely the right to return the CD and obtain a refund because, for example, the CD is considered defective. Where distributors fail to warn consumers that a product does not meet the customary conditions, they risk (and this has already occurred) courts qualifying their behaviour as misleading. Possible sanctions may include transparency obligations, fines, etc. On the other hand, some court decisions have also stated that private copying is not a legitimate expectation in the sense of consumer protection law. This indicates that also the protec-

tion under general consumer protection law, and its relationship to copyright law, is still far from clear.

Applying consumer protection law to commercial dealings with digital content seems a logical consequence of the trend towards the commodification of information. For a long time, information was perceived primarily as a cultural and democratic asset rather than as a commodity. The consequence is that the laws dealing with information (i.e. copyright law) are not designed with a commercial relationship between rightsholder and consumer in mind. In practice, however, this is what DRM use is all about: establishing a commercial, individualised relationship with consumers. Having said that, the example of consumer protection law also indicates that the effective protection of consumer expectations in an increasingly interactive, individualised environment demands bidirectional solutions.

Bidirectional legal solutions would not only grant rights to and impose obligations on rightsholders (as copyright law does), but also give consumers a legal standing in the form of established rights and procedural participation. The purpose of consumer protection law is to improve the standing of consumers in an individual consumer-service provider relationship. Consumer protection law might thus be a means to counterbalance the lack of equal negotiation power between consumers and DRM users before, at and after the moment of negotiation.

For the time being, there is only limited experience with the application of consumer protection law in DRM cases. Likewise, there is still limited experience with what consumers actually can and should be able to expect from digital content, and with how to evaluate those expectations from the economic, the social and the legal point of view. Where should the line be drawn between the protection-worthy expectations of consumers and the economic freedoms of service providers? Does consumer protection law leave room for considerations of wider public policy interests such as the promotion of creativity, access to and use of creative resources, and the ability to benefit from copyright limitations? Unlike copyright law, consumer protection law deals with 'products' and 'services', irrespective of their cultural and democratic value. Accordingly, consumer protection law is designed to protect consumers' expectations regarding the condition of a product. It is not specifically designed to protect the particular cultural, democratic and social value that information, and the use of such, has for our society.

Another question is how much is it and to what extent should it be in the hands of the digital industry to shape consumers' expectations? Legitimate expectations regarding the condition of a product are also an outcome of experience and custom. According to the political scientist Holmes, "rather than merely satisfying preferences, sellers shape preferences."³²⁰ Consumer protection law might therefore be less suitable to protect certain values and public interest objectives in a medium- to long-term perspective. Because if legitimate expectations are a result of custom, it would ultimately be in the hands of the digital content industry to make consumers accustomed to the

³²⁰ Holmes (1990), p. 53.

existence of DRM systems, and thus to determine the outcome of decisions based on consumer protection law. This leads to the question whether in the long run general consumer protection law will satisfy these requirements, or whether more specialised rules of consumer protection pertinent to digital content are needed.

7.5.4 Responsive Technology and Business Models – Trend or Science Fiction?

If regulation can only partly protect access to and the use of digital content, there are other, perhaps even more promising alternatives. The Creative Commons project is a good example of a project driven by interested parties that could offer a means to make the management of digital rights fairer and more consumer-friendly.

Newer, more advanced technologies might allow not only restrictions and prohibitions but also permissions to be expressed. For example, advanced Rights Expression Languages (REs) seem to be able to support diverse consumer interests in using rightfully obtained content (e.g. to use content on multiple devices, existence of backup services in the event that a computer crashes as a consequence of incompatibilities, portability of digital content, content preview, auto-renewal of rights, etc.). Eventually, even more sophisticated symmetric REs might be able to support more complex concepts in the consumers' interests, such as fair use. Having said that, in practice it is still difficult to realise symmetrical REs that can express special (legally excepted) circumstances, such as context, intention or location. Other examples of promising initiatives are fair use infrastructure and authorised domain structures, as well as more fundamental research projects that seek to better understand the user environment in which DRM systems operate. The last-mentioned favour, for example, the implementation of innovative and more consumer-oriented business models.

7.5.5 Privacy

Privacy is a concern that has received a relatively large amount attention from consumer representatives, policymakers and regulators. Interestingly, also industry representatives are quick to admit that there is a need to consider privacy concerns. Obviously, data security is an important issue, also for consumers – the potential buyers of products and services. Also interestingly, the value citizens apportion to privacy seems also to be relatively apt to change depending on the political and social situation. Conversely, privacy and e-commerce has long been a major issue in the discussion.

Consequently, some legal provisions regulate the collection and processing of personal data. These regulations also apply to DRM controllers that collect consumer data and/or track or monitor consumers' behaviour. Unless a consumer has given his/her explicit consent, the DRM user must specifically justify the collection and processing of personal data. Also, the consumer must be informed who controls data for what purposes, etc. The problem with DRM systems and privacy will therefore probably not be the lack of legal protection so much as the practical implementation and enforcement of data protection rules. Often, consumers will not even be aware

that personal data are collected and processed. Also, in many cases it will be difficult for consumers to enforce privacy rules, especially when different jurisdictions apply. Technical solutions such as privacy-enhancing technologies (PETs) might offer additional, possibly even stronger protection. The question is the extent to which it is in the interest of service providers to implement PETs. Consumer data are a commercial asset, and can be an important instrument to differentiate between products and services. Also, there are already business models that offer the consumer a service at a comparatively lower price or for free, if the consumer agrees to the collection and usage of personal data (e.g. GMail). On the other hand, the security of personal data can also add to the popularity of a service and increase consumer acceptability. Respecting privacy can therefore also be attractive from a business perspective.

7.5.6 Interoperability

Interoperability is a major issue with DRM, also from the perspective of consumers. The reasons are manifold. The business chapter (Chapter 6) pointed to the increase in costs resulting from non-interoperable DRM systems for consumers who cannot receive different services from different providers on one and the same device. Moreover, consumers benefit in different ways from standardisation: compatibility of content from different service providers and transportability, namely the ability to play the content on different devices, at lower prices, or to benefit from a broader range of service offers from different providers (diversity). Another, still disputed question is whether the absence of standards may have certain benefits for consumers, too. Will competition between different standards result in increased service competition and investment in research and development (one example is the competition between the PlayStation and the X-Box)? On the other hand, standards can also be a tool to monopolise the consumer market, which is why control over a proprietary standard might not necessarily be in the interests of consumers and functioning competition. Such and similar concerns triggered, for example, the recently launched investigation by the European Commission into Microsoft/Time Warner/Content Guard JV.³²¹ The presence of a dominant proprietary standard might force third party service providers to adhere to the proprietary technology and accept the conditions of the market leader. For consumers, this could result in less choice and higher prices.

