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Content

The **IN**formed **DI**alogue about **C**onsumer **A**cceptability of D**R**M Solutions in **E**urope

Editorial: About the mind-set of software pirates

By: Knud Böhle, ITAS, Karlsruhe, Germany

Abstract: The term "piracy" is used quite often, while still little is known about "pirates". An empirical sociological study about software pirates sheds some light on this crucial subject. Its special strength is to focus on the mind-set of "pirates" and its foundations. However we also found some limitations of the study, mainly that the context of interpretation chosen is still too narrow. In any case, more studies of this type could help to better understand the pirate-consumer conundrum.

Keywords: software piracy, business models, survey, Germany

Introduction

The complaints about "piracy" by industries are numerous. To be clear, we are not referring here to illegal mass-copying and commercial mass-distribution but to "piracy" at the individual level, and we refer first of all to "software piracy". Little research has been done to find out, who and what is behind the behaviour called "piracy". Therefore I welcome very much a study commissioned by Microsoft and carried out by the "Institut für Strategieentwicklung" (2004), which presented its results last year. This small consultancy firm is a spin-off company of the University of Witten/Herdecke (Germany), and the study was performed in close cooperation with the university, namely with Dirk Baecker, a well-known sociologist. As the study was written in German, I will translate all quotes as well as I can asking for apologies if I have not found an exact translation for each concept.

The study is titled "Digital Mentalities". It is mainly based on two empirical research activities: On the one hand an online-survey was carried out in April 2004 with a final 126 questionnaires for analysis (cf. p. 12). Following the authors, the selected sample of German Internet users is characterised among others by a relatively high educational level. On the other hand the authors performed 16 expert interviews (cf. p.36). Both sources informed their study.

Problem definition

What is the problem with "piracy"? First, the problem is **not** that the Internet users do not know that making "pirate copies" of software is illegal. The problem is that users don't intuitively comprehend or accept the legal situation and thus have no moral problem with making illegal copies. In other words, there is a mismatch between the legal *status quo* and a feeling of not-doing-wrong when breaking the written law. The main purpose of the study is to reflect on this discrepancy and to think about measures the software industry could adopt to make the gap smaller.

Main general findings

In my opinion eight items from the survey are worth highlighting here, because of their importance for the further reasoning of the authors. The findings from the survey are:

► 95 % of respondents state that protection of investment for software producers is needed (p. 32),

► 74 % state that each illegal copy means financial damage for software producers (p.15),

► 95 % state that the use of illegal copies in companies is wrong and should be prosecuted (p.13),

► 86 % state that making illegal copies for commercial purposes is bad and deserves prosecution (p.13),

► 22 % state that making illegal copies for private purposes should be prosecuted and punished (p.13),

► 66 % regard illegal copying of software less severe than shoplifting (p.15),

► 25 % don't use illegal copies themselves (p.16),

► < 2 % regard software as "free" information (p.16).

The authors conclude that there is general awareness of what's right and wrong (commercial use, use in enterprises). However with respect to copies for private use most people don't accept the legal situation and behave accordingly. The authors assume that in most cases this behaviour is not motivated ideologically (hinting at the small percentage of 2 % regarding software as "free").

Findings related to four specified groups

In a second step the study distinguishes four groups of respondents by two parameters "computer expertise" and "level of illegal copying" (cf. p.16-20). The four groups are:

► PC-freaks (high computer proficiency, high level of illegal copying; 10,3 % of the sample; average age 25);

► hobby-users (low computer proficiency, high level of illegal copying, 33,6 % of the sample; average age 29);

► pragmatists (low computer proficiency, low level of illegal copying, 49,5 % of the sample; average age 34);

► PC-professionals (high computer proficiency, very low level of illegal copying, 6,5 % of the sample; average age 38).

If we assume that these data are reliable, we can conclude that all in all less than 50 % are heavy illegal copiers, and that illegal copying is related to age.

The investigators wanted to find out more about these groups, in particular about their attitude towards pirate copying. Therefore they introduce two further variables: "piracy mentality" ("Raubkopiermentalität", which means that people are aware of their illegal behaviour and deliberately pursue it) and "sense of justice" ("Rechtsbewusstsein", which means in this case that people are aware of the legal situation and combined with the conviction that copyright infringements are wrong). Following the authors, PC-freaks have the highest degree of "piracy mentality". As one may expect, many PC-freaks and hobby-users lack a "sense of justice", i.e. they don't feel in the wrong when illegally copying, while PC-professionals and pragmatists in their majority have a higher or high "sense of justice" (cf. p. 22-25).

Interpretation and conclusions by the authors

Apparently consumers know what is right and wrong, but most of them behave contrarily from time to time. The authors argue that social gratifications for illegal behaviour from the family or friends are stronger than law. I will come back to this point in the discussion. If law is not accepted, then prosecution and punishment is one option. However this is not considered a promising strategy by the authors. Criminal law won't help to turn "pirates" into paying customers. Intuitive comprehension of legal provisions would be required to change behaviour.

The missing intuitive comprehension is explained first of all by an underdeveloped understanding of the rationale of "intellectual property rights". The traditional understanding of "property" prevents from coming to an appropriate understanding of property rights with respect to digital goods, e.g. ownership and rights of disposal (licensing) would not be distinguished and the traditional meaning of theft as taking away would not work. Therefore the authors call for "digital honesty", understood as a new "culture of how to behave with respect to intellectual property in a digital world" (cf. 32). Education would be important, but also software industry would have its share and responsibility in building this new culture in order to change the mind-set of "pirates".

With respect to "pirates" the authors recommend the software industry to employ differentiated communication. In short, PC-freaks should be treated as specialists and partners; hobby-users (and here DRM comes explicitly in) should be targeted by good service and DRMs; for pragmatists freeware or slim versions would be important; and for PC-professionals high quality and open communication would be the way to go (cf. p.33-35).

Discussion

Although I appreciate the study very much, in my view there are some shortcomings further studies might wish to avoid.

► Of course it is easy to ask for more differentiation, but I believe that some more

distinctions would have improved the study: it makes a difference if I am talking of game software (almost a media type) or expensive business software like SAP. It also makes a difference if I talk about an illegal copy made from software purchased previously, or e.g. software obtained via P2P networks. I would also argue that making an illegal copy of the latest release is different from a copy of an old release which sells cheaply in any case.

► The authors don't discuss that „piracy" is already part of the marketing strategy of the software industry. For the software industry the question is not whether tolerating „piracy" helps to develop markets, but which degree of piracy is best (see Givon et al. 1995 and Prasad and Mahajan 2003). "Piracy is just another way of boosting market share" says Bruce Schneier resuming a statement by Microsoft attributed to Steve Ballmer (quoted in INDICARE 2004, p. 85). Also the rather balanced report by the Committee for Economic development (CED 2004) tells us "The business software industry, for example, has assumed some level of unauthorized copying and, in particular (at times, as much as 40 %) and has moved forward, working against unauthorized copying and, in particular, mass commercial unauthorized physical duplication of their works offshore through education and enforcement by its trade associations. But *they have also changed their business model* to compensate for revenues lost from unauthorized use" (p. 20; emphasis added, KB).

► The strategic approach to "piracy" by the software industry makes the call for "digital honesty" sound rather idealistic. I would add that in fact consumers get quite different messages from industries. While the content and software industries tend to criminalize "pirates", network providers and device manufacturers are much more relaxed, as e.g. the advertisements for broadband reveal.

► Although the authors very briefly argue that the motivation for „piracy" is based on social recognition by family and friends, I would hold that the analysis of "digital mentalities" falls short in this point. Giesler and Pohlmann (2003a and b) have analysed filesharing on Napster rigorously and found that those consumers of "illegal" content are not the rational choice consumers but motivated by a sense of "subculture" in "virtual communities" and the ambition to be a different consumer. These findings can not simply be applied to "software pirates", but do cast some doubt on the result of the survey that sharing software is as "ideology-free", as the authors assume. Note also that "piracy" depends on age and the will to be different. A question about the use and attitudes towards open software might have helped to get a little bit deeper into the motivations of "software pirates". A more complete approach to "piracy" would also require investigating to what extent far "piracy" can be interpreted as a reaction to practices of software companies that are not accepted as fair (e.g. price policy, frequent updates, lack of service, lock-in strategies etc.), so that "piracy" appears as type of (illegal) "self-help measure".

This leads to the interesting question whether these results are meaningful for piracy in the media sector too. There are of course noteworthy differences: computer software often represents a higher value compared e.g. to a tune, the legal situation appears to be clearer (although not really clear) with respect to software as most people will assume a right to a backup copy but not a right to private copies as fair use. An interesting difference is also that normally software is regarded as a "tool" requiring certain training and skills to be used as opposed to e.g. a purely consumptive use of music (ignoring of course creative uses). As software users and consumers of digital content are in many cases the same population, I would guess that the basic problem that users don't intuitively grasp the legal situation and have no moral problem about making illegal copies will also be the same – influenced of course by many parameters. But instead of guessing we need empirical evidence.

Bottom line

The study reviewed does a good job in assessing the software piracy phenomenon. It could show that the kernel of the piracy problem is not a simple problem of illegal behaviour but of a type of cognitive dissonance between legal assumptions and everyday assumptions, or in other words a problem of consumer acceptability of legal provisions and business models. As every good study develops an appetite for more, I hope that the university Witten/Herdecke and its alumni (like Giesler now a professor at the Schulich School of Business of the York University, Toronto) will continue this line of consumer research.

About this issue

In this issue we start dealing with "piracy" one of the most controversial issues in the debate. One way to cool down the debate and to get a more realistic picture is to turn to empirical studies which seem to be gradually increasing in number. We have selected two empirical studies here, one about software piracy, the other about piracy of motion pictures, both trying to gain insights into the behaviour and the motivations of so called pirates. Despite limitations of both studies it becomes clear that a "consumer" is not an animal totally different from a "pirate": For a majority of approximately 75 % the Faustian saw seems to be true "two souls, alas! are lodg'd within my breast…".

