

INDICARE Monitor

About Consumer and User Issues of Digital Rights Management Solutions

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INDICARE's first state-of-the-art report available – food for thought?!

By: Knud Böhle, ITAS, Karlsruhe, Germany

Abstract: This week INDICARE released its first state of the art report (Helberger et al. 2004). As you won't expect an unbiased review by one of the members of the project team, I won't even try to review the report here. Nevertheless, as I am not one of the eight authors who jointly produced the report, I feel free to share some impressions with you.

Keywords: report, consumer, foresight

Introduction

I would like to start writing about my reading experience making four general remarks: Eight authors from different disciplines and from different countries have provided the results of their "multi-disciplinary" discussions on consumer concerns with respect to DRM. One of the really interesting effects of the joint discussions is obviously that lingo has been filtered out and what remains is a good reading for a broader public.

Another characteristic of the report is its strong recourse to real-world examples of initiatives, products, and implementations. This grounding is a good remedy for high flying abstract discourses. I also liked the basic conceptual decisions to always use a pair of concepts in order to grasp the narrow perspective of actors and a broader one of social concerns, e.g. acceptance and acceptability are distinguished, the consumer appears as consumer and citizen, and in economics the business perspective is distinguished from a welfare perspective.

At the general level a fourth property of this INDICARE effort is worth mention, its character as a "living document". You should be aware that you have received just the first state of the art report, and that two updates will follow. This report, as all INDICARE deliverables, has the purpose of stimulating debate and INDICARE aims to be responsive to input and suggestions we receive. Therefore it depends to a certain extent on your feedback what the second and third state of the art reports will take on board.

Lessons learnt and new questions

The philologist Ivor A. Richards once said, "A book is a machine to think with", and I would hold that this is true for the present INDICARE report too. To give just a few examples:

1. The second chapter outlines the European Commission's initiatives on DRM and European research projects on DRM. This historical view, with a time horizon of c. 10 years, shows that the European Commission started early on to involve stakeholders, and also the issue of "acceptance" appears relatively early. In the field of research it is interesting to see a remarkable continuity in the research efforts with many projects building on former ones. Two questions came to my mind: first, I wonder why there is apparently a lack of political activities in this field from the Health and Consumer Protection Directorate General. Secondly, with respect to the EU funded DRM research, I would like to raise the following question: Do we find the good research results implemented in real-world products available in the market? In other words, does the "European paradox" apply to DRM research too?
2. The third chapter about "consumer concerns" follows a convincing approach as it does not simply address the single average consumer, but tries to take into account also customers with disabilities and institutional customers such as libraries, science, and education. This

- makes sense, because this way more or less all groups are covered which have benefited so far from copyright limitations. This broader perspective including institutional customers smoothly leads to the more general question of public sector information (think of historical archives, museums, press archives, the collections of radio stations etc.). While we may be sceptical about DRMs in the private sphere, the need for content management systems in the field of public sector information seems to be rather obvious. In other words, the DRM debate should take into account both fields and investigate the specific pros and cons of DRMs in each area.
3. The fourth chapter about legal aspects creates awareness that a focus on Copyright and the European Copyright Directive is too narrow. Exaggerating, one might take a narrow focus on "Copyright" as the "McGuffin" of the debate. The debate about copyright limitations is important, but discussants should also turn to "access". The "age of access", to use this expression coined by Jeremy Rifkin, washing out "copyright" is the second front.
 4. As the report (chapter four) demonstrates, consumers can hardly rely on the European Copyright Directive as a legal instrument to protect them. It seems as if consumer protection laws and data protection laws are closer to the heart of consumers and the question is, if a particular legal corpus is needed to cluster and specify user demands towards DRM-protected content.
 5. The fifth chapter on technical aspects – explaining among others rights locker architectures, symmetric rights expression languages, superdistribution, privacy enhancing technologies, privacy rights management –, makes clear that what we see is rather the beginning. We ain't seen nothin' yet. This leads to question the relation between technological developments and market development, and may also call for a technology foresight in the field of DRM-related technologies.
 6. The sixth chapter about business aspects shows DRM as a kind of dual use technology: it can be used to lock up content or to unlock it. The chapter also puts into perspective DRM-based business models as just one path to generate revenues for digital content. Last not least the chapter brings to mind two paradoxes of DRM-protected content, which form a real challenge: a "productivity paradox", i.e. higher product costs/less value proposition, and a "hit-the-one-you-win-paradox", i.e. burden for legal users / illegal users out of reach.
 7. A cross cutting issue are standards and interoperability. To describe the abundance of want-to-be-standards and standards initiatives is the first step. The state of the art report takes up the issue in different chapters which complement each other well. Evaluating the importance of standards however is a very different and difficult task going beyond the present report. On the one hand you have to see through statements which are often just lip service in favour of e.g. "open standards", "interoperability" and so on. On the other hand the complexity is hard to cope with as data formats, distribution channels, devices, media types, metadata, application areas, types of clients, regions, power of players, patents, etc. have to be taken into account. This debate required needs to turn from descriptions and declarations of best intentions to strategic analysis – application area by application area.

The basis for all the questions I have raised is the state of the art report. In the best sense I hope to have shown that the report not only covers a lot, but is thought provoking too.

About this issue

The issue starts with the excellent analysis of Bill Rosenblatt of a mutual learning process between P2P networks and protected online-content. I hope we will see more of Bill's analysis in the INDICARE Monitor in 2005. Next you will find an INDICARE interview with André Beemsterboer, director of a Dutch Collecting Society. In this interview by Natali Helberger we learn about the future

of Collecting Societies and the rather important role of DRMs within. The next topic "Mobile music in Japan" is a welcome complement to the Berlin Workshop on Mobile Music, which mainly looked at Europe. Find out, if Jan Michael Hess is right, who claims "Japan's reality is our future".