On the other hand, it is still highly disputed whether and, if so, how the legislator should intervene. Are legally mandated standards desirable if market parties are unable to reach an agreement? Today, DRM standardisation is not mandatory under European law. Some of the most important arguments for and against mandatory standards were discussed extensively in the technical, legal and economic chapters. The question whether the legislator intervenes probably also depends on information policy preferences, namely whether policymakers want to promote stable conditions for ~~competition, diversity and a multi-platform content market~~ (one argument

³²¹ See <http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/04/1044&format=HTML&aged=0&language=EN&guiLanguage=en>

tition, diversity and a multi-platform content market (one argument in favour of standardisation) – even if this eventually means that the technically best standard is not adopted – or to promote innovation and competition for the digital content market. And then, of course, there is still a chance that market pressure will induce market parties to agree on a standard voluntarily.

7.5.7 Transparency

One often cited feature in the interest of consumers is transparency, that is, informing the consumer about:

- Whether DRM systems are used;
- The effect of the DRM system in place (Is it still possible to copy, forward, preview, etc. digital content? What are the risks? Are personal data processed?);
- The contractual usage conditions that the DRM enforces;
- The user of the DRM, how to contact the user, and what the applicable law is.

On the side of technology, among developers and members of the content industry there appears to be a trend to design DRM systems such that they are as unobtrusive as possible for consumers. Is this trend desirable from an information policy and/or legal point of view? On the one hand, unobtrusive DRM design can improve user comfort and user-friendliness; on the other hand, however, it can also be a means of manipulating consumer behaviour: where consumers are unaware of certain characteristics of a product, this could unfairly influence their purchase decision. A lack of transparency (i.e. a lack of awareness that and how DRM systems are used) can also deprive consumers of the possibility to protest or to successfully invoke legal rights. Accordingly, consumer protection law knows far-reaching transparency obligations. How much technical information consumers need and how deep their understanding of the technical process involved should be, is another question that needs further research.

Transparency can also be indirectly in the interest of consumers, namely to the extent that it promotes competition. Only where DRM-controlled products and services are clearly labelled, do consumers have a realistic choice between DRM-controlled and alternative business offers. Where DRM-controlled services are forced to compete with non-DRM-controlled services, this might stimulate the former to pay more attention to consumer acceptability issues. These aspects – transparency and competition – might be also a reason why the issue of transparency has received relatively much attention at the EC level.

7.6 In Conclusion

This first INDICARE report has presented an overview of the state of the discussion. It has also pinpointed those areas where more discussion and a

higher level of knowledge and experience are urgently needed. The following are some of the most urgent issues, along with how the INDICARE project intends to contribute to improve the situation.

1. The time is overdue for a mentality change

At least three points should be understood. First, DRM is not only about rights management: it is also about digital content management. DRM manages the relationship between the providers of digital content and consumers. As such, the impact of DRM use goes far beyond the sphere of copyright law, because it affects how consumers consume digital content and how they benefit from it.

Second, ‘consumers’ are not pirates: they are paying customers. Pirates and consumers are two different things. The need to protect digital content against piracy must not impose an unnecessary burden on consumers, that is, the majority of digital content users. A fact that has been too often overlooked is that consumers are the group to which the digital industry wishes to sell digital content. DRM is not about content protection at any price.

Third, the DRM discussion is an interdisciplinary discussion that involves social, economic, legal and technical aspects. Understanding DRM is an interdisciplinary exercise. Solutions to make DRM solutions more consumer-friendly cannot be developed within the confines of one particular discipline; each discipline must seek interdisciplinary dialogue. It is time to abandon a black-and-white attitude when talking about DRM.

2. Joint dialogue

One conclusion of this report is that the rethinking process among all stakeholders has already begun. As the report shows, several promising projects and initiatives are being developed. Others will hopefully follow. Initiatives are emerging in different disciplines – legal, economic, social and technical – and are spreading throughout the world. Enhancing the transparency of who does what and with which outcome, and offering opportunities for joint dialogue can be beneficial for the process of rethinking and of thinking further, and can make this process more effective.

3. Better involvement of the consumer side

The low level of active involvement of the advocates of consumer concerns and interests is one important reason for what until recently was largely a unidimensional policymaking process. In this context, it is important to understand that there is no such thing as a ‘consumer’: the consumer base comprises different groups with different needs and preferences. Obviously, there is a need to identify effective ways of improving the way consumer-related issues are addressed in legislative and policymaking processes. Most importantly, there is a need to support those consumer representatives who are dedicated to improving the situation of consumers with their expertise and experience.

4. Learning about the expectations of consumers regarding DRM

Surprisingly little is known about the level of acceptance of DRM by consumers, and what consumers' expectations are concerning the use of digital content. Without having a clear idea of consumer acceptance and expectations, it is neither reasonable nor realistic to expect that the situation of consumers can be improved, be it in the form of technical, legal or business solutions.

5. Improving the legal standing of consumers

For the time being, the legal standing of consumers vis-à-vis the users of DRM under copyright law is very weak. Copyright law does little to improve the situation of consumers. Moreover, the potential of copyright law to improve the situation is limited. Copyright law protects the position of consumers only very indirectly, and many concerns consumers have regarding DRM do not fall within the scope of copyright law. So far, the legal discussion has focused on DRM and 'fair use'; it is time to approach the question of the 'fair use of DRM'. Consumer protection law will gain in importance.

6. Delineation between legal and illegal use

Much of the present discussion results from uncertainty about when the use of digital content is legal and when it is not. Closely related to this is the question where the dividing line is between uses that are, from a social, economic and political point of view, desirable and should be promoted also in the future, and where the interests of DRM users in applying technical control preponderate. The existing delineation, as stipulated in copyright law, no longer bears any relation to the realities of DRM. Once agreement has been reached, the next step should be to discuss how to realise this newly-found balance in terms of legal, technical and/or economic solutions.

7. Consumer-oriented DRM design and business models

Technical and business models have long shown a very low level of consumer-orientation. This situation is unacceptable and should be improved. One of the objectives of this report is to show that there is potential for improvement and that initiatives are underway (for example, the use of existing technical and economic solutions or the development of new ones to better accommodate consumer interests).

The Informed Dialogue about Consumer Acceptability of DRM Solutions in Europe takes the form of an awareness and knowledge-building process. INDICARE can contribute in several ways to the process of making DRM more acceptable. INDICARE's objective is to observe developments and to critically evaluate them in the light of consumer interests. Part of the INDICARE strategy is to maintain and constantly increase its interdisciplinary expertise, and to build up and extend an external network of experts. INDICARE offers a forum for learning from and about each other, for sharing observations and for exchanging opinions. In doing so, INDICARE uses mod-

ern communication technologies: the INDICARE website, the electronic newsletter, blog entries and online discussions.