The next two articles can be understood as critical comments on the current situation of rights management. *Rik Lambers* presents the US Digital Media Consumers' Rights Act (DMCRA) as an attempt to re-establish the balance between rightsholders' and consumers' interests in copyright. He then asks if Europe should follow this transatlantic initiative, and concludes that 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.

Péter Benjamin Tóth, legal counsel at the Hungarian musical collecting society AR-TISJUS, focuses on a conceptual confusion he claims to have detected even in EC documents like the Communication on „The Management of Copyright and Related Rights in the Internal Market". He argues that "Rights Management" needs to be understood as the exercise of rights based on copyright legislation with *licensing* as key action, while so-called DRM is based on technological protection measures (TPMs) with *permission* as key action. Not being based on legal regulations DRM would be a misnomer, and he proposes the term Digital Content Control Exercise (DCCE).

A particular technical issue of interoperability is dealt with by two standards experts, *Niels Rump* and *Chris Barlas*. They regard semantic interoperability as a fundamental problem of digital rights management. Special efforts are required to enable the flow of metadata describing content between domains e.g. the mobile domain, pay TV and PCs. The MPEG Rights Data Dictionary (ISO/IEC 21000-6: 2004), as part of the MPEG-21 group of specifications, is seen as a tool that should be able to solve the semantic interoperability problem.

INDICARE was present at the IST 2004 Event last year in The Hague, and Zoltán Hornák, SEARCH, reports about the two sessions on DRM. For businesses interoperability and security are the main concerns, while others still express their general scepticism and doubts about DRM solutions, and propose alternatives. Zoltán has also brought back from the conference a new acronym SPDC, i.e. Self Protecting Digital Content, which means that digital content will be transmitted as executable program and following execution on the user's authorized device, the protected content can be enjoyed. *Cryptography Research* promoting SPDC claims that if someone can break the protection of one particular good, he still is not able to break other items.

Finally we have included two reviews of the first INDICARE' State-Of-the-Art Report. The first reason is that these reviews are valuable contributions to the Informed Dialogue on DRM solutions *per se*. Secondly, critical feedback is most important for us to inform and improve the envisaged updates of the State-Of-the-Art Report. This

time we present comments from *Cory Doctorow*, European Affairs Coordinator for the Electronic Frontier Foundation (EFF), and *Philip Merrill*, who writes for grammy.com and is an active contributor to the Digital Media Project (DMP, Geneva). We invite

further reviews and would be happy to also receive comments from a much wider range of stakeholders including industries, collecting societies, legal experts, standards experts, consumer organisations, and policy makers.

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"Two souls, alas! are lodg'd within my breast…"
Results of an online-survey on film consumption and piracy

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Abstract: This article presents results from an empirical study about consumers and "pirates" of film media. It starts from the assumption that the "film system" needs to exploit film content beyond film-theatres by means of secondary film media of which the DVD is most important today. At the same time digitization, the net, and p2p networks have given rise to "piracy". But interestingly, as the study scrutinizes, pirates are not the opposite of consumers…

Keywords: film, consumer, piracy, consumer behaviour

Introduction

Consumers use different film media, from screenings in cinemas via transmission on television to "secondary film media" like DVDs or VHS. For the film-industry, the exploitation of film-contents in film-theatres is only the first step of many in a long economical chain. Production-costs are recouped

rarely at the box offices for the bigger part of all productions worldwide. Although some films, mostly Hollywood blockbusters, storm the box office, it isn't certain that the production costs will be completely recouped by exploitation in film-theatres. To make film-productions economically viable, other channels of exploitation like transmission on television, release on storage media like DVD or VHS as well as the new Video-On-Demand (VoD) have to be used.

However today, potential consumers can easily acquire film-contents illegally and film-piracy has increased because of uncontrolled p2p networks. While piracy-supporters argue that the internet has been constructed as a freebie information portal and therefore freebie data-transfers are considered legitimate, many economic and political initiatives are trying to use legal steps and technical protection measures to protect producers' copyrights.

The survey

One of the main goals of an empirical analysis carried out by the institute for sociology at the University Karlsruhe (TH) between October and December 2004 was to investigate how users of illegally distributed film-contents are at the same time legal users (Langewitz 2004).

A total of 982 people filled in the online-questionnaire, of which 67.4 % were male and 29.9 % female. This gender ratio isn't unusual for an online-survey, because predominantly male film-consumers use the web to collect information about films, as shown in the online survey by the two German television broadcasters under public law, ARD/ZDF(2004).

To reach as many persons as possible, e-mails were sent to potential participants selected from online-user-lists (e.g. www. email-verzeichnis.de or www.email-verzeichnisse.de), alumni-lists and databases of professionals (e.g. www.mediabiz.de). Potential participants were also encouraged by way of online-media and online-forums as well as print-media, in which the goal of the survey has been communicated. Specialist film-sites like www.filmforen.de, www.film.de or www.filmreporter.de were mainly used for this purpose. It is assumed that in the end *a representative sample of active German film-users* participated.

This is confirmed by the basic findings:

► 48.2 % of all participants said they go to cinema often,

► 51.8 % frequently watch films on television,

► 58.9 % use film-DVDs a lot. The high value of DVDs for film-exploitation today is already apparent.

► 28.3 % (not more) watch films often on VHS, and just

► 8.3 % of all participants answered that they often use the World Wide Web for consuming films.

Next we wanted to know more about the use of secondary film media. Once a consumer has seen a film on one medium, it is of interest, to find out if he will consume the film once more on another medium. For maximum exploitation, consumers must consume film-contents multiple times. To achieve this, high content quality, high technical quality, and a strong emotional consumer commitment to the product is required. In some cases multiple exploitation is extremely successful due to strong customer loyalty, e.g. the mass-phenomena "Star Wars", "Star Trek" or the "Lord of the Rings"-Trilogy.

According to the survey presented here: 63 % of all respondents often buy a film on DVD, *because* they already have seen it at the cinema, and 33.2 % often buy DVDs of films viewed on television before.

For the economics of secondary film media it is also interesting that DVDs and VHSs are bought rather than hired out: 27.9 % of all participants replied that they never rent DVDs, and 60.7 % of all respondents never rent films on VHS. In contrast only 16 % of all respondents never buy DVDs and 60.7 % of all respondents never buy VHSs. This precarious situation for VHS does not come as a surprise as production costs for VHSs are high while the functionality of this storage-medium- is very low. Producers must lower prices and thus their margin gets very

small. It is easy to foresee that the videotape as a storage medium is dying out and producers will concentrate on DVDs.

Next it was interesting to learn about copying behaviour: Almost every participant in the survey who owns up to having pirated movies is at the same time an active consumer. In other words: there are some consumers, who own illegal film-copies. In more detail:

56.6 % of respondents described video tape as their primary target-media for film copies, followed by 36.2 % copying on DVDs; next come special digital compression techniques, e.g. DiVX with 30.8 %, and finally S-VCD (29.8 %) and VCD (28 %). Just 26.2 % of respondents said they didn't own any copied films. On average every respondent owns more than 57 copied films. The average number of legally purchased film-copies however is considerably higher; it is more than 86. Therefore it comes as no surprise that the German video-industry considers 2004 a successful year as reported in December last year in "Videowoche Online" (2004). The bigger worry for producers is the continuing and rapid decline of film-prices on video.

Discussion about consumers and pirates

The importance of age
Age plays an important role. The "Piracy Study 3" (2004) showed that predominantly people aged 20 to 29 years produce illegal film-copies. But this age-group is also the one which most frequently visits the cinema. These findings are confirmed by the survey presented here: 49.9 % of all respondents belong to the group aged between 20 to 29 years. Most of them are active both as consumers and as film-pirates. Only a tiny fraction consumes films only illegally. The overwhelming majority watches films in cinemas (98.2 %).

The importance of roles changes
Film-pirates become consumers, producers become consumers, consumers become producers, and producers become pirates. There is no limit to role changes. This has already been observed by Winter (1995). Indeed an overwhelming majority of 90.9 % of all producers tape films from television broadcasts,

56.4 % of producers admitted to sometimes copying films from video tapes and 30.9 % copied films from DVDs. In other words producers behave more or less like average consumers. These results are based on the answers of those respondents (9.1 %) of the sample who said they were employed in the film-industry.

Anti-piracy campaigns go astray
Anti-piracy-campaigns like the "Hard but fair: pirates are criminals"-campaign by ZKM (Zukunft Kino Marketing GmbH; ZKM 2004) try to prevent potential film-pirates from carrying out criminal activities. One of the main problems of their strategy is that the campaign is targeted at film-theatre-audiences or is presented as a clip before the main feature on the DVD. In this way, consumers, who also may have some illegal film-copies at home, are treated as criminals. On the ZKM-campaign-website (cf. ZKM 2004) you find exactly this issue in the FAQ section: "We are showing the consequences of criminal organized film-piracy and we point out: your acts are actually theft of copyrighted works and illegal for that reason." It is certainly necessary to point out the problem of film-piracy but it is important to use an adequate form of communication and to address the target group properly. In practice, *organized* film-pirates will hardly be reached by this strategy.