The next three contributions are dealing with technical issues. Ernő Jeges from SEARCH, our Hungarian partner, reviews a new approach to anti-piracy, which seems to work best with computer games, e.g. for illegal users of a game swords turn into pigs making fighting rather difficult – thus spoiling the party. The following interview with Leonardo Chiariglione is about the Digital Media

Project and his intriguing vision of an interoperable DRM platform. In the conference report by Kristóf Kerényi from SEARCH about the Fourth ACM Workshop on Digital Rights Management cutting edge research in DRMs is presented. Kristóf, who was on tour in the US for INDICARE, has written a further report about the DRM strategies 2004 conference in Los Angeles. The issue closes with announcements of the two most recent INDICARE reports.

We wish you the very best for the holidays to come and the next year

the INDICARE team

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Learning from P2P Evolution of business models for online content

By: Bill Rosenblatt, President, GiantSteps Media Technology Strategies, New York, USA

Abstract: Online content services using DRM have been seen as antithetical to file-sharing services based on the peer-to-peer (P2P) model. But over the past year or so, more and more copyright-respecting services have appeared with features appropriated from P2P networks, while at the same time, P2P networks with some copyright-respecting features have also been introduced. The truth emerging is that DRM and P2P are orthogonal sets of capabilities, which can be complementary as well as antithetical (Einhorn and Rosenblatt 2005). From consumers' perspective, the differences between "P2P" and "DRM" based services are gradually shrinking.

Keywords: P2P, business models, superdistribution

Introduction

In this article, based on a presentation given by the author at the First INDICARE Workshop on Business Models for Mobile Music and DRM, 30 September, 2004, Berlin, we examine the features and advantages of P2P networks with respect to major constituencies in digital content value chains: consumers, the law, content owners, and technology developers. We then show how early, mostly US-based legitimate online content services have grown to appropriate some P2P features (and vice versa – how some P2P-derived services are emerging that purport to respect copyright).

We go on to analyze the likelihood of various P2P features making it into copyright-respecting services, and we assess features of P2P that are likely to remain largely absent from legitimate services, and by suggesting trends that will persist into the future.

The good and bad of p2p

Consumers are attracted to P2P file-sharing services for a host of reasons, in addition to the obvious one (from consumers' perspective) of not charging for content. P2P has several advantages, including these:

- ▶ **Anyone can participate:** P2P networks do not respect boundaries, national or otherwise.
- ▶ **Render on many devices:** P2P networks provide content files that can be rendered on a wide variety of user devices, e.g., MP3 files for music.
- ▶ **Permanent files:** files available on P2P networks do not “expire”; they are playable indefinitely.
- ▶ **Share with friends:** there are no restrictions on sending copies of files from P2P networks to friends or acquaintances.
- ▶ **Tastemakers:** many P2P networks enable users to act as recommenders or tastemakers who can acquire followings among users.
- ▶ **Otherwise unavailable content:** P2P networks are natural havens for content that is unavailable elsewhere, such as digital “rips” of tracks from out-of-print or obscure music albums.

- ▶ **Optimized delivery:** some P2P networks, such as BitTorrent, exploit the power of machines attached to the network to divide up the task of sending large files around.
- ▶ **Free content:** P2P networks can make content available at no charge.
- ▶ **Superdistribution:** P2P networks can conceivably support Superdistribution, as described below.

At the same time, P2P networks have certain disadvantages, aside from the fact that their use lays consumers open to infringement liability. They are plagued with spoof files, which record companies and other content owners put there in order to degrade the overall service quality. Other files may be incomplete or have poor sound quality. Some file-sharing services make their money by forcing users to view ads or by installing intrusive “spyware” onto their machines. And file-sharing services generally have very limited information about artists and content.

Copyright-respecting services tend not to have any of these problems: they offer guaranteed, complete content with audio/video quality that ranges from decent to excellent, few or no ads, and no spyware. And many copyright-respecting services offer a wealth of artist and content information, recommendations, links, and so on. Surely there ought to be a way to incorporate some of the desirable features of P2P while still ensuring that copyright owners are compensated – either by adding P2P-like features to copyright-respecting architectures or by adding copy controls onto P2P network architectures.

One general approach to bridging the gap between P2P and existing paid services is known as *Superdistribution*. Although this term was popularized after the rise of the Internet (Cox 1996), it dates back further (Mori and Kawahara 1990). In this context, it means multi-tiered distribution that starts with the owner of the content and enables entities at each step to redistribute content under their own business terms. Some of the earliest DRM technologies, such as IBM's infoMarket, attempted to implement multi-

tiered distribution with e-commerce, but it was found to be too complex, especially in the days before e-commerce components (e.g., online payment processing) were commonly available.

Yet as we will see, Superdistribution is beginning to experience a comeback as the ramifications of the model for certain types of content are explored. Among other things, Superdistribution can provide a framework that enables tastemakers (see above) to get paid. With general-purpose e-commerce software easily available, it is conceivable to layer Superdistribution on top of P2P network architectures.

Adding p2p features to legitimate services

	Desirable for Users	Legal	Acceptable to IP Owners	Easy with DRM	Likelihood in legitimate Services
Anyone can participate	Green	(red) National boundaries	(green) In theory...	Green	(red) Not worth the trouble
Render on many devices	Green	EU private copying laws	Within limits: products vs. content	(orange) Hardest technology problem	Legal or via 3rd party solutions
Permanent files	Green	Green	Depends on business model	Green	Some business models
Share with friends	Green	(orange) Generally restricted	Within limits	Green	Within limits
Tastemakers	Green	Green	Green	Green	Green
Otherwise unavailable content	Green	(red) Licensing obstacles	If they can get paid	Green	(red) Unlikely
Optimized delivery	Marginal importance	Green	Marginal importance	Complex but feasible	Through CDNs
Free content	Green	(red) No!	(red) No!	Green	(red) No!
Superdistribution	Remains to be seen	(green) Licensing contracts	Only in certain cases	Getting easier	Remains to be seen

Table 1: Salient features of P2P networks with respect to four constituencies.

Legend: Green means attractive, yellow denotes reservations or limitations, orange denotes serious reservations/limitations, and red means unattractive or impossible. The rightmost column represents an assessment of how likely the feature in each row is to make it into copyright-respecting content services.

Let's examine some of the most noteworthy issues implied in the above table.