Another part of our strategy is to get knowledgeable and dedicated people to sit down together at the table. Several workshops will bring together law-makers and policymakers, consumer and industry representatives, scholars and practitioners to discuss selected issues in greater depth. A workshop on DRM and mobile platforms was held in October in Berlin. You are invited to download a report about this workshop from the INDICARE website. Future workshops will discuss electronic payment and DRM (to be located in Budapest), the consumer acceptability of DRM (to be located in Amsterdam) and the social aspects of DRM deployment (to be located in Karlsruhe). All workshop reports will be made available to the public.

In addition, the INDICARE partners are dedicated to actively participating in important events, conferences and public consultations and contributing their expertise. The constantly updated INDICARE website indicates the events at which INDICARE partners will be present. While it is obvious that INDICARE cannot cover all the relevant topics, there are nevertheless several potential topics into which the INDICARE partners will conduct more research. One of these is the applicability and usefulness of consumer protection law in a DRM-ruled environment. Another is the execution of a consumer survey, in order to learn more about consumer acceptance and acceptability. Another issue is the potential of RELs and technical solutions, as well as of innovative business models, to accommodate consumer interests.

The results of INDICARE's research will be presented in, inter alia, the INDICARE Monitor, reports, the contributions of INDICARE partners to conferences and consultations and – last but not least – two handbooks, one for consumers and one for small and medium-sized content companies. At the end of this two-year project, this report will be updated to document internal and external progress.

Literature

- Adler, A. (2003): Digital Rights Management: Whose Rights Are Being Managed? Association of American Publishers, Washington, D.C.; online available at:
<http://www.netcaucus.org/events/2003/drm/onepagere/aap.drm2003.pdf>
- ANEC – l'Association Européenne pour la Coordination de la Représentation des Consommateurs dans la Normalisation/European Association for the Co-ordination for Consumer Representation in Standardisation (2003): Consumer Requirements in Standardisation regarding the Information Society. ANEC2003/ICT/008rev, Brussels; online available at:
<http://www.anec.org/attachments/ito08-03rev.pdf>
- Austrian Association for the Furthering of Free Software (2004): Comments on the Informal Consultation of the Final Report of the High Level Group on DRM of the European Commission, DG Information Society, Vienna; online available at:
http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/doc/austrian_association_for_the_furthering_of_free_software_ffs.pdf
- Bechtold, S. (2002): Vom Urheber zum Informationsrecht. Implikationen des Digital Rights Management, Munich.
- Bechtold, S. (2003): The Present and Future of Digital Rights Management - Musings on Emerging Legal Problems. In: Becker, Buhse, Günnewig, Rump (eds.), Digital Rights Management – Technological, Economic, Legal and Political Aspects, Berlin, pp. 597 – 664; online available at:
http://www.jura.uni-tuebingen.de/bechtold/pub/2003/Future_DRM.pdf
- Berlin Declaration (2004): Berlin Declaration on collectively managed online rights: compensation without control. Berlin, 21 June 2004. Also response to the call for comments on the Communication COM(2004)261; online available at:
http://europa.eu.int/comm/internal_market/copyright/docs/management/consultation-rights-management/berlindeclaration_en.pdf also
<http://wizards-of-os.org/index.php?id=1699>
- BEUC – Bureau Européen des Unions de Consommateurs/European Consumers' Organisation (2003): BEUC comments on the 95/46/EEC Directive on Data Protection. February 2003, Brussels; online available at:
http://www.europa.eu.int/comm/internal_market/privacy/docs/lawreport/paper/beuc_en.pdf
- BEUC – Bureau Européen des Unions de Consommateurs/European Consumers' Organisation (2004): Digital Rights Management, Position Paper contributed to the informal consultation of the final report of High Level Group on DRM of the European Commission, DG Information Society, Brussels; online available at:
http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/doc/beuc.pdf
- Bremer, O.; Buhse, W. (2003): Standardization in DRM – Trends and Recommendations. In: Becker, E.; Buhse, W.; Günnewig, D.; Rump, N. (Eds.): Digital Rights Management. Technological, Economic, Legal and Political aspects. Berlin, pp. 334-343.
- Buhse, W. (2004a): Wettbewerbsstrategien im Umfeld von Darknet und Digital Rights Management. Szenarien und Erlösmodelle für Onlinemusik. Wiesbaden.
- Buhse, W. (2004b): Open DRM standards for interoperable mobile services. INDICARE Monitor Vol. 1, No 3; online available at:
http://www.indicare.org/tiki-read_article.php?articleId=37
- Buhse, W.; Wetzel, A. (2003): Creating a framework for business models for digital content. Mobile music as case study. In: Becker, E.; Buhse, W.; Günnewig, D.; Rump, N. (Eds.): Digital Rights Management. Technological, Economic, Legal and Political aspects. Berlin, pp. 271-287

- Campaign for Digital Rights (2004): Comments to the informal consultation of the final report of the High Level Group on DRM of the European Commission, DG Information Society; online available at:
http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/doc/campaign_for_digital_rights_cdr.pdf
- Cavoukian, A. (2002): Privacy and Digital Rights Management (DRM): An Oxymoron? Information and Privacy Commissioner, Ontario; online available at:
<http://www.ipc.on.ca/docs/drm.pdf>
- CECUA – Confederation of European Computer User Associations (2004): Comments on the Informal Consultation of the Final Report of the High Level Group on DRM of the European Commission, DG Information Society; online available at:
http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/doc/cecu.pdf
- CEN/ISSS – European Committee for Standardisation/Comité Européen de Normalisation, Information Society Standardisation System (2003): Digital Rights Management. Final Report, Brussels
- Chiariglione, L. (2004): Chiariglione's vision: An interoperable DRM platform to the benefit of all, INDICARE-Interview by Knud Böhle, in: INDICARE Monitor, Vol. 1, No. 5; online available at: http://www.indicare.org/tiki-read_article.php?articleId=58
- Chen, C.J.A.; Burnstein, A. (2003): Foreword. Berkely Technology And Law Journal, Vol. 18, No. 2, 2003, pp. 487-494
- Cheng, S.; Rambhia, A. (2003): DRM and Standardization – Can DRM Be Standardized? In: Becker, E.; Buhse, W.; Günnewig, D.; Rump, N. (Eds.): Digital Rights Management. Technological, Economic, Legal and Political Aspects. Berlin, pp. 162-177
- Cohen, J. (1996): A Right to Read Anonymously: A Closer Look at “Copyright Management” in Cyberspace, Connecticut Law Review, Vol. 28, pp. 981
- Clark, J. (2002): How do disabled people use computers?; online available at:
<http://www.joeclark.org/book/sasay/serialization/Chapter03.html>
- Cohen, J. (2003): DRM and Privacy. Berkeley Technology And Law Journal, Vol. 18, No. 2, 2003, pp. 575-619
- Committee for Economic Development (2004): Promoting Innovation and Economic Growth: The special problem of digital intellectual property, Washington, D.C.
- Coyle, K. (2004): Rights management and digital library requirements. Ariadne No. 40 (July 2004) ; online available at: <http://www.ariadne.ac.uk/issue40/coyle/>
- Davis, D.M.; Lafferty, T. (2002): Digital rights management: implications for libraries. The Bottom Line, Managing Library Finances Vol. 15, No. 1, pp. 18-23
- De Cock Buning, M. (et al) (2001), Consumer@Protection.EU. An Analysis of European Consumer Legislation in the Information Society, Journal of Consumer Policy, Vol. 24, 2001, pp. 287-338
- DMP – Digital Media Project (2004a): Comments on the Informal Consultation of the Final Report of the High Level Group on DRM of the European Commission, DG Information Society; online available at:
http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/doc/digital_media_project_dmp.htm
- DMP – Digital Media Project (2004b): A Table of Traditional Rights and Usages (TRU) of Media User; online available at: <http://www.chiariglione.org/contrib/040102chiariglione01.htm>
- Doctorow, C. (2004): Microsoft Research DRM talk, June 17, 2004; online available at:
<http://www.dashes.com/anil/stuff/doctorow-drm-ms.html>
- Dreier, T (2004): Some rights reserved - Creative Commons in between unlimited copyright and copyright anarchy. Interviewed by Bettina Krings, INDICARE Monitor, Vol. 1, No. 4, 24