Motivations of film "pirates"
In our study "unavailability" was frequently mentioned as a reason to make a copy, either because of timing (the film has already been distributed in other countries while a release for Germany has not been decided on), or for territorial reasons (the film will not or only within constraints be distributed in Germany). The reasons for this fall into three main categories:

1. The film hasn't found a German publisher.

2. The film has been put on the index by the „Federal inspection authority for youth endangering publications" (BPjS).

3. The film has been banned under §131 and/ or §184 StGB (criminal law).

Especially fans of the horror-genre have difficulty with the unavailability of movies, so a very productive "underground" has developed. In relation to this an interesting fact is that a lot of these fans would like to purchase the products legally to support the filmmakers. In addition, for these fans the original product possesses a special emotional or ideological value. From a legal point of view, these consumers act illegally as even the ownership of such films is a criminal act. Horror-fans use a complex network to get forbidden films and accordingly to buy their stuff abroad. It is easily possible for them to order appropriate films from foreign online-stores or p2p-networks. These transactions might be legal to the extent that the films are bought in official stores. Therefore the consumers aren't acting as film-pirates. The illegal aspect consists of buying films banned in Germany, e.g. by the §131 StGB.

Giesler and Pohlmann (2003) use the example of Napster to describe piracy primarily as a subcultural lifestyle concept which creates the "emancipated consumer paradox". Consumers are creating an ever growing distance to the consumption process as defined by market economy, which manifests itself in a collective feeling of freedom by producing and consuming illegal film-copies. This is certainly a problem for the film-industry, because an "emancipated" consumer can hardly be controlled.

Bottom line

Piracy for private purposes is not behaviour by a special group as the survey revealed, and film-pirates copying film-contents for their own use find themselves in a grey area, especially when they have purchased a legal copy before. Most consumers are at the same time "pirates" just like those who work in the film industry, who are producers, consumers and pirates. Nevertheless age is apparently an important parameter indicating a high level of legal film consumption and a higher level of (not always illegal) copying activities. Film piracy is also a group phenomenon when it comes to splatter and trash. Break out of the economical system is just one element of this "underground" culture. Prosecution and punishment may be the appropriate strategy against professional film pirates, who make profits from stolen films by selling them on black-markets, strategies to reduce piracy at the individual level need however to be more cautious than criminalising campaigns.

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Restriking the balance: from DMCA to DMCRA. A short analysis of the May 2004 Hearing on the Digital Media Consumers' Rights Act

By: Rik Lambers, Amsterdam, The Netherlands

Abstract: Historically US copyright law has sought a balance between rightsholders' and consumers' interests. The anti-circumvention provisions of the Digital Millennium Copyright Act have changed this balance to the benefit of rightsholders. Proposed legislation tries to restore the balance: the Digital Media Consumers' Rights Act would reaffirm fair use for consumers and augment the transparency of the use of technological protection measures. But what is fair? And should Europe follow this transatlantic initiative?

Keywords: DMCRA, DMCA, fair use, anti-circumvention, consumer law, US, EU

Introduction

In 1998 the United States Congress passed the Digital Millennium Copyright Act (DMCA). This act strengthened the position of copyrightholders by, amongst others, the prohibition "to circumvent a technological measure that effectively controls access to a work" (see Section 1201 (a)(1)(A) DMCA). Rightsholders can implement technological measures to prevent infringing uses of their copyrighted works and set the conditions under which consumers may access and use these works.

There has been considerable critique of this anti-circumvention provision of the DMCA, notably of its broad scope. It prohibits the circumvention of an (effective) technological measure that protects any work, whether or not the work is copyrighted and whether or not the envisioned use of the work would constitute a copyright violation. Consequently, the anti-circumvention provision also prohibits consumers to circumvent technological measures of a copyrighted work if they want to make a fair use of that work.

Fair Use Doctrine

The fair use doctrine is comparable to, though not to be equated with the system of copyright exemptions in European copyright law. It is comparable in the sense that both the fair use doctrine and the system of copyright exemptions determine that for certain uses of copyrighted material the user does not need to have authorization of the rightsholder beforehand. Both US and European copyright are said to seek a balance between rightsholders' interests on the one hand and the interests of users and society as a whole on the other hand (see, for example, Recital 31 European Copyright Directive (EUCD)). The fair use doctrine and the copyright exemptions represent the second part of this balance: the users' interests. Examples of fair uses of copyrighted material, and which may also be exempted under European copyright law, are quotation for critique and news purposes, use for scientific or scholarly research, and private use.

While the object of the fair use doctrine and the copyright exemptions is comparable, their regulation differs. Where the copyright exemptions are exhaustively numerated in national and European copyright laws (for example see Article 5 EUCD), the fair use doctrine is less clearly defined and more open to (juridical) interpretation. The boundaries of fair use, its scope, are fuzzy

and hotly debated, as will be seen hereafter. However, it has been clear that technological measures do prevent fair uses of copyrighted works. For example, the DMCA forbids a teacher to circumvent a Digital Rights Management system (DRMs) on a DVD to show extracts of it in his class. The DMCA also prevents a visually disabled person from circumventing the DRMs on an e-book so he can use a technical fix that reads the e-book aloud. Any circumvention, even if the subsequent use of the technologically protected material is fair, is prohibited. Consumers need to get permission from the copyrightholder for a use that was historically allowed without authorization. This is what has been called the creation of a "permission culture" (see Lessig 2004, pp. 173, 192-193). The fair use of information by consumers, but also by scholars and news providers, becomes more and more dependent of the permission of rightsholders.

Four pillars of the DMCRA

The rise of a permission culture, or more specific the decline of the ability of consumers to make fair uses, has led to a reassessment of the DMCA. Five years after its enactment a new bill has been introduced in the US Congress to modify the DMCA and strengthen the position of consumers: the Digital Media Consumers' Rights Act (DMCRA). The DMCRA has four pillars: three that relate to fair use and the anti-circumvention provisions of the DMCA, and a fourth that seeks to augment the transparency for consumers towards the use of technological measures. Each pillar will be analysed in light of the Congressional Hearing on the DMCRA (see Hearing DMCRA 2004). This Hearing showed a great divide on the meaning of fair use between proponents (Consumer Electronics organisations, libraries, consumer organisations, academics) and opponents (the record and movie industry). Fair use, the ground on which the greater part of the DMCRA is founded, seems all but rock solid.

1. Reaffirms Fair Use

The most fundamental modification the DMCRA would bring to the DMCA is that the circumvention of a technological measure

is deemed legitimate as long as the purpose of the circumvention is legitimate. A consumer, who circumvents a technical protection to make a fair use of the protected copyrighted work, shall not violate the anti-circumvention provision of the DMCA. This would be, for example, the teacher who circumvents a DVD encryption to show extracts in class for scholarly purposes. However, if that same teacher were to circumvent the DVD encryption and distribute the content of the DVD without a legitimate purpose, he would be punishable for both the act of circumvention and the act of copyright infringement. As such the DMCRA does not provide a legal tool in the hands of copyright infringers, stress the drafters of the bill. The content industry, a strong opponent of the bill, has a different view.

In the perspective of the Motion Picture Association of America (MPAA) the DMCRA would legalize hacking and, states the MPAA: "once a copy protection is circumvented, there is no known technology that can limit the number of copies that can be produced from the original" or "distinguish between a 'fair use' circumvention and an infringing one" (see Hearing DMCRA 2004, p. 31). Both opponents and proponents of the DMCRA acknowledged that there are no such technologies at this moment. What is more, the Hearing showed that while there may be no technology that can determine what a fair use is, neither could the attendees. That is, there were conflicting views on what the scope of fair use entails. For example, is it a fair use to make a complete (back up copy) of a DVD or CD? Do consumers have a right to do so? No, said the MPAA. Yes, said legal scholar and copyright activist Lawrence Lessig. He relied on historic argumentation by referring to the tradition of US copyright and pointed to a US Supreme Court decision to underscore his claim. This last action revealed precisely one of the problems with the fair use doctrine: it is an open norm applied by judges to determine whether there is a case of copyright infringement in a specific context. While section 107 of the US Copyright Act provides four factors that should be considered while determining if the use made of a work is a fair use, this is

still a matter of interpretation that proves difficult for skilled lawyers. For technology, such as DRMs, this determination is even harder to make.

However, the claim Lessig and other proponents of the bill made, was that the DMCRA is not about the *scope* of fair use, but "whether you should have fair use despite the fact somebody has used a technology to take it away" (see Hearing DMCRA 2004, p. 56). Whatever the scope may be, if consumers can claim a fair use, they should be able to enforce it. Technological restrictions, backed by the DMCA, would make this enforcement impossible, and thus the notion of fair use effectively becomes obsolete. The DMCRA would provide a much needed and legitimate remedy.

The strategy of the content industry was to take the focus away from this argumentation, and question fair use and its enforcement as such. It stirred up the existing legal debate about the nature of fair use: if it is a user's right or not more than a defense to a copyright infringement claim. Proponents of the DMCRA stress the first, opponents the second interpretation. No consensus on this question has been reached. But by questioning the nature of fair use the content industry tried to point out that the main foundation of the DMCRA, on which three of its pillars are built, is not as rock solid as thought. Moreover, technological enforcement of copyrights through, for example, DRMs, would be impossible and bring considerable harm to the industry, so it was claimed.

2. Reestablishes the Betamax Standard
In December 2004 the US Supreme Court agreed to hear the MGM v. Grokster case. Twenty-one years after the groundbreaking Sony v. Universal Studios case, the Supreme Court can again decide to what extent technology providers are liable for the (copyright) infringing uses third parties may make with their products, so-called contributory infringement. From the Sony v. Universal Studios ruling followed the Betamax standard, which established that technology providers would have a defense against liability claims if the technology in question is "merely capable of substantial noninfringing

uses". The VCR had this capability, according to the Supreme Court, and this year a lower court determined that p2p network Grokster had too, and could rely on the Betamax standard against claims of contributory infringement.