- ▶ **Anyone Can Participate:** The obstacles to anyone participating in a copyright-respecting P2P network are national boundaries that govern e-commerce as well as content licensing agreements. This type of problem is likely to be

We can speculate on the likelihood of various features of P2P being added to copyright-respecting networks by looking at how attractive they are to various constituencies:

- ▶ Consumers: is the feature desirable or uninteresting?
- ▶ The law: is it legal or illegal?
- ▶ Content owners: does it make sense from a business perspective or not?
- ▶ Technology: is it easy or difficult to implement with DRM and related technologies?

Table 1 summarizes many of the salient features of P2P networks with respect to the above four constituencies. The salient features are explained below.

judged too complex to be worth solving; services will need to remain specific to countries. This is the case today with services that are available in multiple

- ▶ countries, such as Tiscali Music Club, Vodafone live!, iTunes, and Napster.

- ▶ **Play on Many Devices:** Technology is the biggest hurdle to a copyright-respecting service providing content that plays on many different devices. Interoperability among formats and DRM schemes is elusive. At this time, attempts at interoperability are coming from various different sources, including putative de facto standards (Microsoft Windows Media), open DRM standards (Open Mobile Alliance Download and DRM, see OMA 2002), open interoperability standards (Digital Media Project, see DMP 2004, Coral Consortium, see Coral 2004), and ad-hoc interoperability (RealNetworks' Harmony, which is part of its RealPlayer Music Store service). Even more basic problems like interoperability of consumers' online identities have not been solved yet.

Apart from technology problems, there is a real question of whether content owners are even interested in making their content available on any device. For centuries, content owners have been in the business of selling products, and there is a general mentality among them that users must buy a new product each time they want to consume content on a different device.

- ▶ **Permanent Files:** Although consumers are slowly starting to understand the value of subscription services (at the right price point, of course), consumers are still very much behind the idea of "owning" content. Content owners will need to provide permanent downloads for the foreseeable future; many will do so.
- ▶ **Share with Friends:** This one is rather ironic. For the most part, the law says that sharing content with "friends" without compensating rights holders is infringement. Private copying laws in some EU countries allow consumers to make copies for the use of themselves or family members, while fair dealing law in the UK (UK Copyright, Design and Patents Act, s. 29, 30 (1988)) empowers courts to render decisions on such matters according to factors like the type of usage and its effect on the overall market for the content. The fair use laws in the US are

similar (17 United States Code § 107 (2000)).

Yet laws may well end up not being the limiting factor in this case – because most online sales of content are not really "sales" at all, but rather are license contracts, and thus are not necessarily subject to fair dealing or private copying law restrictions. Moreover, consumers have come to expect some freedom to make copies of content (usually in analogue) for friends and family; therefore, as we will shortly see, expectations are driving market forces so that more and more legitimate online content services support some carefully circumscribed notion of "sharing".

- ▶ **Tastemakers:** While some people in the P2P community are under the impression that this idea was invented there, legitimate content services have been making user recommendations available for quite some time.

Perhaps the first successful "tastemaker" implementation in the media industry was the affiliate network feature of Amazon.com, which enables "affiliates" to create websites (or email messages) with specially coded links to products on Amazon. If a user clicks on such a link on an affiliate website and buys the product, the affiliate earns a sales commission. More recently, Amazon implemented a variation on this theme called Listmania, in which users can create themed lists of recommended products that appear on the site as users browse related items. Earlier this year, iTunes created its own affiliate network through an affiliate network provider called Link-Share.

P2P tastemaker functions do go beyond the above capabilities by providing built-in ways for users to search and browse other users' collections or recommendations. Yet the larger point is that it is eminently possible for copyright-respecting online content services to offer "tastemaker" features.

- ▶ **Otherwise Unavailable Content:** One of the truly great things about P2P file-

sharing services is that they give collectors of the rare and obscure chances to show off their collections, so that the material can become less rare and obscure through exposure. Unfortunately, however, many of those rarities are likely to be still under copyright, in which case such aficionado altruism is likely to run afoul of the law. Unfortunately, it is impossible in the general case to solve the nightmarish licensing problems that would come up in this case; such problems are very difficult to solve even in the analogue world.

It is possible that a government might pass a compulsory licensing law that requires content to be made available online under reasonable and non-discriminatory terms, or at least provides fallback terms for content that is not licensable through conventional methods. This would help in many cases, exceptions including those for which the publisher or artist cannot be identified.

- ▶ **Optimized Delivery:** This feature is marginally important for music files as broadband connectivity and content delivery networks (CDNs) become more and more ubiquitous, although it should be valuable for large video content for some time to come. Many DRM technologies can, with some effort, adapt to file-splitting schemes. This will be a nice-to-have feature on all kinds of online content services.
- ▶ **Free Content:** This, of course, is not going to be possible on a copyright-respecting service. The continued presence of non-copyright-respecting networks should provide “ballast” in the market that induces copyright-respecting services to make their offerings more consumer-friendly, but (as implied above) there are many ways to do that based on features rather than price, and that trend should continue, even after any legal action takes place that puts the free file-sharing networks out of business.
- ▶ **Superdistribution:** As mentioned above, the ready availability of e-commerce software components for such functions

as payment processing, along with highly configurable DRM technology, can make Superdistribution a reality (see Rosenblatt 2003). The biggest question is whether consumers will be interested in it – i.e., interested in making the effort to resell content.

Ironically, the idea appeals most for curiosities and rarities, but if they were made available digitally, their rareness would essentially disappear. Of course, this does not take into account those who care more about collecting the physical artifacts than the actual content.

Otherwise, Superdistribution for widely-known content makes limited sense, because its only real value is as a “viral marketing” or recommendation service, in the same vein as affiliate networks like those used by Amazon.com and iTunes. If multiple participants offer the same widely-known content, then the situation devolves into one of competitive pricing, which is already the case among the many online music services that essentially offer the same products for similar prices.