September 2004; online available at:
http://www.indicare.org/tiki-read_article.php?articleId=40

- EBLIDA – European Bureau of Library, Information and Documentation Associations (2004): EBLIDA response to the European Commission consultation on the Communication from the European Commission to the Council, the European Parliament and the European Economic and Social Committee on the Management of Copyright and Related Rights in the Internal Market (COM (2004)261 final, Brussels, 16 April 2004). The Hague
http://www.eblida.org/position/CollectingSocieties_Response_June04.htm
- Electronic Frontier Foundation (2004): A Better way Forward: Voluntary Collective Licensing of Music File Sharing, “Let the Music Play”. White Paper; online available at:
http://www.eff.org/share/collective_lic_wp.pdf
- European Commission (1995): Green Paper on copyright and related rights in the Information Society. COM (95) 382 final; online available at:
[http://www.ivir.nl/dossier/auteursrechtlijn/bronnen/COM\(95\)382final.doc](http://www.ivir.nl/dossier/auteursrechtlijn/bronnen/COM(95)382final.doc)
- European Commission (1996): Communication from the Commission concerning the follow-up to the Green Paper on copyright and related rights in the Information Society. COM (96) 568 final; online available at:
<http://europa.eu.int/ISPO/infosoc/legreg/docs/com96586.doc>
- European Commission, DG Information Society (2002a): Commission Staff working Paper: Digital Rights. Background, Systems, Assessment. SEC (2002) 197, Brussels; online available at:
http://europa.eu.int/information_society/topics/multi/digital_rights/doc/workshop2002/drm_workingdoc.pdf
- European Commission, DG Information Society (2002b): Dialogue on Digital Rights Management Systems (DRMS). Working Group 1: The User Perspective, Draft Minutes, Brussels, 18 July 2002; online available at:
http://europa.eu.int/information_society/europe/2005/all_about/digital_rights_man/doc/wg1/minutes_final.doc
- European Commission (2004a): The Management of Copyright and Related Rights in the Internal Market, Brussels
- European Commission (2004b): Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions - Connecting Europe at high speed: recent developments in the sector of electronic communications. COM (2004) 61 final, 3 February 2004, Brussels; online available at:
http://europa.eu.int/eur-lex/en/com/cnc/2004/com2004_0061en01.pdf
- European Commission (2004c): Communication from the Commission to the Council, the European Parliament and the European Economic and Social Committee. The Management of copyright and related Rights in the internal market. Brussels (16.04.2004, COM(2004) 261 final); online available at:
http://europa.eu.int/eur-lex/en/com/cnc/2004/com2004_0261en01.pdf
- EVA – European Visual Artists (2004): Comments on the Informal Consultation of the Final Report of the High Level Group on DRM of the European Commission, DG Information Society; online available at:
http://europa.eu.int/information_society/europe/2005/all_about/digital_rights_man/doc/eva.doc
- Feigenbaum, J.; Freedman, J.E.; Sander, T. and Shostack, A. (2002): Privacy Engineering in Digital Rights Management Systems. Proceedings of the 2001 ACM Workshop on Security and Privacy in Digital Rights Management, Berlin, LNCS Vol. 2320, pp. 76-105; online available at: <http://www.homeport.org/~adam/privacyeng-wspdrm01.pdf>
- Fetcherin, M. (2003): Evaluating Consumer Acceptance for Protected Digital Content, in: Becker, E.; Buhse, W.; Günnewig, D.; Rump, N. (eds.): Digital Rights Management. Technological, Economic, Legal and Political Aspects, Berlin et al, pp. 301-320.

- Fetscherin, M.; Schmid, M. (2003): Comparative Study of Digital Rights Management Systems for Music and eBooks. Institute of Information Systems, University of Bern; online available at: <http://www.ie.iwi.unibe.ch/staff/fetscherin/resource/2003-08-28-Helsinki-Music-Print-DRM.pdf>
- FIPR – Foundation for Information Policy Research (2004): Comments on the Informal Consultation of the Final Report of the High Level Group on DRM of the European Commission, DG Information Society, Response by Ross Anderson; online available at: http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/doc/foundation%20for%20information%20policy%20research.pdf also available at <http://www.fipr.org/copyright/ipr-consult.html>
- Firenze Tecnologia, Media Innovation Unit (MIU) (2004): Comments on the Informal Consultation of the Final Report of the High Level Group on DRM of the European Commission, DG Information Society; online available at: http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/doc/media%20innovation%20unit_firenze%20tecnologia_en.pdf
- Fisher III, W.W. (2004): Promises to Keep – Technology, Law, and the Future of Entertainment, chapter 6; online available at: <http://cyber.law.harvard.edu/people/ffisher/PTKChapter6.pdf>
- Friend, F. (2004): Who protects the un-protected? Open access needs DRM, INDICARE Monitor Vol. 1, No. 5; online available at: http://www.indicare.org/tiki-read_article.php?articleId=49
- Friesen, N.; Mourad, M.; Robson, R. (2002): Towards a Digital Rights Expression Language Standard for Learning Technology. IEEE report; online available at: http://ltsc.ieee.org/meeting/200212/doc/DREL_White_paper.doc
- Garfinkel, S. (2002): The Rights Management Trap. Massachusetts Institute of Technology; online available at: http://msl1.mit.edu/ESD10/docs/tech_rev_simson_drm.pdf
- Garnett, N. (2003): Digital Rights Management – Missing Links in the Broadband Value Chain. Broadband Stakeholder Group; online available at: http://www.broadbanduk.org/reports/report03_appendix3.pdf
- Gasser, U. et al. (2004): iTunes: How Copyright, Contract, and Technology Shape the Business of Digital Media – A Case Study. Berkman Center for Internet and Society / Digital Media Project; online available at: <http://cyber.law.harvard.edu/media/uploads/81/iTunesWhitePaper0604.pdf>
- Gervais, D. (1998): The law and practice of digital encryption. Amsterdam
- Godwin, M. (2004): What Every Citizen Should Know About DRM, a.k.a. “Digital Rights Management”, Washington D.C.; online available at: <http://www.publicknowledge.org/content/overviews/citizens-guide-to-drm/attachment>
- Gooch, R. (2003): Requirements for DRM Systems, in: Becker, E.; Buhse, W.; Günnewig, D.; Rump, N. (Eds.): Digital Rights Management. Technological, Economic, Legal and Political Aspects. Berlin, pp. 16-25.
- Grunwald, A. (1999): Rationale Technikfolgenbeurteilung. Konzepte und methodische Grundlagen. Heidelberg
- Grunwald, A. (2000): Technik für die Gesellschaft von morgen. Möglichkeiten und Grenzen gesellschaftlicher Technikgestaltung. Frankfurt/M.
- Guibault, L.M.C.R (2002): Copyright Limitations and Contracts, An Analysis of the Contractual Overridability of Limitations on Copyright. London et al.
- Guibault, L.M.C.R. (1997): Contracts and copyright exemptions. Amsterdam
- Helberger, N. (2004): It’s not a right, silly. INDICARE Monitor, Vol. 1, No. 5; online available at: http://www.indicare.org/tiki-read_article.php?articleId=48
- Helberger, N. (2005): Fence as fence can. Information Technology & Law Series, forthcoming