The DMCRA seeks to reestablish the Betamax standard for devices that can facilitate the circumvention of technological measures for legitimate purposes. Under Section 1201 of the DMCA the manufacturing or selling of these devices is currently prohibited. As a result a consumer cannot legitimately acquire hardware or software that would enable him to circumvent technological restrictions to make a fair use. Under the DMCRA consumers would actually be able to purchase the tools to enforce a fair use of a copyrighted work, or manufacture these tools themselves.

Proponents of this specific provision have not only stressed the consumers' interests, but also the more societal interest of flourishing technological innovation. This might be hampered if manufacturers live in a fear of liability for putting certain devices on the market, as noted by the President of the Consumer Electronics Association during the Hearing. For technological innovation the upcoming Supreme Court case MGM v. Grokster will be of great importance: the Betamax standard may be revised, even before the DMCRA finds its way into law, if at all.

3. Restores Valid Scientific Research
Under the DMCA scientific researchers may only circumvent technological protection measures for encryption research under specific circumstances. Infamous is how Princeton University Professor Ed Felten was threatened with a DMCA lawsuit when he wanted to publish his research on weaknesses in a certain digital music security system (the Secure Digital Music Initiative). Felten initially withdrew his research. As a result both the academic freedom of speech and the progress of science were hindered by the (mis)use of a DMCA provision. The DMCRA would provide that researchers can analyse other technological protection measures than encryption and allows them to manufacture the circumvention tools to do

so. Valid scientific research would be restored, bringing more security, and presumably also more secure technological measures.

4. Transparency through Labeling

A fourth pillar of the DMCRA stands alone from the previous three, which are connected to the fair use principle. It seeks to enlarge the transparency for consumers on the use of technological measures. It may not be clear to consumers that, for example, CDs or DVDs are unplayable on certain devices due to technological measures. The DMCRA would add to the DMCA that adequate labeling of copyrighted material should occur to the benefit of consumers. This would enable them to make a more informed choice in the purchases they make. Also, the sale and advertising of mislabeled CDs would be prohibited. This was the least controversial provision during the DMCRA Hearing.

In short: While the scope of fair use may be questionable, it seems uncontested that the anti-circumvention provisions of the DMCA have prevented consumers from actively making a fair use of content protected by technological measures. Consumers, but also scholars, libraries and consumer electronic device manufacturers may be hurt in their interests by the DMCA. Not the least because of the strong objections and lobbying of the content industry, it is all but certain that the DMCRA or a comparable proposal will make it into law.

European analogy

Like the DMCA the EUCD offers a double-edged sword to rightsholders: circumvention is forbidden, and even if it were for a legitimate purpose, the manufacturing and sale of circumvention tools is also prohibited. The anti-circumvention provision of article 6 EUCD tends to overshadow the consumers' interests and related copyright exemptions, as laid down in article 5 EUCD.

Disagreement over the nature and scope of fair use in the US is mirrored in the confusion of European consumers over the private copying exemption. As such the EUCD does not provide a right to make a private copy, as recently underlined by several European court cases (see Helberger 2004). This shows an important difference to US legislation: many of the copyright exemptions that would be considered fair use, are not mandatory under the EUCD and left to the determinant of Nation States to guarantee and facilitate.

No proposal comparable to the DMCRA is pending on a European Community level. The European Nation States may take different regulative approaches to the subject matter. German copyright law, for example, does provide a transparency provision (Article 95(d)) that can be compared to the fourth pillar of the proposed DMCRA. Likewise technologically protected content should be sufficiently labeled as such under the German provision. That insufficient labeling could lead to a misleading practice was outlined in the aforementioned European court cases (see Helberger 2004).

In short: 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 (cf. Helberger et al 2004, p. 56). *Complementary* to consumer protection provisions, since the EUCD does not provide a private copying right. The DMCRA might serve as paragon.

Bottom line

Restriking of the historical balance between rightsholders and consumers is overdue. It is time that the *R* of Rights is put (back) in the DMCA and equivalents.

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Digital Rights Management or Digital Content Control Exercise?

By: Dr. Péter Benjamin Tóth, ARTISJUS, Budapest, Hungary

Abstract: In quite a short time, the term Digital Rights Management (DRM) has conquered the world of copyright. The number of definitions given by law or IT professionals is inestimably high. Still, I try to give a new point of view on this matter, starting not so much from the practical realisation of DRM systems, but from the term itself. I wish to assert that DRM systems cannot be described as "digital rights management systems" as they usually do not involve the management of copyright.

Keywords: Technical protection measures, Copyright, Copyright Directive, code as code

What does Rights Management mean?

The term "rights management" is not a new one in copyright; it has been in existence for several decades. As the European Commission states in its communication on the management of copyrights, "*The term 'management of rights' refers to the means by which copyright and related rights are administered, i.e. licensed, assigned or remunerated for any type of use." (source.).* Briefly, rights management in my phrasing is:

► the licensing of relevant uses under an exclusive right based on copyright or related rights regulation (against payment, i.e. "royalty" or for free);

► the distribution of collected royalties (if it is not the rightsholder who carries out licensing in person;

► the prohibition of relevant uses under an exclusive right based on copyright or related rights regulation.

To sum up: in case of copyright management the right to license or prohibit a use is based on provisions of law. The following factors have to be explicitly regulated in law:

► the right itself;
► the uses that require a license;
► the person who holds the right;
► the limitations of copyright;
► the sanctions of infringements.

What has to be excluded from the definition?

Now let me try to conclude in a negative way what activities can not be considered as "rights management":

► Permission or prohibition regarding contents that are *not protected by copyright*.

   An example for this: someone has an idea that has commercial value, and intends to reveal this secret only to a person who gives money for his idea. Ideas as such are not protected by copyright; this activity is not rights management, but secrecy.

► The permission or prohibition of activities *not specified as relevant uses in copyright*.

   For example, when someone gives mere access or allows perception of the work only on condition of payment – the bookshop sells a book, the movie theatre sells tickets to the show. As the consumer does not carry out a relevant "use" (watching the movie, reading the book), the movie or the bookshop does not manage any copyright, they just exercise their proprietary rights. None of the consumers who steals a book or goes into the movie theatre without buying a ticket is a copyright infringer.

► The permission or prohibition of activities specified as "*free uses" in copyright law*.

   The term "free use" means an exception from the exclusive rights of the right-sholder. This term is often used also in cases where the use is not totally "free", i.e. it is accompanied by payment in some form. This is the case when a phonogram producer uses a digital copy control system that prevents the consumer from making copies for his private purposes, for example to listen to that CD also in the audio system of his car. As private copying is free use under several jurisdictions, the prohibiting activity of the phonogram producer is not rights management – it is just taking advantage of a technical possibility.

Why so-called DRM systems are not DRM systems

With the example of the copy-protected CDs we have arrived at the definition of so-called "DRM" systems. As most scholars agree, the term *"digital rights management"* can be understood in two ways: **(a)** rights management carried out in a digital way or **(b)** the management of digital rights. We can base our following arguments on any of these two approaches, as in both cases the *genus proximum* of DRM is "rights management".

Now let us see, what the main DRM developer and provider companies present to us when trying to market their products. Their very simple model has three actors (see Fig. 1): the author, the consumer, and the DRM-provider that helps the author in protecting the work. There is one small, but not irrelevant problem with this model: it does not exist in practice.
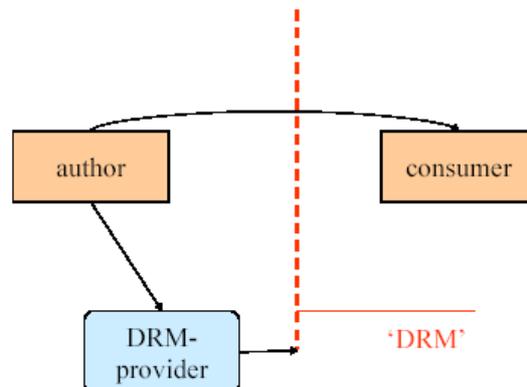

Figure 1: Simple model with three actors

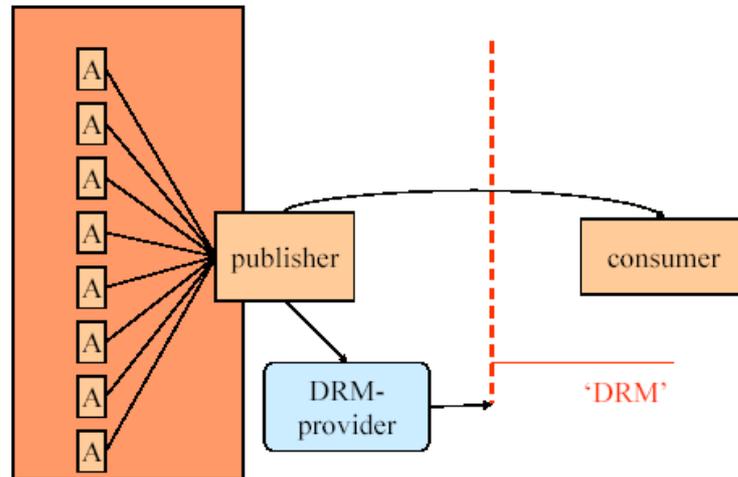We proceed with more practical examples. In Fig.2 we see the model of an electronic magazine publisher.

Figure 2: Model of an electronic magazine publisher

On the left hand side there are the authors (journalists or scholars, photographers, graphic artists, etc., signed with "A") of the periodical. They license the publisher to reproduce and distribute (or make available to the public) their works. The e-publisher sells the magazine to the consumers, and – in order to defend his financial interests – pays for the services of a DRM-provider to safeguard the content.

In this figure there is one activity that can be regarded as rights management – it is the licensing activity of the authors towards the publisher. Therefore rights management does not appear on the right-hand side of the picture (where the activity of the DRM-provider takes place), but happens on the left-hand side, where there is no DRM. The space where real "rights management" takes place is signed in red in Fig. 2.