New Services with P2P Influences

Even though they came into existence after the advent of Napster (the original, non-legitimate one), early copyright-respecting content services incorporated virtually none of the advantages of P2P, even when factoring out “free” vs. “pay”. Services like the US-based pressplay and the original MusicNet on RealOne featured monthly subscriptions, downloads that expired, mediocre sound quality, anemic search and browse features, no sharing, and Byzantine pricing plans seemingly borrowed from the early days of the mobile telecoms industry. Coupled with a “build it and they will come” approach to marketing, it is no wonder that critics panned these services.

Yet newer services have begun appropriating features from P2P networks. Apple’s iTunes started the trend towards offering controlled sharing. iTunes allows users to copy files onto other machines and burn MP3 versions of files onto CD limited numbers of times.

US-based MusicMatch significantly raised the stakes on sharing in August 2004 by introducing a “share with your friends” feature. With this, users can send emails with playlists to as many “friends” as they like; when the friends receive the playlists, they can play the songs on them, in their entirety, up to 3 times before having to purchase them as individual downloads or subscribe to MusicMatch’s On Demand service. More recently, FNAC in France introduced its Fnacmusic download service, which raises iTunes’s 3 CD burns to 10.

Although no copyright-respecting service gives content away for free, there are a few innovative approaches to pricing in existence today. One is that of charging users a flat monthly (or annual) fee for the right to permanently download as much content as they want. One current practitioner of this model is UK-based Wippit, which is more like a modified P2P file-sharing network. Wippit maintains a list of files that are approved for sharing on the network; it enforces this not by encryption-based DRM but by a technology known as *fingerprint filtering*. Before a file is approved for use on the network, it is examined by a program that extracts various psycho-acoustic parameters from it in order to come with a “fingerprint” of the music in the file. The technology then searches for an instance of that fingerprint in a database of fingerprints of approved works, and if it finds a match, it lets the file go onto the network; otherwise it blocks the file.

Another alternative approach to pricing is to get users to view ads in exchange for the right to download music. Hong Kong-based Singwell International is attempting to build this type of network, which it calls Qtrax. Singwell expects to pay licensing fees to copyright holders but make revenue through its ability to sell ads that are highly targeted to users based on the kind of music they download.

A handful of new services, all US-based, are experimenting with limited forms of Superdistribution. One is Weed, a service of Seattle-based Shared Media Licensing Inc. Weed licenses independent-label music content and makes it available for purchase and

eventual resale. Users can listen to Weed files up to 3 times before having to purchase them. After purchase, they can put them on websites, in emails, on CDs, or anywhere else, and pass them on to others, who can then listen to them with an option to purchase. This process can repeat arbitrarily many times. The commerce model is fixed, and it is three tiers in depth: a seller earns a 20% commission on the sale price; the user who sold it to the seller earns 10%; and the user who sold it to *him* earns 5%; Weed itself earns 15%, and the remaining 50% goes to the artist. Weed uses Windows Media DRM plus its own software to control this process.

Two services with multi-tier commerce models that are roughly similar to Weed are in beta at this writing. One is Bitmunk, from Virginia-based Digital Bazaar; the other is Peer Impact, from Saratoga Springs, NY, based Wurld Media. Bitmunk differs from Weed mainly in that it normally uses non-invasive watermarking instead of encryption-based DRM, which enables users to catch pirates forensically rather than preventing piracy proactively. (As is the case with some other P2P networks, Bitmunk allows users, at their own option, to put up files that are packaged with DRM.) Peer Impact combines a Weed-like commerce model with optimized content delivery (see above) a la BitTorrent. Peer Impact is unique among these services in that it has licenses, at this writing, from three of the four Majors.

Bottom line

While some features of P2P (such as free content) will never make it into copyright-respecting services, and other features (such as transnational usage and availability of rarities) seem highly unlikely to make it, the gaps between historically free and infringing P2P services and DRM-based copyright-respecting content services are rapidly shrinking. Over the next year or two, the boundaries of and gaps between them should become clearer through market forces and legal decisions. At the same time, the trade-offs among new services that incorporate P2P-derived features should become more and more subtle. Content owners will need to carefully examine these services’ features as

well as market forces to determine where to license their content.

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If you can't beat them, join them. DRM as the future for collecting societies

By: André Beemsterboer, CEDAR, Hoofddorp, The Netherlands

INDICARE-Interview by Natali Helberger, IViR, Amsterdam, The Netherlands with André Beemsterboer, CEDAR (Centrum voor Dienstverlening Auteurs- en anverwante Rechten). Some say that DRM is the last nail in the coffin of collecting societies. Not so André Beemsterboer, director of CEDAR, one of the major Dutch collecting societies. In this interview, Mr. Beemsterboer explains his vision of the future of collecting societies – collecting societies as users of DRM.

Keywords: collective rights management, collecting societies, Creative Commons, Berlin declaration, content flatrate

About André Beemsterboer: *Mr. Beemsterboer is director of CEDAR. CEDAR stands for the center for services for the management of copyright and related rights. CEDAR offers facilitative services to holders and licensees of copyrights and neighbouring rights, including the collection and distribution of licence and other fees, advice and a one-stop shop for multimedia producers. Seven Dutch collecting societies are clients of CEDAR. You can contact him via the CEDAR website at: <http://www.cedar.nl>*

INDICARE: Mr. Beemsterboer, supposed I am an author and member of a collecting society, and I decide to switch from collective rights management to individual rights management, using DRM. Am I free to do so, or does the collecting society also has to have a word in this?

A. Beemsterboer: If you are member of a collecting society, you will usually have to consult with the collecting society first before managing your rights individually. Of

course, this also depends on the kind of collecting society, the category of works and the kind of relationship between collecting societies and authors. With some collecting societies, authors have the possibility to keep some rights and manage them individually, with others not.

In general my feeling is that collecting societies should create a possibility for individual authors to have categories of exploitation which they would like to do themselves. We should be aware, however, and I already know that this is not a popular subject, that there are still major user groups that take disadvantage of authors. They pressure authors who manage their own rights, to give away a licence at unfavourable conditions, or even for free. In principal, collecting societies have developed as safe havens for individual authors. Authors should be aware of the fact that if they step out and manage their rights individually this can have advantages, but it can be also dangerous for them.