- Hes, R.; Borking, J. (2000): Privacy-enhancing technologies. Registratiekamer, The Hague; online available at: http://www.cbppweb.nl/downloads_av/AV11.PDF
- HLG DRM – High Level Group on Digital Rights Management (2004): Final Report. March - July 2004, Brussels. Report available at European Commission, DG Information Society, eEurope 2005; online available at: http://europa.eu.int/information_society/eeurope/2005/all_about/broadband/digital_rights_man/doc/040709_hlg_drm_2nd_meeting_final_report.pdf
- Holmes, S. (1990): Liberal constraints on private power, in: Lichtenberg, J. (ed.), *Democracy and the Mass Media*, Cambridge, p. 53.
- Hugenholtz, P. B; Guibault, L.M.C.R; Van Geffen, S. M. (2003): *The Future of Levies in a Digital Environment*. Amsterdam
- Iannella, R. (2002): Digital Rights Management in the higher education sector. Department of Education, Science and Training, Canberra; online available at: http://www.dest.gov.au/archive/highered/eippubs/eip02_2/eip02_2.pdf
- Iannella, R. (2003): Mobile Digital Rights Management. IPR Systems white paper; online available at: <http://www.iprsystems.com/whitepapers/Mobile-DRM-WP.pdf>
- IMPALA – Independent Music Companies Association (2004): IMPALA Comments on the Informal Consultation of the Final Report of the High Level Group on DRM of the European Commission, DG Information Society; online available at: http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/doc/impala.pdf
- Jackson, T. (2004): Comments on the Informal Consultation of the Final Report of the High Level Group on DRM of the European Commission, DG Information Society; online available at: http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/doc/jackson_tim.pdf
- Kenny, S.; Korba, L. (2002): *Applying Digital Rights Management Systems to Privacy Rights Management*. National Research Council Paper 44955
- Kerényi, K. (2004a): Short description of some standards currently used in the field of DRM solutions. INDICARE Monitor Vol. 1, No 1, 25 June 2004; online available at: http://www.indicare.org/tiki-read_article.php?articleId=18
- Kerényi, K. (2004b): File sharing on P2P networks. INDICARE Monitor Vol. 1, No 2, 30 July 2004; online available at: http://www.indicare.org/tiki-read_article.php?articleId=26
- Kerscher, G.; Kawamura, H. (2001): Position Paper: DRM for Persons who are blind and/or print disabled, in: *Workshop on Digital Rights Management for the Web*, World Wide Web Consortium, 22-23 January 2001 INRIA - Sophia-Antipolis, France, <http://www.w3.org/2000/12/drm-ws/pp/daisy.html>
- Koelman, K.J. (2001): The protection of technological measures vs. the copyright limitations. Paper presented at the ALAI congress *Adjuncts and Alternatives for copyright*, New York
- Koelman, K.J. (1997): *Liability for on-line intermediaries*. Amsterdam
- Koelman, K.J. (1998): Privacy, data protection and copyright: Their interaction in the context of electronic copyright management systems. Amsterdam, <http://www.ivir.nl/publications/koelman/privreportdef.pdf>
- Koelman, K.J. (2000): A Hard Nut To Crack: The Protection of Technological Measures. *European Intellectual Property Review* 2000, pp. 272 – 288.
- Koelman, K.J.; Helberger, N. (1998): *Protection of technological measures*. Amsterdam; online available at: <http://www.ivir.nl/publications/koelman/technical.pdf>.
- Korba, L.; Kenny, S. (2002): *Towards Meeting the Privacy Challenge: Adapting DRM*. NRC-CNRC; online available at: <http://iit-iti.nrc-cnrc.gc.ca/iit-publications-iti/docs/NRC-44956.pdf>