If a consumer wants more than simple access to the works – for example he intends to republish some of the articles – he will not necessarily obtain a license from the publisher for it, he may have to agree with the authors directly. In most cases the agreement between the authors and the original publisher extends to other uses and also to sub-license other users, but in legal terms it is not necessary. Therefore it cannot be excluded that the relationship between the publisher and the consumer (seller and buyer) may also turn into "rights management", but this is not imperative.

Let us go into details with another, recently typical use: the on-line music store (e.g. Apple iTunes). We can see the simplified licensing and marketing model of this service in Fig.3.
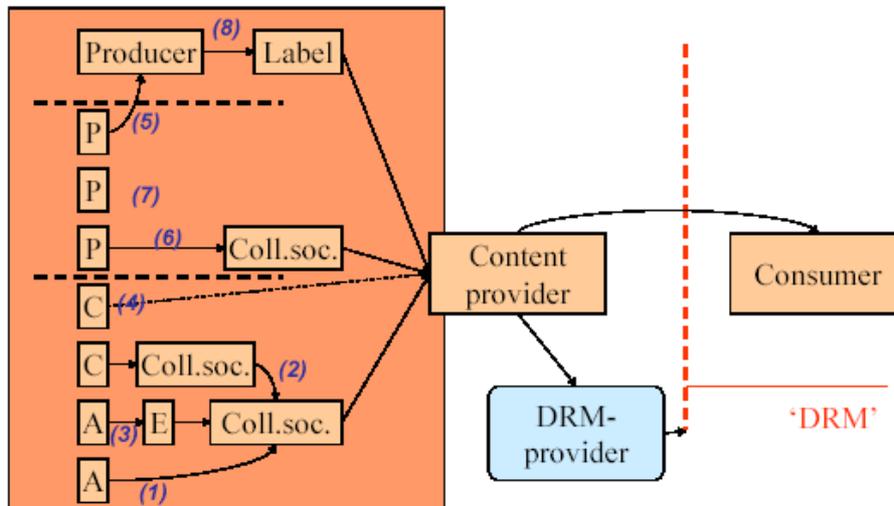
Figure 3: Model for an online music store

In the on-line music store, the musical works are usually sold fixed on a phonogram (and then turned into a common audio file format), in the interpretation of performing artists. Therefore we have three categories of original rightholders:

► authors of the musical works (using the hundred-year-old acronyms in the world of rights management "C" stands for composers, "A" stands for author, i.e. here lyricists);

► performing artists of the sound recording (signed with "P")

► phonogram producers.

As all persons in the above categories have exclusive rights to license the making available of their works/performances/recordings under copyright or related rights, a lawful user has to obtain license from each of them.

In practice, these rights are not exercised individually by the original rightsholder.

(1) The composers and lyricists usually form their own collecting society and trust them to manage their copyrights.

(2) These collecting societies trust each other to license their repertoire on their territory respectively. Reciprocal representation agreements exist in the field of online uses. These agreements of composers' and lyricists' collecting societies, the so-called

Santiago- and Barcelona Agreements, are currently under competition law revision by the Commission.

(3) Some authors do not only trust their collecting society but also a music publisher (using again the French-based traditional acronym coming from the term "Editeur", signed "E" in the figure), and therefore he and the publisher both have a right to royalty-share. In Fig. 3 I could not present the complicated practice of music publishing – co- and sub-publishing agreements, repertoire transfers, etc. –, but in a fully developed rights management system one has to take all these into account. Presently the musical collecting societies track all these changes, and pay royalties to the authors themselves, their music publishers or sub-publishers and foreign collecting societies.

(4) Finally, some of the authors decide to exercise their rights individually.

(5) The performing artists generally transfer all their rights to the phonogram producer.

(6) However, the possibility may not be excluded, that some of them also form a collecting society, or

(7) keep their rights in their own hands.

(8) The related right of the phonogram producer is also often transferred to other producers or to one of the five "majors".

If the content provider (in the case of iTunes: Apple Inc.) intends to carry out this activity legally, it has to clear all these rights. This clearance, the licensing practice of all the rightholders, is called "rights management" (signalled with red in the figure again). The DRM system used by Apple is, however, used in another relationship: between Apple and the consumer. This is not "rights management", because Apple does not give any right to use the work. If the downloader wishes to play the music files in his restaurant, he has to obtain a license from the rightholders (or their collecting society) directly. If he wants to create a PC-based juke-box, he also has to clear the rights, he will not be able to get a license for this use from Apple. This may also depend on the contracts between all rightholders and Apple, but in legal terms the opposite solution would mean the exception not the rule.

Let us summarize our conclusions in a chart, showing the difference between real rights management activity and the so-called "Digital Rights Management".

	Real Digital Rights Management System	So-called (IT) Digital Rights Management System
basis	right (granted by copyright law) on special subject matters (specified by copyright law)	technical control (power) over any digital content
substance	licensing/prohibition of copyright-relevant uses	permission/forbidding of any acts based on a mere technical possibility to prevent these acts
name	Digital Rights Management	Digital Content Control Exercise

Consequently **Rights Management** is the exercise of rights based on copyright legislation. The key action is **to license**. On the other hand **so-called DRM is** the exercise of possibilities based on digital *technological protection measures* (TPMs). TPM is defined by the Directive 2001/29/EC, Art. 6.3: „For the purposes of this Directive, the expression 'technological measures' means 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 subject matter, which are not authorised by the rightholder (…)". The corresponding action is about **permission**.

As this is not a realisation of "rights management", I propose a new name to it: **Digital Content Control Exercise** *(DCCE)*. In my view this concept emphasises that this phenomenon is not based on legal regulations, its basis is a purely technical power or control over any content.

Bottom line

In my opinion it was an obvious and basic fault of the Commission to include the term "DRM" (correctly: DCCE) in their communication on „The Management of Copyright and Related Rights in the Internal Market", as a form of copyright management. "*DRM systems (...) clearly are an important (...) tool for rights management in the Internal Market of the new digital service"* (Communication 2004, 1.2.5.). As a rule, "DRM systems" have nothing to do with "rights management", they are just a tool for defending interests of content providers.

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When "playing" isn't "playing" or how to achieve semantic interoperability

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Abstract: This paper discusses one of the fundamental problems of digital rights management: how to enable the flow of content between different domains: whether from the mobile domain to the world of pay TV or from music download to eBooks. While content itself can easily be migrated from one domain to another – thanks to content coding standards such as those developed by MPEG – the metadata describing the content can not – or at least not yet.

Keywords: interoperability, semantic interoperability, metadata, Rights Expression Language (REL), Rights Data Dictionary (RDD), OMA, MPEG

Introduction

One of the pre-requisites for trading "virtual goods" is that everybody in the value chain must know exactly what they are talking about. Without agreement on meaning, it will be extremely difficult, if not impossible, to make deals and transact business between parties who do not know each other. And as we are talking about content that may be compiled from several different sources and contain several different media types, such as music, text and video (i.e. true *multi*media), we are potentially talking about hundreds of different metadata and identification systems. When talking about music we use ISRCs, ISWCs, GRids, MWLIs, IPIs and ID3. For textual resources we have ISBN, ISSN, ISTC, BICI, SICI, NITF, PRISM and ONIX, for visual content there are ISAN, V-ISAN, UMID, MPEG-7, DMCS and SMEF. Museums, libraries and Universities have their own systems (independent from the schemes based on content-types): IIM, LOM, IMS, CIDOC and MARC. To finish the alphabet soup for this paper, there are identifiers for physical products (EAN and UPC) as well as identifiers and metadata for the online world (DOI, DII, URL, URI, URN and iDD).

When trading a piece of multimedia content it will be necessary to be able to deal with identifiers and descriptors from any these identifier and metadata systems. The alternative – the development of an entirely new unitary system that would be adopted by everyone – is highly attractive, but probably completely impossible on the basis that everyone would have to agree on the new system and to give up their own systems.

In other words, we will need to create some method to be able to map the semantics of one metadata standard to the semantics of another if we want to be able to create true multimedia experiences.

Lost in Translation

Nowhere is this more obvious then when dealing with content that is governed by rules articulated in rights expression languages (RELs), such as specified by OMA (2004) and MPEG (ISO/IEC 21000-5:2004). These two standardisation bodies each opted to adopt a different rights expression language on the basis that they were the most appropriate for their respective domains. It causes, however, a potential problem for users (a user being any participant in the content value chain, from content creator via content distributor to the consumer), namely that content that has been created in, say, the "MPEG domain" and is governed by the

MPEG REL, cannot be rendered by a device in the "OMA domain" which does not understand the MPEG REL, even though the underlying compression and packaging of the content is the same.

The film "Lost in Translation" we all saw on the silver screen last year showed that translating from one language into another can be tricky. While this is true for humans, it is even more so for computers – especially when commercial values are at stake – as the following anecdote indicates. During the discussions between Consumer Electronics (CE) industry engineers and executives from movie industries which led to the drafting of the MPEG REL specification, there was extensive discussion about "deleting" content.

However, while the CE engineers understood "deleting" as the process of wiping the entry from the media's table of content (and thus making the file inaccessible), the content owners' view was that "deleting" should mean a complete overwrite of the entire file with random numbers, thus destroying every trace of it and making it completely impossible to restore. This seems to be a small difference, but there are significant consequences as, if devices were to be built based on the former definition, content owners might well not have been willing to release their content for such devices. This story highlights the critical importance of well-defined and agreed semantics.

Managing Meaning

Douglas Adams has already described a solution to this problem: A "Babelfish" (Adams 1979) that translates entire sentences without any loss of meaning from one language into another. Unfortunately, no-one has been able to implement a complete Babelfish as of yet.