INDICARE: If I decided instead to use a Creative Commons (CC) licence, would you warn me, too?

A. Beemsterboer: I think that CC is very good as a principle. I do not think that CC is an important instrument for usage on a large scale. One of my points of criticism is that CC creates the feeling that no authorisation is needed at all. And I don't agree with that. Also with CC, you still need authorisation from the owner, because also with CC, the author still wants to maintain a certain degree of control over how his work is distributed, and that his name is mentioned. This means that there are certain licensing conditions in the CC that need to be maintained and monitored. To put it very bluntly, the only difference between a collecting society and the collective use of CCs is money. With one, you get money, with the other not. CC lacks a monitoring mechanism. Who is going to check whether the licensing conditions are met, and who is going to pay for the costs of monitoring? The author?

INDICARE: I see. Let us return to DRM. I currently have the impression that is often not even the author who would like to use DRM, but the music publishers or producers.

A. Beemsterboer: That is correct. In many cases it is the record company or the producer who will invest in DRM, not so much the author. Actually, I do not believe that the individual author is willing to deal with multi-usage of his works through DRM. What authors want to do is to create, to write, to paint or to photograph. Rightsholders are not in the business of using DRMs for the administration of their rights. That is why they created collectives.

INDICARE: One could go even one step further and claim that there are situations in which the use of DRM is not in the interests of authors at all. I am thinking, for example, of the case of the new CD from Beastie Boys "The Five Boroughs" that was distributed by EMI with DRM protection. The result was that Beastie Boys received angry criticism from their fans, and judging from the discussions on their site they probably lost a number of dedicated fans, too.

A. Beemsterboer: I agree with you on that.

INDICARE: Then let me ask you this: suppose, an author comes to you and tells you that he does not wish that DRMs are used to protect his work. He asks you to, please, consider this when you make a licence deal with a producer or record company. What will you answer him?

A. Beemsterboer: If an author would say that he does not want individual users to be hunted down for illegal use that is fine. But I would ask the author why? If we do not hunt down the first illegal user, we will be confronted with many more illegal users in a month's time. I am not going to say that I will hunt users down and shoot them. But collecting societies can only maintain their position if they have the possibility to say that if something goes wrong we have the right to sue. If we did not have any power at all, collecting societies would not exist. Also authors have to accept the principle of copy-right, which is: if I have created something I am the one to decide what to do with it. In the end, it is the author who must decide what others can do with his work. If he wants everybody to use his work as long as his name his under it, that is fine. But how will

the author control that his individual conditions of usage are met?

INDICARE: On the other hand, this still does not solve the problem of the author that he risks imbalances between his interests in not using DRM, and the interests of record companies or producers in using DRM.

A. Beemsterboer: There is certainly an interesting relationship between record companies, producers, broadcasters, who are rightsholders themselves, and between the creative author and the collecting societies. It has always been a very feeble balance between the three parties. DRMs and the internationalisation of the distribution of entertainment products will have a major influence on that delicate balance. And I am absolutely positive that there will be an imbalance for a certain period. After that a new balance will be found. This balance will involve the same players, but they might have changed roles. Some of these newly found balances will go to the detriment of the structure of some collecting societies, but also to the detriment of the position of some of the major publishers, bigger record companies and film producers. I think they will lose influence in certain markets and in certain areas. Authors, or rather: groups of authors, will gain. And collecting societies have a role to play there. Otherwise, authors will turn away from collecting societies because they feel that collecting societies belong to the old world.

INDICARE: Could you go a bit more in detail what you mean when you say that the balance will change?

A. Beemsterboer: One of the elements of the changing balance is that for certain usages, there will not be a collective that represents the whole world repertoire. The repertoire will be split up, and groups of authors will manage it. This means that the ones who want to use the music will be confronted with many different parties and different rates. In the future, there will be more differentiation for certain works and certain forms of usage. Contents will be produced and marketed in a different way. It is going to be a fascinating time.

INDICARE: This means: more collective societies offering more differentiated services?

A. Beemsterboer: Yes. Of course, there is the risk that the variety of all these different platforms will be inefficient. But because the collectives will use DRM and other technologies, their services will be easy to access and the works easy to license.

INDICARE: This is interesting. So far, the discussion of collective and individual licensing concentrated primarily on the question of what will it be in the future: DRM or collecting societies. You seem to suggest that there will be a third option: collecting societies using DRM?

A. Beemsterboer: That is exactly what I think. In my view, collecting societies need to develop new services. The basic service now is the collective management of large portions of repertoire for big users. If collecting societies want to stay alive in the future, they will need more flexible services. Let us take the case that someone comes to me and says that he wants to develop a website with this logo, with audiovisual content, a background and news articles. Usually, he would need to go to several addresses to do that. What I want to do as a collecting society is to be a broker in licenses. And in order to be a broker in licenses I need DRM so that I am able to identify works and identify rightsholders. This does not mean that authors would necessarily have to assign exclusive rights to the collecting society. Instead, the author could give the collecting society a mandate to play the broker role. The broker role will be in the future an additional role for collecting societies, next to the existing basic services. If collecting societies do not develop this broker role, authors will go away and do it themselves. Or they will organise themselves in other collectives.

INDICARE: In other words, collecting societies would act as a sort of intermediary between the author and the market?

A. Beemsterboer: Yes, next to anybody else who wants to play the same role, like distribution companies or authors themselves.

INDICARE: Is this already the reality, will it become the reality or are we talking science fiction?

A. Beemsterboer: It is not a reality yet, but we are also not talking science fiction. At the moment, we are developing that broker role. In the course of next year, the first products should be on the market. Collecting societies will then offer not only licensing services, they will extend their range of activities and take also the role of, for example, a distributor of digital content. One can imagine this like a portal or a platform for authors to meet with users: authors can join the portal and use its distribution infrastructure. They can also decide to commission collecting societies to collect the money for them, or to use DRM, or to maintain their moral rights, or to negotiate for them. Rightsholders can then choose from a whole range of services.

INDICARE: Have you already decided on a particular DRM? Will you choose an open or a proprietary standard?