- Kutterer, C. (2004): Talking about the BEUC position paper on Digital Rights Management, Interview, INDICARE Monitor by Knud Böhle, Vol. 1, No. 4; available online at http://www.indicare.org/tiki-read_article.php?articleId=46
- LACA – Libraries and Archives Copyright Alliance (2004): Letter from 8th June 2004 to Jörg Reinbothe, EU Commission with reference to MARKT/E4/AA/D(2004) 6036 21 April 2004 The management of copyright and related rights in the internal market (COM 2001) 261 final 16.04.2004; online available at: http://europa.eu.int/comm/internal_market/copyright/docs/management/consultation-rights-management/laca_en.pdf
- Lambers, H.W.J. (2005): Speech Control Through Network Architecture, A Public-Private Hybrid? Information Technology & Law Series, forthcoming
- Lambert, S. (2001): Barclaycard and Pre- Barclaycard and Pre-Pay. Barclaycard presentation
- Lessig, L. (1999): Code and Other Laws of Cyberspace. New York; online available at: <http://www.code-is-law.org>
- Lodder, A. (ed.) (2002): eDirectives: Guide to European Union Law on E-Commerce. The Hague
- Martin, M.; Agnew, G.; Boyle, J.; McNair, J.H.; Page, M.; Rhodes, W.A.; (2002a): DRM requirements for research and education. Discussion paper, ; online available at: <http://xml.coverpages.org/RE-DRMRequirements.pdf>
- Martin, M.; Agnew, G.; Kuhlman, D.L.; McNair, J.H.; Rhodes, W.A.; Tipton, R. (2002b): Federated Digital Rights Management. A proposed DRM solution for research and education. D-Lib Magazine, Vol. 8, No 7/8; online available at: <http://www.dlib.org/dlib/july02/martin/07martin.html>
- McDaniel, P. (2003): Privacy Enhancing Technologies. NYU Stern School of Business; online available at: http://www.research.att.com/courses/nyu/b20-3156/b20-3156-win-03/b20_3156_sp03_lecture5.ppt
- Melzer, R. (2004): Rights locker architecture - the next step? Potential and risks of a new approach to digital content delivery, INDICARE Monitor Vol. 1, No. 4, 24 Sep 2004; online available at: http://www.indicare.org/tiki-read_article.php?articleId=44
- Mossink, W. (2001): Report working conference on copyright and universities. Utrecht: Surf Foundation; online available at: <http://www.surf.nl/copyright/report.html>
- Mulligan, D.K.; Burstein, A.J. (2002): Implementing Copyright Limitations in Rights Expression Languages. Proceedings of 2002 ACM DRM Workshop; online available at http://www.law.berkeley.edu/cenpro/samuelson/papers/other/ACM2002_Paper_111802.pdf
- Mulligan, D.K.; Han, J.; Burstein, A.J. (2003): How DRM-Based Content Delivery Systems Disrupt Expectations of “Personal Use”. Proceedings of the 2003 ACM Workshop on Digital Rights Management, Washington, D.C.; online available at: http://www.sims.berkeley.edu/~john_han/docs/p029-mulligan.pdf
- Niehüser, L. (2004): The right to resell. Will eBay finally allow secondary markets for digital media? INDICARE Monitor, Vol. 1, No. 3; online available at: http://www.indicare.org/tiki-read_article.php?articleId=33
- NightLabs (2004): Comments on the Informal Consultation of the Final Report of the High Level Group on DRM of the European Commission, DG Information Society; online available at: http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/doc/nightlabs.pdf
- NTIA – National Telecommunications and Information Administration, US. Department of Commerce (1995): Falling through the Net: A Survey of the Have Nots in Rural and Urban America. Washington D.C.

- NTIA – National Telecommunications and Information Administration, US. Department of Commerce (1998): *Falling through the Net: New Data on the Digital Divide*. Washington D.C.
- Odlyzko, A. (2003): *Privacy, Economics, and Price Discrimination on the Internet*; online available at:
<http://www.dtc.umn.edu/~odlyzko/doc/privacy.economics.pdf>
- Phillips, L. (2004): O2 launches free-to-view mobile video, DMEurope, August 6, 2004; online available at: <http://www.dmeurope.com/default.asp?ArticleID=2522>
- Privatkopie.net and Bits of Freedom (2004): *Putting users at the centre achieving an 'information society for all'*, Comments on the Informal Consultation of the Final Report of the High Level Group on DRM of the European Commission, DG Information Society, written by Volker Grassmuck; online available at:
http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/doc/privatkopie_bof.pdf
- Rammert, W. (1993): *Technik aus soziologischer Perspektive. Forschungsstand. Theorieansätze, Fallbeispiele - ein Überblick*, Opladen
- Rebentisch, A. (2004): *Comments on the Informal Consultation of the Final Report of the High Level Group on DRM of the European Commission, DG Information Society*; online available at:
http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/doc/rebentisch_andre.pdf
- Robson, R. (2003): *Digital Rights Management*. Eduworks Corporation presentation.
- Rosenblatt, B. (2003): *Analysis of Cryptographic Research, Inc.'s Self Protecting Digital Content*. DRM Watch; online available at:
<http://www.drmwatch.com/special/article.php/3095031>
- Rump, N.; Barlas, C. (2004): *From couch potato to active consumer*. INDICARE Monitor, Vol. 1, No. 4, 24 September 2004; online available at:
http://www.indicare.org/tiki-read_article.php?articleId=42
- Russ, A. (2001): *Digital Rights Management Overview*. SANS Institute; online available at:
<http://www.sans.org/rr/papers/48/434.pdf>
- Russel, C. (2003): *Access to technology for the disabled: the forgotten legacy of innovation?* Information and Communication Technology Law, Vol. 12, No. 3, Oct 2003, pp. 237-246
- Sajka, J. (2001): *Position Paper of the American Foundation for the Blind*, in: *Workshop on Digital Rights Management for the Web*, World Wide Web Consortium, 22-23 January 2001 INRIA - Sophia-Antipolis, France; online available at:
<http://www.w3.org/2000/12/drm-ws/pp/gemplus-vannel.html>
- Samuelson, P. (2003): *DRM {and. or. vs.} the law*", Communications of the ACM. Volume 46, Issue 4, pp. 41-45
- Schenker, J. L.(2004): *Industry and European agencies clash on anti-piracy fees*, International Herald Tribune, April 17, 2004; online available at:
<http://www.iht.com/articles/515528.htm>
- Schippan, M. (2004): *Rechtsfragen bei der Implementierung von Digital Rights Management-Systemen*. Zeitschrift für Urheber und Medienrecht (ZUM), Vol. 3, 2004, pp. 188-198
- Schneier, B. (2000): *Secrets and Lies. Digital Security in a Networked World*. Wiley
- Schoen, S. (2003): *Trusted Computing: Promise and Risk*, Electronic Frontier Foundation.
http://www.eff.org/Infrastructure/trusted_computing/20031001_tc.pdf
- Shum, I. (2002): *Getting "Ripped" Off By Copy-Protected CDs*, J. Legis Vol. 29, No. 125
- Sloan, M. (2001): *Web Accessibility and the DDA*, Journal of Information, Law and Technology, Vol. 2, ; online available at: <http://elj.warwick.ac.uk/jilt/01-2/sloan.html>