We do, however, have plenty of syntactical tools (XML being the fashion of the last couple of years) to help us with the transforming the structural grammar and we have many online dictionaries that can help to translate individual words. But when it comes to translating phrases or sentences, the available systems are far from perfect. What has been missing up to now are semantic tools that can translate (i) from one language to another

language without losing the meaning, but also (ii) to translate from one environment to another environment (e.g. between different content verticals as discussed above) while maintaining the meaning of what is being translated.

However, with the development of the MPEG Rights Data Dictionary (ISO/IEC 21000-6: 2004) as part of the MPEG-21 group of specifications we do now see tools emerging that should be able to solve the semantic interoperability problem.

MPEG Rights Data Dictionary Approach

When MPEG set out its requirements for a rights expression language and a rights data dictionary it was not anticipated that one of the submissions would be an ambitious and novel idea for the creation of tools for semantic interoperability. The submission from the Contecs:DD consortium (at that time: International DOI Foundation, Melodies and Memories Global Ltd., the Motion Picture Association, the Recording Industry Association of America and Enpia, who have since then been replaced by Rightscom Ltd.) was chosen by MPEG partly because it did offer a route to interoperability, enabling MPEG to work with the huge variety of vocabularies implied by the profusion of metadata schemes identified earlier.

The rationale for this decision was that communities wishing to use MPEG technology would not necessarily want to adopt a single (new) MPEG vocabulary, but would continue to use their own. Indeed, it is not the job of a horizontal standards organisation like MPEG to dictate to specific vertical communities what they should and should not do within their own sector. This of course extends to enabling them to continue to use their own metadata schemes, even though the use of a single scheme could greatly enhance meaningful communication between sectors. It was this problem that MPEG sought to solve when it adopted the approach of an ontology-based rights data dictionary. This means that the dictionary is built up as a knowledge base using a consistent data model with all terms being expressed in terms of their relationships to one another. For computational purposes this enables ex-

tensive inferencing, which both cuts down complexity and achieves rich results from the knowledge base (cf. International DOI Foundation 2004).

The dictionary standard is actually based on a remarkably simple model, containing only four entities – resource, agent, time and place. Combining these four entities in a "Context Model" (so called because each term is analysed in terms of the context in which it exists), it is possible to classify and derive terms for the dictionary in a highly granular way with the use of these four entities. The advantage of using an underlying data model of this nature is that the dictionary can be cumulatively enlarged in a consistent manner, so that all terms are potentially interoperable, even though they come from non-interoperable sources. For more information see International DOI Foundation (2004).

This is achieved by analysing each term as it is presented for inclusion in the dictionary, then mapping it to a central core in accordance with their original semantic content. By this means, the dictionary can be built up with terms from many different vocabularies, mapped together in a matrix of meaning.

The dictionary as finalised and published in the ISO standard is only small, but, supported by the Context Model it contains the building blocks of a potentially much bigger dictionary. And given that the communities that may adopt MPEG standards could be very substantial, this bigger dictionary will contain terms required by anyone wishing to use MPEG technology, especially, but not limited to, the MPEG Rights Expression Language (ISO/IEC 21000-5). The process for extending the dictionary is the proposed Registration Authority, which is expected to be managed by the International DOI Foundation (IDF). This is significant because the IDF represents a major content owning community that will be encouraged to adopt the dictionary from the start. In addition the music, motion picture and publishing industries have all expressed their support and several implementations are currently under way.

Achieving semantic interoperability between MPEG and OMA

While the dictionary deals with the method by which terms can be made interoperable, it remains to be seen how rights languages themselves could be made to interoperate. To understand this, it's essential to understand the problem that multiple rights expression languages may present. Say that rights holder A uses the MPEG rights expression language while rights holder B uses the OMA language. Both languages have a right called "play". The question then arises as to whether the MPEG "play" is the same as the OMA "play". But only by analysing the semantic content of both versions of the word "play" it is possible to know if they mean the same. If they do not mean exactly the same, there is a danger that a device will allow a user to deal differently with a resource, depending on whether the device is using the MPEG "play" or the OMA "play". This could have serious unintended consequences and may lead to the same issues as discussed above with respect to "delete".

One solution to this is to use an interoperable rights data dictionary, constructed on the MPEG principle, to enable users to generate rights expressions in both the MPEG and OMA languages, by using the same top-level core terms, which are then translated ("specialised", to use the term coined in ISO/IEC 21000-6) into the appropriate MPEG and OMA semantics. This approach would ensure that the actions permitted by an MPEG or OMA rights expression (using terms from the respective languages) were equivalent even though the two rights expressions had apparently different terms. There may, of course, be other methods to achieve the same ends, but what is certain is that direct translation between rights languages may be unreliable for a combination of syntactic and semantic reasons. If this is so, a better solution may well be the one outlined above.

What does that mean practically?

Rights owners will describe their content as well as the rules under which their content can be accessed in their preferred language and to their requirements. Device manufac-

turers A and B will, however, design their devices with technical capabilities in mind.

This will almost certainly lead to slightly different implementations of, say, the verb "play": In a specific device, "play" could involve a resizing of a video clip to a slightly smaller screen and another device it would involve the reduction of the colour depth to a black-and-white picture to cater for a black-and-white display.

In order for the an automated content distribution system to work with such different devices, a semantic connection between the content owner's "play" and the two device's "play" needs to be created so that (i) the former becomes a superset of the two latter and (ii) that this relationship becomes known to the content distribution system as well as the devices.

Bottom line

Everyone agrees that standards are valuable and can lead to interoperability. But when there are different standards solving the same problem in different domains, it may be extremely difficult to efficiently interconnect even adjacent domains. Today we have this situation: each content vertical and each distribution domain has its own vocabulary – with the net result that true *multi*media must remain a dream unless there is a process to make controlled vocabularies interoperable. Technologies such as the MPEG-21 Rights Data Dictionary can help to manage these various sets of meaning so that one always knows in terms of one's own vocabulary what someone else was saying.

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About the authors

Niels Rump has worked in the area of DRM since the mid 1990s. He was the main developer of one of the earlier commercial DRM systems (Fraunhofer IIS' Multimedia Protection Protocol, MMP). During his time at Fraunhofer IIS, he started working in several DRM-related standards bodies including MPEG, AES, and SDMI. He has also worked for InterTrust Technologies before joining Rightscom in 2001 where he concentrates on the technical aspects of DRM applications and technologies. As a Senior Consultant he is involved in the development of identification, metadata and messaging systems within, amongst others, the Music Industry Integrated Identifier Project (MI3P). He holds a degree in computer science from Erlangen University, Germany.Contact: niels.rump@rightscom.com

Chris Barlas has more than twenty years experience of rights management. In the mid 1990s, he led the European Commission supported Imprimatur project. Subsequently he was involved in other successful European Commission projects including <indecs> which delivered the widely adopted analysis of metadata interoperability. He has also worked as a writer and producer in television and radio. At Rightscom he works as Senior Consultant. In the public sector, he edited the CEN/ISSS DRM study and co-authored WIPO's recent report on DRM. Chris has been active in international standards development. At MPEG, he co-edited the MPEG-21 Rights Data Dictionary, published in April 2004 and took an early leadership role on standards at the Open eBook Forum. At Rightscom he recently assumed responsibility for developing the market for Ontologyx.

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DRM at IST 2004

By: Zoltán Hornák, SEARCH Laboratory, Budapest, Hungary

Abstract: This year the EC's annual IST Event was held 15-17 November in The Hague. Two dedicated sessions addressed DRM: "The Evolving Consumer Value Chain: Extended Home Environment and DRM Challenges" (conference session) and "The Future of DRM" (networking session). While the conference session mainly addressed security and interoperability issues, the networking session was characterized by a vivid debate whether the problem of digital IP protection can be solved by DRM approaches or if completely different solutions are required. Although no clear conclusion was drawn, the arguments were interesting.

The IST 2004 Event

One of the most important thematic priorities of the European Commission's Sixth Framework Programme (see FP6) is the Information Society Technologies (see IST), whose aim is to ensure European leadership in knowledge economy and foster the development of the knowledge-based society. The annual conference, where representatives of the academia, the public sector and the ICT industry can meet to build relationships and establish cooperation, is the so-called IST Event (2004a).

This year the IST 2004 Event was held in The Hague. The event offered three main instruments for the participants to help them build new contacts and find potential partners: the **Conference** with 30 sessions addressing main topics of IST, the **Exhibition** showing results of recent IST R&D projects, and several **Networking Sessions** offering valuable possibilities to meet persons with the same interest and discuss ideas about future cooperation.

A conference session called "The Evolving Consumer Value Chain: Extended Home Environment and DRM Challenges" and also a special networking session were dedicated to Digital Rights Management.

Home environment and DRM challenges

At the conference session on DRM six presentations (IST Event 2004b with slides available) addressed ongoing development activities and future views on the improvement of DRM solutions.

Richard Gooch (IFPI) talked about new music distribution needs, where consumers would like to listen to the songs they have paid for throughout their home environment: PC, music centre, discman, car, etc. without any inconvenience. The DRM system in this scenario should protect against "copying for the neighbours". The speaker highlighted two important problems: security and interoperability. Admittedly solutions to these problems were not addressed in this opening presentation.

Lindsay Holman (Panasonic OWL) presented several interesting facts about music and video downloads and P2P network penetration. Even though P2P networks have been understood as equivalent with piracy in the past, the speaker's opinion was that this technology would play a significant role in the future of *legal* content distribution. By learning from the success of this technology and applying adequate Copy-Protection and Copy-Management (CPCM) solutions to it, content industry could benefit.