A. Beemsterboer: Not yet. But I also do not want to be bombarded with all kinds of different systems and software packages. I will seek the advice from an expert without being brainwashed for two hours about all kinds of software.

It is also too early for me to say whether I will choose an open or a proprietary standard. Of course, I will use the DRM technology that will ensure that the market coverage is high enough, and that the licensing conditions for using that technology are fair.

INDICARE: If collecting societies embrace, as you say, DRM, do you see a future role for collecting societies in standardisation, or in making DRM solutions more acceptable to consumers?

A. Beemsterboer: No. I, as collecting society and future licence broker, will not develop DRM solutions by myself; this is not my core business. And I do not have the money for that because the money that I have to invest is the money from authors. I will use the existing technology as it is provided by the market.

INDICARE: Still, the problem remains that at present many consumers are reluctant to accept DRM protected products and services. The lack of acceptance has various reasons, beginning with the lack of interoperability solutions, the position of consumers if they want to make private copies, or when they conclude contracts about the use of digital content. For record companies or producers who want to use DRM the lack of acceptance is a problem. If collecting societies step into the role of a distributor and user of DRM, will this problem not become the problem of collecting societies, too?

A. Beemsterboer: I would like to make a distinction here. Protection of consumer interests and using DRM technology for efficient licensing are, in my opinion, two separate subjects. I also distinguish two types of consumers. Institutional or commercial users, and private users. There will be different set of rules for each of them. For the rest, I have not yet any deeper knowledge of the legal position of consumers. I see their legal position as a problem. This is an issue that needs to be tackled. It already is being tackled to some extent by collecting societies, but even more by the industry, the distributors and the ones who maintain the infrastructure.

INDICARE: There have been a number of cases in France and in Belgium where consumers complained that the usage of DRM prevents them from listening to CDs or DVDs in car radios, or from making copies for their personal use. Are you aware of these cases?

A. Beemsterboer: Yes. And what I think is that as long as the consumer knows from the start what he is buying and what he can do with that product then there is no problem. If the consumer goes to a website to download music under a DRM system which will not allow him to make more copies, and this is a condition that is clearly marked when he is buying the product, there is no case. In this respect I agree with the statement from the Dutch minister of Justice during a debate about the implementation of the directive. He said that the main issue at stake in the French and Belgium cases was product liability. If I go to sell a car without a motor and that is

mentioned clearly, no one can complain later that the car does not drive away. The same is the case with a CD that is DRM protected. I do not see any reason to prohibit that, as long as the consumer is aware that he is buying a CD which he cannot copy.

INDICARE: If you wanted to buy a CD by your favourite band and it was electronically copy protected, would you still buy it?

A. Beemsterboer: No, I wouldn't. And if all consumers did not buy the record, then the artist and the record producer would say: 'My god, what are we doing? We are not selling any records any more.'

It is the other way round: the consumer must make the producer and the distributor of the record aware that the market wants a product that can be copied for private use. It is up to the consumer to say what he wants. And it is up to the producer, the distributor and the creator to say: 'I am not going to do that.' or: 'Of course, you are right.' If I was a producer or creator I would try to find out what the consumer wants, and then decide whether I can deliver that or not, and if it is strategically wise to do that or not. In my view a record producer should sell records with a limited possibility for copies. Only then he will sell products that fit the consumer demand.

INDICARE: Would it be, in your opinion, an acceptable option for a record distributor to offer more differentiated pricing models, i.e. to sell a record at a lower price and without the possibility of making copies, as well as at a higher price with unlimited copyability?

A. Beemsterboer: Exactly. That will be the future.

INDICARE: As a final question, I would like to ask your opinion about an alternative proposal to solve the private copying dilemma. Some scholars and cyber right activists suggest the introduction of a so called

broadband content flatrate. The idea is to compensate rightsholders for the downloading of their works in p2p networks. This idea was brought up, for example, in the Berlin declaration, which was also signed by Lawrence Lessig.

A. Beemsterboer: I do not believe in free access for everybody. I think that the private copying regulation as we have it now is a poor alternative for individual exploitation by the author. Still, it is a fair alternative. Abolishing all manageable individual exploitations is in my view the end of creation. Also, investors will not be willing to invest in large creative products any more, if they get in return just some basic fee from some institution as a sort of tax compensation for the fact that the works are being used. An investor wants to be able to say that he first will sell the product to cinemas, then half a year later to the video market, then to the DVD market, and one year later to a broadcaster. With the flatrate proposal there is no segmentation of marketing. It does not fit the way digital content is marketed. And it will endanger the development of creative content.

INDICARE: This is a remarkable statement, considering that the flatrate was proposed in order to stimulate creation and wide-spread use of works.

A. Beemsterboer: The flatrate could work in certain areas where the author is not dependent on the income from his works, for instance in the case of scientific authors. They are scientists and they want their works to be distributed as widely as possible. They also want their works to be copied because this will promote their status as scientists. For them the Berlin declaration could work.

INDICARE: I will pass this on to my colleagues from the institute. Mr. Beemsterboer, thank you very much for taking the time and for giving us this interview.

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The following background material does not appear in alphabetical order as usual. Here we prefer to refer first to the webpage of our interview partner's organization, and then to the CC site, the site of the Berlin declaration, and the latest EC consultation on collective rights management.

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Mobile music in Japan - Japan's reality is our future

By: Jan Michael Hess, CEO, Mobile Economy GmbH, Berlin, Germany

Abstract: This article takes a close look at the world-leading Japanese mobile data market which is all about migrating users to 3G (third generation of mobile communication technology) and offering new cutting-edge services driven by more powerful 3G networks and devices. Its special focus is on the mobile music market which generates 50 % of mobile content premium revenues. Learning from Japan makes sense as there are basically no differences between end user cultures in Japan and other countries, but there still are many differences between management cultures.