- Slowinski, F. Hill (2003): What consumers want in Digital Rights Management (DRM). Making content as widely available as possible in ways that satisfy consumer preferences. New York; Washington, D.C., ALA dx.doi.org/10.1003/whitepaper1; online available at: <http://doi.contentdirections.com/mr/aap.jsp?doi=10.1003/whitepaper1>
- Stamp, M. (2002): Digital Rights Management: The Technology Behind the Hype; online available at: <http://www.csulb.edu/web/journals/jecr/issues/20033/paper3.pdf>
- Stichting Vrijschrift.org (2004): Digital Restrictions Management (DRM), Comments on the Informal Consultation of the Final Report of the High Level Group on DRM of the European Commission, DG Information Society; online available at: http://europa.eu.int/information_society/eeurope/2005/all_about/digital_rights_man/doc/vrijschrift.pdf
- Stiftung Warentest (2004): Baustellen-Blues. Musikanbieter im Internet, Test 10/2004, pp. 38-43.
- STM – International Association of Scientific, Technical and Medical Publishers (STM) (2004): EU Communication on the Management of Copyright and Related Rights in the Internet Market COM(2004)261. The Hague; online available at: http://europa.eu.int/comm/internal_market/copyright/docs/management/consultation-rights-management/stm_en.pdf
- SURF (2002): Conference “Copyright and universities: from principles to practices”. Report of working conference. Utrecht: Surf Foundation; online available at: <http://www.surf.nl/copyright/zwolle/2002dec/>
- SURF (2004): Report on the working conference “Optimal management of copyright: making it happen!” Utrecht: Surf Foundation; online available at: <http://www.surf.nl/copyright/zwolle/2004feb/conferencereport.php>
- Tai, V. (2004): Digital Rights Management. Nokia SEAP presentation; online available at: http://ncsp.forum.nokia.com/download/?asset_id=11590;ref=devx
- Todo, K. (2002): New Trends of New Trends of Digital Rights Digital Rights Management. INTAP Content Distribution Network Technology Committee presentation; online available at: <http://www.net.intap.or.jp/INTAP/cdn/data/ubiquitous2002/todo.pdf>
- Tóth, G. (2004a): DRM and Privacy – Friends or Foes? INDICARE Monitor, Vol. 1, No. 4; online available at: http://www.indicare.org/tiki-read_article.php?articleId=45
- Tóth, G. (2004b): Contest of Formats. The race of audio formats is advanced, while the race for interoperability of protected formats is just about to start. INDICARE Monitor, Vol. 1, No. 3; online available at: http://www.indicare.org/tiki-read_article.php?articleId=34
- Trompenaars, B. (1998): Formation and validity of on-line contracts, Amsterdam, <http://home.uchicago.edu/~mferzige/rapportbernardine.pdf>.
- Vora, P.; Reynolds, D.; Dickinson, I.; Erickson, J.; Banks, D. (2001): Position Paper: Privacy and Digital Rights Management, in: Workshop on Digital Rights Management for the Web, World Wide Web Consortium, 22-23 January 2001 INRIA - Sophia-Antipolis, France; online available at: <http://www.w3.org/2000/12/drm-ws/pp/hp-poorvi2.html>
- W3C – World Wide Web Consortium (2004): Web Content Accessibility Guidelines 2.0: Working Draft 11 March 2004; online available at: <http://www.w3.org/TR/2004/WD-WCAG20-20040311/#intro-purpose>.
- WBU – World Blind Union (2003): Manifesto for a United Nations Convention on the Rights of People with Disabilities; online available at: <http://www.euroblind.org/fichiersGB/wbumanif.htm>
- Wegner, S. (2002): OPERA - Interoperability of Digital Rights Management. EURESCOM; online available at: <http://www.eurescom.de/~pub/deliverables/documents/P1200-series/P1207/D2/P1207-D2.pdf>

- Wiegand, N. (2002): Technische Kopierschutzmaßnahmen in Musik-CDs - Aufklärungspflicht über die Implementierung. *MultiMedia und Recht (MMR)*, Vol. 11, 2002, pp. 722-730
- Wilhelmsson, Th. (2002): Is There a European Consumer Law – and Should There Be One? *Saggi, Conferenze E Seminari*; online available at:
<http://w3.uniroma1.it/idc/centro/publications/41wilhelmsson.pdf>
- Yan, Z. (2001): Mobile Digital Rights Management. Seminar on Network Security; online available at:
<http://www.tml.hut.fi/Studies/T-110.501/2001/papers/zheng.yan.pdf>
- Zwolle Principles (2002): Principles: Balancing stakeholder interests in scholarship friendly copyright practices; online available at:
<http://www.surf.nl/copyright/keyissues/scholarlycommunication/principles.php>

Online Resources

- AOL Music Downloads: <http://musikdownloads.aol.de>
- Besonic: <http://www.besonic.com/>
- Bits of Freedom: <http://www.bof.nl/>
- Bureau Européen des Unions de Consommateurs/European Consumers' Organisation (BEUC):
<http://www.beuc.org/>
- Chaos Computer Club e.V. (CCC): <http://www.ccc.de/>
- Connect: <http://www.connect-europe.com/>
- Consumer Protection, Housing and Quality of Life/Consommation, Logement et Cadre de Vie (CLCV): <http://www.clev.org/>
- Consumtenbond: <http://www.consumentenbond.nl/>
- Digital Audio-based Information System (DAISY): <http://www.daisy.org/>
- Digital Living Network Alliance (DLNA): <http://www.dlna.org/>
- Digital Media Project: <http://www.dmpf.org/>
- Digital Video Broadcasting project (DVB): <http://www.dvb.org/>
- DigitalConsumer: <http://www.digitalconsumer.org/>
- Disabled People International: <http://www.dpi.org/>
- DRM Watch: <http://www.drmwatch.com/>
- Electronic Frontier Foundation (EFF), San Francisco, USA: <http://www.eff.org/>
- European Association for the Co-ordination for Consumer Representation in Standardisation (ANEC): <http://www.anec.org/>
- European Commission, DG Information Society, Brussels, Belgium: Website on Digital Rights Management:
http://europa.eu.int/information_society/eeurope/2005/all_about/broadband/digital_rights_man/index_en.htm
- European Commission, DG Internal Market, Brussels, Belgium: Website on Consultation procedure on "Management of Copyrights and Related Rights" of the European Commission:
http://europa.eu.int/comm/internal_market/copyright/management/management_en.htm
- European Committee for Standardisation/Comité Européen de Normalisation, Information Society Standardisation System (CEN/ISSS), Brussels, Belgium, Website on Digital Rights Management:
http://www.cenorm.be/cenorm/businessdomains/businessdomains/iss/activity/drm_frg.asp
- European Digital Rights initiative, registered in Brussels, Belgium: <http://www.edri.org/>
- Eventim: <http://www.eventim-music.de/>
- FIPR – Foundation for Information Policy Research: <http://www.fipr.org/>
- iTunes: <http://www.apple.com/de/itunes>
- Karstadt: <http://www.karstadt.de/>
- Kontor: <http://www.kontor.cc/>
- Legalis (site with French jurisdiction): <http://www.legalis.net/>
- Mediamarkt: <http://musikdownload.mediamarkt.de/>