Erwan Bigan (VIACCESS SA) gave an overview on current protection systems, like conditional access (CA), digital rights management, copy protection and copy control. According to the speaker's view, evolution seems to be turning from conditional access based services, like coded cable TV, to usage controlled DRM solutions. He also highlighted interoperability and security as the key success factors.

Timo Ruikka (Nokia Corp.) introduced OMA/DRM standardisation efforts to elabo-

rate open, widely accepted standards. Now OMA DRM 2.0 is ready and can be deployed to create interoperable DRM solutions. The next steps will not be of technical nature, but about attractive services and business models to win consumers. If offer and demand were to match, then the relative security and interoperability provided by OMA DRM should be enough.

Wouter Leibbrandt (Philips Electronics) addressed future trends from the convergence point of view. It seems that mobile trends will drive development in this area. According to surveys mobile phones are more important for people than their wallets as they carry their mobiles with them all the time and wish to use them for all sorts of services. During the first wave of mobile infotainment developments "*single function products*" became more and more powerful. In this phase development was driven mainly by insufficient memory capacity and other technical bottlenecks. Now we are experiencing the second wave of this evolution characterized by "*combination products*", where different services are integrated into one device (mobile + camera, flash-drive with MP3 player, etc). In this phase a lack of interoperability is the main obstacle.

José Jimenez (Telefónica) interpreted DRM as the key element in the "war towards the Intelligent Home". Using Lord of the Rings imagery, he went through mobile network trends and pointed at actions needed to fight decreasing ARPU (average revenue per user) and increasing competition. With respect to consumers, the lack of interest in technology would be the most important hurdle. This war can be won only together, according to the speaker, and DRM seems to play a key in this process, because its interoperability requirements force actors to cooperate.

Shortly summing up: From the presentations mentioned above one can see that much effort has been invested in developing and deploying DRM solutions, but several problems, mainly security and interoperability, are still open and call for widely accepted solutions. The question – which none of the speakers addressed directly – however is,

whether these problems can be solved in the near future.

Vivid debate about DRM at the networking session

The networking session about the "Future of Digital Rights Management"started as a conventional round table discussion about upcoming calls for proposals and possible projects, but very soon the direction of the conversation turned to the theoretical and practical problems and the uncertainty surrounding the future of DRM. After the second round the audience joined the debate with – sometimes extreme – views and the whole session turned to an endless debate about the question, whether any DRM technology can be long-lasting in practice or not. Even though there was no clear outcome of this discussion, it is interesting to highlight some points from the debate.

People do not want unbreakable rules
Any type of protection is based on laws and rules. Rules in everyday life are sometimes easy to break, like speed limits and illegal music downloads. We all know that breaking rules is illegal and in unlucky situations entails punishment. However in case of digital content protection, rules seem to behave strangely. On one hand there is practically no punishment for P2P MP3 downloads, while on the other hand, if strong DRM technology were applied, the rules would not be breakable, and ideally there would not be any exception from the rule.

The vision of rules that do not permit any exception sounds exaggeratedly strong for consumers. A future in which there is no way, even in exceptional cases, to un-protect protected digital content in order to have access to it, understandably frightens us. In everyday life a "small breaking" of the rules may help more than it causes trouble (e.g. exceeding the speed limit sometimes can save life)? Applied to digital content, the equation of all the disadvantage of strong protection on the one side and relatively limited damage avoided on the other side, is often perceived as unbalanced. According to one of the speakers, people do not want unbreakable rules.

Preserving digital heritage

One can experience that it is hard to find certain works of art, like CD's and films from the beginning of 1900's. There are many cases where the market for traditional media became very limited due to the free Internet availability of the content. As a consequence shops and libraries did not keep copies. While in the past many of these works of art could be found and downloaded from the WEB freely but illegally, these channels are shut down today. As a result content practically disappears and becomes unavailable.

The speaker urged that we should take care of our digital heritage and ensure that all digital works of art will be preserved for the time when their legal protection expires and they become public and unprotected. Nobody seems to deal with this issue, no one seems to be interested, and law does not seem to address this question.

Can IP protection ever work?

After the issues that addressed DRM from the points of frustrated expectations a comment from the audience turned the table to the technological problems: "We have to see that *legal means and technological means have all failed*. We should not pacify the world with the promise that these questions can be solved in the future by technical means. Copy protection does not and will not work. We have to look for a different solution."

Since this comment implied that if the situation is so bad, there is no ground for further research or standardisation investments, it raised quick and loud objections and started a lively debate:

Many from the audience claimed that from a theoretical point of view the problem is solvable, but requires actions that are hard to achieve in practice, that was why further efforts are needed.

► For example in the case of music it should be possible for a song to exist only in properly encrypted form right from the very beginning when it is recorded in the studio.

► Decryption should be dynamic and self-containing, that is the digital content should be an executable program, whose output would be the protected content. The executable program should play the output only in such environment, where it is ensured that content can not be stolen (i.e. only on certified playback devices). Self Protecting Digital Content (SPDC) was referred as an example for this solution (see Cryptography Research, Inc. 2004). SPDC claims that if someone can break one of the protections, he still won't be able to break others, since there is no single point of attack in the system. Interoperability would be the key question if such a strong DRM came into practice.

Alternative compensation to encourage intellectual production

There was another interesting comment from the audience. It suggested that we should have turned back to the roots of IP protection laws and examined how its initial goals could be reached in another way: The very basic goal of IP protection is to encourage authors to produce more and higher quality intellectual property, because it is the common interest of the whole society. In the past IP protection law seemed to fulfil its basic goals, it encouraged authors to produce more and more products (quality is another question) and consumers accepted paying for them. The new possibilities by newer and newer technology would have spoilt the mechanism and its balance.

The comment suggested forgetting about the current situation for a minute, where we are, what the laws are, and try to think in a set of rules, that can be feasibly enforced even in practice and take into account the new possibilities of the Internet and the changed requirements of the consumers, while still encouraging authors.

One has to accept that *consumers want to exploit the possibilities of easy copying* between different devices, through the Internet or even between each other (not just within their own home!). Experience would show that those initiatives fail that try to apply any sort of copy protection and try to prohibit

users from exploiting opportunities that technology now provides. Users want to collect everything they might ever need – even if they do not or only very rarely use it (e.g. music collections with thousands of albums) –, and they want to take these collections with them all the time, just because technology permits it, and because it is much easier than anything else.

The speaker suggested that one should play a bit with the idea that copying any content was be free (according to law) and very easy (because of technology improvements). In such an environment how could one encourage authors to produce more and higher quality IP?

A possible solution would be to collect "IP taxes" and distribute this money based on the usage of different IPs (e.g. songs). If the usage counts for this calculation were to be solved by relatively strong (but weaker than currently projected) DRM technology it could be the solution. On one hand it would not prohibit consumers from doing what they like, giving them total freedom, while on the other hand there would be no reason to break this system by anyone, since their money would not depend on it. Only authors would be interested in cheating the system, but tolerating some fraud in that sense might be better than the current situation. However, one has to admit that this idealistic situation would need such basic changes that chances that it will ever be reached are very small.

Bottom line

From the lively debate and the extreme views on the future of DRM we can conclude that there is no clear consensus about the direction where technology, law and practical systems should go. It might be the case that the so-far more or less common IP regulations will split into different sub cases (like music vs. other arts, or even the case with software), or different proprietary solutions will rule this world. Currently no one seems to know the answer, but time will surely take future to present.

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Eight comments on the first INDICARE state-of-the-art-report

By: Cory Doctorow, European Affairs Coordinator for the Electronic Frontier Foundation, London, United Kingdom

Abstract: The following article is based on a letter the author sent to Natali Helberger, the editor of the first INDICARE state-of-the-art-report. While the overall appraisal of the report is very positive, there are eight suggestions which INDICARE might want to stress in its updates of the report. Most of them deal with intricate technical matters of DRMs.

Keywords: authorized domain, vulnerability, broadcast flag, forensic DRM, price discrimination

1. Latent effects of DRMs

There should be more consideration given to the ability of DRM to change the capabilities of your device after the fact. If you buy a device with a DVD burner, but buried within the device's DRM language is the ability of a broadcaster to disable your burner for his shows, then how will you know whether your burner will work with the shows you've bought the device for? In the US, a Media Center PC can no longer be used to burn DVDs of the Sopranos because HBO has switched on a "no-burn" flag. Likewise, users of the Rhapsody music service may lock in to a service contract and compatible devices because their favourite artists are available on Rhapsody, and find themselves both locked in and shut out when the artists terminate their agreements with Rhapsody – a common occurrence today.

2. The concept of "authorized domain" is based on unrealistic social assumptions

With regard to "authorized domain" and the idea that a cartel will set out devices that know what constitutes a household. In the DRM meetings I've attended where this is being implemented, the notion of an authorized domain is being driven by assumptions about what constitutes a family that are far from universal. It might be impossible for a child who is in joint custody to her parents to bring her videos from one parent's home to another. A family where one party travels too often may find its media fragmented and locked out of its devices. Divorce, marriage, custody – all of these are moving from the realm of the social contract to a determination made in secret by a cartel of content companies who are locking in all their views of what constitutes a valid household.

3. The "authorized domains" is a mere option not a guarantee

Further to authorized domain: even within an authorized domain, the DRM systems envisioned will allow rightsholders to restrict how you use the media you lawfully acquire. The authorized domain *allows* a rightsholder to give you the flexibility to watch a movie anywhere in your household, but it does not *require* that the rightsholder do so: already in the proposal for the authorized domain is the ability to limit viewing to a single device, or to cap the number of viewings, or to limit viewings to "local" devices (i.e., even though your authorized domain includes your car, a music company can still force you to buy music that only plays in your house, and you'll have to buy the same music over again for your car).