Keywords: mobile industry, mobile music, 3G, competition, innovation, e-payment, Japan

Mobile Kaizen management is good for Japanese consumers

Next to South Korea which enjoys the highest fixed and mobile broadband penetration – counting relative DSL connections and 3G-enabled mobile phones – Japan continues to be the leading mobile data market in the world. Having analysed the Japanese mobile market since 2000 I do believe that Japan is still far ahead when it comes to managing the mobile economy and maximizing value for consumers. I like to call the Japanese management approach “Mobile Kaizen”, i.e. the art of continuously improving the mobile economy.

In Japan, there are 3 mobile network operators that all launched their first mobile Internet services back in 1999 and, since then, have competed heavily among each other for the mobile communications budget of Japanese consumers and businesses. The Japanese market is driven by consumer demand and managed in a carrier-centric way. The carriers control the market and specify all the functionality of the mobile handsets that are built to their orders mainly by Japanese handset makers (only now Vodafone tries to

sell devices made by Nokia and Motorola in Japan).

Japanese carriers don't loose time to wait for global standards such as MMS (Mobile Multimedia Messaging) or OMA DRM (Digital Rights Management Standard set by the Open Mobile Alliance). They order the technologies that they believe will drive the ARPU (Average Revenue Per User) or the sales of new handsets. Japanese carriers know very well how to continuously improve their offerings with the aim of delivering more value for money to their customer base. In my view, the carrier-centric model for managing the mobile economy is better suited to deliver mobile data services that consumers pay for than the device-centric model – favoured by Nokia – which is still dominant in Europe. This is a key reason why Japan leads the pack.

While the Japanese market is getting more saturated, the level of competition increases. All three carriers have introduced mobile data flat rates now after KDDI started their flat rate attack in November 2003. NTTDoCoMo publicly declared that they had no choice but to follow the first mover – they would have rather done it at a later point

of time. Fortunately, the result of this fierce competition is lower mobile data prices which Japanese keitai users (keitai = Japanese word for mobile phone) definitely enjoy.

Carrier statistics and 3G migration status

At the end of each month, the Japanese Telecommunications Carriers Association announces the latest mobile subscriber statistics: As of 31 October 2004, there were 84.6 million mobile subscribers in Japan resulting in a mobile penetration of 67 % – 127 million inhabitants make Japan a rather crowded island.

The market leader is NTTDoCoMo with 47.5 million customers and a market share of 56,1 %. Having launched i-mode in February 1999, NTTDoCoMo now serves 42.5 million i-mode users in Japan who have access to over 4,400 official i-mode content sites and over 70,000 unofficial content sites which are neither listed on the operator's portal nor able to use the operator's billing system. In fact, the unofficial content market is very important since it accounts for 50 % of the mobile data traffic in Japan.

From the beginning, NTTDoCoMo was motivated to create a mobile ecosystem enabling mobile content providers to make healthy money by passing on a very fair share of the premium content revenues (no data transmission revenues are shared in Japan): NTTDoCoMo only keeps 9 % and passes on 91 %. This 9 % is modelled to compete with other payment systems rather than maximise revenues on a short-term basis by overemphasizing the marketing power of the official portal. At the same time, NTTDoCoMo does not invest in content development and would never license music rights as in the case of Vodafone in Europe.

NTTDoCoMo's 3G service called FOMA (Freedom of Multimedia Access) is based on W-CDMA (Wideband-Code Division Multiple Access; 384 kbps downlink peak data rate) and the current number of 3G FOMA customers is 7.1 million. This means that DoCoMo have already migrated 14.86 % of their customers to 3G. The monthly 2G ARPU of DoCoMo is YEN 7,700 (€52.32)

with 24.75 % data revenues. The monthly 3G FOMA ARPU is YEN 10,030 (€74.22) with 34.20 % data revenues. These numbers prove that 3G handsets and networks are well qualified to make customers spend more on mobile voice and data. However, 3G ARPU will eventually go down by the time the mass market will have adopted 3G – this is the typical effect when more low value customers come on the network. In Japan, early 3G adopters are heavy data users who want to reduce their packet fees.

Number 2 in the market is KDDI with 21.9 million subscribers and a market share of 25.91 %. KDDI has 17.1 million customers subscribing to their mobile portal called EZweb. Surprisingly, KDDI is number 1 in the 3G market as they have been very smart in migrating to 3G by using CDMA2000 1x from Qualcomm offering a 144 kbps downlink peak data rate. Now, KDDI already has got a total of 16.1 million 3G subscribers which means they have successfully migrated 73.66 % of their customer base to 3G. KDDI also keeps only 9 % of mobile premium content revenues and has the same approach to enabling the mobile content ecosystem.

Recently, KDDI launched the new service called WIN (We Innovate the Next) which is the highspeed 3G service based on CDMA2000 1x EV-DO (Enhanced Version-Data Optimised) with a 2.4 Mbps downlink peak data rate. KDDI's ARPU is YEN 7,300 (€54,02) and the WIN ARPU is YEN 11,190 (€82,81).

Only the increased bandwidth of WIN enabled KDDI to introduce a 2-tiered flat rate called "Double Teigaku" which costs YEN 2,000 (limited packets) or 4,200 (unlimited packets). KDDI now counts a total of 1.19 million WIN subscribers of whom 81 % are flat rate subscribers. KDDI targets 3 million WIN subscribers in March 2005. NTTDoCoMo responded to the flat rate challenge from KDDI by introducing "Pake-Houdai" ("all you can eat") priced at YEN 3,900 for their heavy users who spend at least YEN 6,700 for their voice plan (a voice tariff including free voice minutes per day).

The number of flat rate FOMA subscribers is not available though.

Vodafone Japan has fallen behind to the third position and when it comes to 3G they are even more behind. Vodafone Japan also uses W-CDMA for 3G and waited for a later release of the standard to enable global roaming. Now, Vodafone Japan serves 15.2 million subscribers which results in a market share of 17.95 %. 13 million customers use the Vodafone live! portal but only 274,400 of Vodafone's subscribers are 3G-enabled – a mere 1.81 % of their customer base. This is especially disappointing for Vodafone as the Japanese market still contributes the most revenues of all Vodafone companies due to the high ARPU in Japan. Vodafone Japan's ARPU is around YEN 6,500 (€48.10) while separate 3G ARPU figures are not yet disclosed. Vodafone keeps 12 % of mobile premium content fees and passes on 88 %.