MSN: <http://music.msn.de/>
MTV: <http://www.mtv.de/>
Musicload: <http://www.musicload.de/>
Napster: <http://www.napster.co.uk/>
NFS Middleware Initiative: <http://www.nsf-middleware.org/>
Od2: <http://www.od2.com/>
Open Mobile Alliance: <http://www.openmobilealliance.org/>
Popfile: <http://www.popfile.de/>
Premiere: <http://www.premiere.de/>
Privatkopie.net, Germany: <http://privatkopie.net/>
PublicKnowledge: <http://www.publicknowledge.org/>
Samuelson Law, Technology and Public Policy Clinic, School of Law, University of California, Berkeley, USA: <http://www.law.berkeley.edu/cenpro/samuelson/>
SANS Institute: <http://www.sans.org/>
Stichting Vrijsschrift.org: <http://www.vrijsschrift.org/>
SURF Foundation, Copyright Management for Scholarship: <http://www.surf.nl/copyright/>
The Berkman Centre for Internet and Society, Harvard Law School, <http://cyber.law.harvard.edu/>
The Economist: <http://www.economist.com/>
The Register: <http://www.theregister.co.uk/>
Tiscali: <http://www.tiscali.de/>
T-Online: <http://www.t-online-vision.de/>
World Blind Union (WBU): <http://umc.once.es/home.cfm>
World Intellectual Property Organisation: <http://www.wipo.org/>
World Wide Web Consortium (W3C): Workshop on Digital Rights Management, 22-23 January 2001, Sophia-Antipolis, France: <http://www.w3.org/2000/12/drm-ws/Overview.html>

Annex I

Mulligan, Han and Burstein presented how representative DRM-based online services, which could be found in the music and video industry at that time, disrupt consumer expectations regarding the personal use of copyrighted material.³²² They deduced consumer expectations from the norms and expectations governing the purchase and rental of traditional physical CDs, DVDs, and videocassettes. In their context, “personal use” is comprised of both legally defined “personal use rights” and “personal use expectations”. Deduced from that, they explore three functional aspects:

- portability of acquired content to any other suitable device, including to shift the format of the copy (“time shift”, “space-shift” and “lending” of copies),
- ability to excerpt content, and
- extend of relationship and interaction with copyright holders, including the extend of ongoing relationships, time commitments, breadth of content usage rules and requirements, complexity of information transaction (i.e. the number of entities using consumers’ personal information), the independence of those entities’ privacy policies, and the complexity of information exchange.

Some of their findings for online music stores are listed in Table 1. They provide details about the limitation of the services. Regarding the portability of acquired content they point to some limitations. When attempting to shift content to other services, the observed services have the discretion to grant new licences or the licence expired. Potentially they also assume that licences could also be revoked before the end of the original usage time. They further consider that consumers may “rip” the content (burn from computer to CD, if allowed by the DRM system), but this would mean an extra cost to achieve the same portability that accompanies a physical CD.

Concerning the excerpting, sampling or other forms of content modification, they show that all examined services prohibit this, and that DRM-based files are not interpretable using media editing software, such as a graphic software. This is contrary to the situation with physical media where individuals are able to sample content for use in reviews, commentaries, or compositions of new creative work. They point to its widespread exercise and cultural value.

Additionally, they make suggestions to allow transfer of rights, i.e. to allow sharing of a restricted copy with others (lending), and to allow transferring of privileges to others, to avoid limiting of copying of individual tracks, and to allow excerpting and modification, and to promote privacy.

In their analysis they point to the serious privacy concerns. All examined services require to locally install a proxy software. Some proxy software continually reference to the history log files of the browser programme, where

³²² Cf. in the following Mulligan, Han, and Burstein (2003).

user's websites visits and file downloads are recorded (one software even when the client is idle). The analysis of the services gives rise to their statements such as "monitoring of user browser habits" or "maintain meticulous records concerning how movies files are used by individual customers". Additionally, they ask to consider the highly complex webs of involved (third) parties that monitor and exchange information collected about consumers (e.g. advertising partners). To obtain some insights a careful examination of the many services' privacy policy is necessary. In comparison to the straightforwardness of purchasing content in traditional physical media such examination of terms is a daunting task.

Table 2: Permissions granted by various services

	iTunes	PressPlay	Rhapsody	MusicNet	MusicNow	LiquidAudio	MovieLink	CinemaNow	CDs
Number of CD burns per purchase;	∞	1, b	1, b	2, b	2, b	3, b	0	0	∞
Number of portable device transfers per purchase:	∞	1, b	0, b	0, b	2, b	3, b	0	0	∞
Number of computers per purchase	3, b	2, b	∞	2, b	3, b	1, b	∞	∞	∞
CD ripping allowed	Y	Y	Y	Y	Y	Y	N	N	Y
Offline access to non-purchased tracks	na	N	Y, b	Y, b	N	na	N, d	N, d	na
Format conversion allowed	N, d	N, d	N, d	N, d	N, d	N, d	N, d	N, d	Y
Account sharing allowed	N, c	N, c	N, c	N, c	N, c	N, c	N, c	N, c	na
Excerpting allowed	N, d	N, d	N, d	N, d	N, d	N, d	N, d	N, d	Y
Relationships required beyond sale	Y, b	Y, b	Y, b	Y, b	Y, b	Y, b	Y, b	Y, b	N

Source: Mulligan, Han and Burstein (2003), arrangement and depiction changed.
Abbreviations: d: DRM enforced; c: contract enforced; b: both DRM and contract enforced

Annex II

The German Stiftung Warentest, a product testing organisation, analysed 12 music download services that operates on the German market. The testing criteria encompasses prices, usage experiences including product search, buying and payment, download (process and management of connection failures), quality of sound, use, information on services' websites, consumer protection, handling of the websites' services, the services' statements on repertoire, on number of authorised burnings on CD or copies to portable players, on used file format, transferability to other DRM/WMA-capable devices, and accepted modes of payments. Table 2 presents the results for the criteria "use" and "consumer protection", as well as the number of burns and copies to portables. Under the criteria "use" the management of licensing, the actual usability of files in comparison to the promised usage options, and the portability of files to other portable players were evaluated. The criteria "consumer protection" includes an assessment of the user-friendliness from a legal perspective, including an analysis of the relevant text passages on the services' websites by a legal expert. Also aspects of data protection and security of the network connection in particular for registration and payments were considered.³²³

Table 3: Usage Experiences and Consumer Protection of Music Download Services

	AOL	iTunes	Connect	Karstadt	Kontor	Mediamarkt	MSN	Tiscali	MTV	Popfile	Musicload	Eventim
"Use"	o	o	(o)	o	o	o	o	o	o	-	-	-
"Consumer Protection"	o	(o)	(o)	o	o	+	o	o	o	o	+	+
Number of burns to CD ¹⁾	3 to 10	∞	3 to 10	1 to ∞	1 to ∞	1 to 10	5 to 10	3 to ∞				
Number of copies to portable players ¹⁾	3 to ∞	∞	3 to ∞	1 to 10	1 to 10	1 to ∞	1 to ∞	3 to ∞	1 to ∞	5 to 10	5 to ∞	3 to ∞

Source: Stiftung Warentest (2004), p. 40-41.

Note: ++ = very good (grade 0,5-1,5; "sehr gut"), + = good (grade 1,6 to 2,5; "gut"), o = fair (grade 2,6 to 3,5; "befriedigend"), (o) = satisfactory (grade 3,6-4,5; "ausreichend"), - = fail/unsatisfactory (grade 4,6-5,5; "mangelhaft"); 1) = Statements by the download services

³²³ Stiftung Warentest (2004), p. 41.