4. Increased vulnerability by DRMs

Regarding vulnerabilities created by DRM, see the recent revelation that Microsoft's DRM has a flaw that allows malicious people to embed viruses in your music, so when you play the music back, it compromises your machine. This is a much more direct risk than that from Trusted Computing – needless to say, non-DRM music does not carry this risk.

5. The promise of lower prices for DRM protected content is not held in practice

Regarding flexible business models: while there is the theoretical possibility that DRM could enable a marketplace of infinite price

discrimination, where someone who merely wants to listen to a track once pays less than someone who acquires the permanent right to listen to the same music, it should be noted that to date, DRM systems have been used exclusively to sell music with less flexibility than non-DRM equivalents at higher prices – in other words, DRM in the market is used exclusively to charge consumers more for less.

6. The promise of piracy prevention by DRM is not held in practice

A meta-question that's often missed here is, "Does DRM work at its stated purpose?" We know that DRM can be used to take rights away from consumers who want to do legitimate things, but is there any evidence that DRM has ever been successfully used to keep a work from being shared on the Internet or sold by counterfeiters on CD or DVD? My experience of this suggests that DRM is a complete failure at accomplishing its stated goal: In other words, DRM costs consumers a lot and does not prevent piracy -- there isn't a single instance in the history of the field where a DRM system prevent some piece of content from appearing and circulating on the P2P networks.

7. The Broadcast Flag isn't a "standard"

It's a mistake to characterize the Broadcast Flag as "standardization" – what is standard with the Broadcast Flag is that if you build a TV, it must detect the flag and lock flagged content away. What liberties can be exercised within the lockbox is not determined by a technical standard, but rather by an FCC review whose criteria are still not set, through which a given technology will be either approved or denied approval for inclusion in digital television devices. There is no guarantee of interoperability, similar capability or other "standard" elements in the Broadcast Flag regime.

8. Effective "forensic" DRM is rather unlikely and not without problems

Regarding DRM for "tracking unlawful use" – given the experience of the SDMI watermarking technology, there's plenty of reason to believe that "robust" watermark (eg one that can't be removed or altered) is improbable. If "forensic" DRM can be removed by users before engaging in an "unlawful use", we should assume it will be. More: what's to stop me from attacking you by releasing files on the Internet with a watermark that fingers you as the originator? Finally – how can we reconcile the goal of a world where users can listen, read and watch media anonymously with a scheme that requires that all such media have to be tagged with the user's identity?

Bottom line

The INDICARE State-of-the-Art-report does a great job of telling everyone's story, including the DRM propopents', but juxtaposing the other side's remarks with good, compact rebuttals. Some issues when assessing intricate technical matters of DRMs may still deserve further consideration.

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Another cry in the wind?
A review of Indicare's first state-of-the-art report

By: Philip Merrill, Pasadena, United States

Abstract: This review is written by a columnist writing for the music industry and at the same time one of the most active members of the Digital Media Project (Geneva). He declaredly shares his biased and rather sceptical view of the current situation of DRM and combines it with a rather positive review of the first State-of-the-Art Report of the INDICARE project.

Keywords: INDICARE, Digital Media Project,

Introduction

Dramatic progress leaves us wanting more, and so INDICARE's worthy and excellent first State-of-the-Art Report (Helberger et. al 2004) can use a good pounding. With two revisions scheduled and handbooks on DRM for consumers and small businesses expected, it would be nice if the sorry state of DRM truly improved by March 2006. There is every reason to hope, but unlike the premium movie features trusted to DRM, a happy ending might not be in the script. At least this exceptionally well-mannered and articulate document makes it more likely, exemplifying the fine spirit of informed dialogue that puts the "INDI" in INDICARE.

Of unfortunate DRM circumstances

Some observers of the issues surrounding Digital Rights Management have believed, in many cases for ten years or more, that this is possibly the single most important issue of our time with the potential to shape history by ushering in enduring "rules of the game" for electronic publication and subsequent use. Great faith was placed in technology when America's anti-circumvention approach became internationally adopted by WIPO WCT/WPPT signatories leading to our present regimen making it illegal in most cases to circumvent digital content protection technologies (see Merrill 2004a). Since the technology of DRM is still in its early stages, such faith might have been ill-founded. Aside from inherent technical difficulties, there is the need for society to perform a systems analysis on how we communicate among ourselves, as well as the age-old distortions caused by incumbent's very powerful special interests. In this case, any firm in the business of DRM solutions is bound to be impressive on many technical levels, albeit the pressing issues of whether any DRM protection has worked yet or whether a security solution can be expected to be developed capable of being effective in the future. One view of digital security regards protection schemes as virtually doomed as soon as their features become known to the hacker community, which is the bias of this reviewer.

The SOTA Report avoids coming out and saying that all protection schemes thus far have been a failure once their features became known. Chapter 2 of the SOTA Report adds the separate hidden message that the European Commission has known for ten years what the problem is and that its best efforts have not prevented today's unfortunate DRM circumstances. This attracted mention on Indicare.org by Knud Böhle when he asked, "does the 'European paradox' apply to DRM research too?" while describing his reading experience of the Report's Chapter 2 (Böhle 2004). But the Report faces a paradox of its own.

Is the State-of-the-Art Report yet another cry in the wind?

The impartiality that was the goal of the SOTA Report has now been achieved. So what? This reviewer described it elsewhere as "One of the most informative documents ever written about Digital Rights Management." (Merrill 2004b). Who will read it? One might wish the world to be acutely aware that digital permissions and security on line could form the basis for the "new world order" far more than overt cultural philosophies or dogmas. DRM at least rivals

global warming as one of the hugely important things that can vastly damage the conditions for human life on Earth. Unlike hideous weapons to which great attention is paid, apathy and ignorance cause DRM to be of distant concern like the putative effects of carbon emissions. So is the State-of-the-Art Report yet another cry in the wind? Let us hope not and shape our endeavours to let its informed dialogue be a solid platform for significant progress to be made.

As an Internet type, I feel compelled to share my bias. I write a weekly column on intellectual property rights news of relevance to content owners in the music industry. I am especially sympathetic to IP rights holders because of the writers and other creative people I have known personally, none of whom have been made rich by their efforts. I am an ardent contributor to the definitional TRU efforts of the Digital Media Project, as described in the SOTA Report and at Indicare.org in an interview with Leonardo Chiariglione (2004). I am both an opponent and a supporter of the notable work done by Lawrence Lessig, Fred von Lohmann and Cory Doctorow. Because of my news function as a writer, I scan EFF and legal news regularly, often regretting that voices I consider overly partial to cleartext and hackers do the best job crying out on this important issue. With regards to the SOTA Report's treatment of "Interoperability" I side with DMP's response to the EC DRM HLG (HLG 2004); this too might be a cry in the wind.

Between generalities and sad-but-true specifics about the state of today's DRM

Indeed the SOTA Report can be considered to oscillate between generalities such as "interoperability" and sad-but-true specifics about the state of today's DRM and the need for improvement. A subsequent INDICARE article calls into question whether "digital rights management" as a phrase is not itself such an over-generality (see Tóth 2004). This reviewer is most struck with frustration at the Report's repetition about the importance of "transparency" in consumer contracts since this highlights both present social ills as well as a daunting future challenge. Although the possibility of granular licensing for individual content licenses was thought as one of the great potentials of electronic commerce for at least a decade, the fact is that most consumer contracts and licensing are only consensual by fiction. In our DMP work, several TRUs relate to respect for terms and conditions; these are included with an emphasis on the fact just stated. To think that the Report's list of items such as "affordability" or "ease of use" can do better would be folly. As if all this is not depressing enough, we can come to the definitively important challenge of better defining "access" since continued access to content and the ability to do things with that content is what the underlying issue is all about. Thus the emphasis of EFF types on cleartext and their often bombastic confidence that all digital security will continue to be hacked. The rules for electronic content need to do better than to rely on malfunctions and defeats for our future freedoms.

The task of DMP and INDICARE compared

The Digital Media Project has it easy since our fondness for technological solutions brings simplicity that is missing from the scene today. It is easier to start afresh with plans for a wish list that includes both security and advanced End-User usages. INDICARE does not have this luxury. If the envisioned DMP platform comes along, that would be wonderful, but it does not change the issues of other DRM technologies that choose to do things a different way. Since DRM is the scope of INDICARE, future revisions of the SOTA Report will most likely be forced to document continuing problems and unresolved issues posed by ever-more-numerous DRM technologies. It might be better to think of the Report in terms of the "stalemate" described in DMP's Digital Media Manifesto (Digital Media Project 2004). While DMP attempts to break the stalemate through standardisation, INDICARE has produced what could be considered the first objectively impartial prose document that can be considered to be post-stalemate in the sense that it opens up the discussion on a much better level for "informed dialogue".

Overall

As can be seen from the tone of this review, it is easy to be partisan and stay focused

while pushing a clearly defined agenda and set of views. It takes far more skill and thoughtfulness to render into prose what the authors of the State-of-the-Art Report accomplished by balancing views, staying polite, and avoiding what could be considered ranting and raving. This review could be considered a rant by many, although its slant is meant to achieve brevity. The State-of-the-Art Report's authors invite comment and this reviewer expects to make more detailed comments available. For example, in overly brief form, one paragraph was written in partisan shorthand, the discussion of REL could be considered overoptimistic, and the discussion of fingerprinting appears to omit important features of that technology. But these are trivial as objections and only important as the sort of fine-tuning commentators might hope to provide. This reviewer especially hopes that a spirit of community and informed dialogue will cause a variety of stakeholders to comment on the Report, as requested, enabling further revisions to achieve progress and improvement. The first step was a big one.

Bottom line

The first State-of-the-Art Report was a good one. Now that this post-stalemate step has begun, one hopes major stakeholders will join in adding their voices to this enterprise that could so critically improve the future use of digital content.

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Masthead

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