As pointed out above, Vodafone hopes that in the long run their global strategy will enable them to fight back on the Japanese market. But NTTDoCoMo and KDDI don't have to wait for go decisions from Europe and thus are extremely fast with launching new services. Just take a look at the contactless IC smartcard technology called FeliCa that NTTDoCoMo now incorporates into most new phones. NTTDoCoMo has got already over 600,000 FeliCa-enabled handsets in the market which offer mobile payments and membership card applications that are extremely convenient for users. While KDDI announced the adoption of FeliCa in the second half of 2005, Vodafone is still struggling to define their FeliCa strategy.

Chaku-uta drive 3G

Mobile music is still the hottest segment in mobile Japan. In 2004, the Japanese ringtone market (polyphonic ringtones called Chakumelo) will be YEN 100 billion (€750 million) and the ringtone market (CD-quality 30 second music clips called Chaku-uta) will be at least YEN 20 billion (€150 million). Ringback tones – "waiting music" played to the caller while waiting for the phone to be picked up – are still small in Japan but will be successful, too.

In 2003, a total amount of YEN 180 billion was spent for mobile premium content and 50 % was music-related business. This is really massive if you compare it to a still declining CD industry in Japan with a mere value of YEN 400 billion (€3 billion).

During the "Mobile Intelligence Tour" to Tokyo, which I organised in April and October 2004, we enjoyed meetings with Masakatsu Ueda, president of Label Mobile. Label Mobile was established by 5 record companies in 2001 and now it has 11 labels as shareholders. While Chaku-uta were introduced by KDDI in 2002 they are now offered by all 3 carriers. For their new FOMA handset series NTTDoCoMo just increased the file size for Chaku-uta to 500KB. Chaku-uta uses the file format AAC+ (Advanced Audio Coding). In fact, Chaku-uta is now the most important 3G service in Japan.

Most Chaku-uta tunes sell at YEN 100 (€0.75) but prices vary from YEN 50-200 (€0.34-1.50). A standard ringtone sells between YEN 10-20 (€0.08-0.15). About 150 million Chaku-uta downloads are expected from the various Label Mobile sites in 2004, out of a total market forecasted to reach 200 million Chaku-uta downloads. These figures are very promising, given that only 15 million phones in the market were enabled for Chaku-uta in August 2004.

The most important factor for the record companies about Chaku-uta is the following: Anybody in Japan can provide ringtones as long as they pay YEN 5 (€0.03) royalty fee per ringtone download to JASRAC, the Japanese equivalent of GEMA (GEMA is the German "Gesellschaft für musikalische Aufführungs- und mechanische Vervielfältigungsrechte" or society for musical performing and mechanical reproduction rights). For the normal ringtones no rights have to be negotiated. So ringtones have become an absolute commodity while the main business bypassed the labels.

However, permission is needed in the case of Chaku-uta from the master right holders which in Japan are the record labels. By co-founding Label Mobile the major labels in Japan have decided to disintermediate ringtone providers and do the business on their

own. This trend will happen in other markets, too, and classic ringtone providers will have to adapt early enough to record labels and publishers doing direct business again with the music fans. Moreover, production costs for Chaku-uta are quite low as encoding music into AAC+ can be done automatically while ringtones have to be composed and optimised manually.

The copy protection of Chaku-uta is very high: Only the official files can be set as ringtones and they cannot be taken out of the phone. This is a direct result of the carrier-centric model where each of the 3 operators defines the functionality of handsets including the rules for what can and cannot be done with paid content.

I assume that most Japanese consumers accept the fact that they cannot move content they paid for because they have had no other choice so far. But I am quite sure that over time this might change.

KDDI's Chaku-uta Full will rock 3G to the next level

KDDI announced their ultimate mobile music service called "Chaku-uta Full" (full track downloads) in October and just launched it on 19 November 2004. Now the labels don't have to dream anymore about the keitai becoming the new walkman. It is already a reality, though only for some early adopters at this stage. You can only buy Chaku-uta Full if you are a KDDI WIN highspeed customer with a flat rate. This makes perfectly sense as avoiding extra packet fees is a prerequisite for launching full track download services – even with AAC+ the file size averages 1-2 MB.

At the launch of Chaku-uta Full only four handset models support the service: W21CA (manufactured by Casio), W21T (Toshiba), W22SA (Sanyo Electric) and W22H (Hitachi). One Chaku-uta Full song will cost between YEN 200-300 (€ 1,50-2,25) and users can choose from a catalogue of 10,000 songs in the beginning. But KDDI wants to grow the size of the catalogue and invites other labels to produce and sell full tracks.

Of course, users can set a Chaku-uta Full as ringer, too, usually at three positions in the

full song. And given the increased convenience of shopping for mobile music anytime and anywhere I am very confident that this service will make a lot of money. At least, it is the core mobile data strategy of KDDI for 2005.

Mobile DRM is suboptimal in Japan, too

As pointed out above in the case of KDDI, the DRM situation in Japan is the following: Due to the fact that the Japanese market is carrier-centric each carrier has so far defined its own content protection system. Today, users are not able to forward or save to the removable memory card any content they purchased for their mobile phone. As far as I know, the new 3G handsets of Vodafone will support OMA 1.0 which does not enable superdistribution (OMA 2.0 will support superdistribution; see Buhse 2004). It remains to be seen which operator pushes superdistribution first as a competitive weapon in the future.

Thus mobile DRM is suboptimal for the users in Japan, too: It is impossible to continue using your paid content on your next phone for the time being. The more you have spent for buying mobile premium content such as ringtones, games etc. the more it will hurt you. While Japanese operators are starting to implement device management tricks for easy back-up of personal information data such as contact and calendar information, they still have to improve on their server-based know-how about their customers' access rights to content they paid for in the past. Especially, in the age of mobile data flat rates there is a marginal cost of zero associated with redistributing premium content again.

Given these limitations, mobile consumers still love mobile music. On a global level, mobile music already generates 10 % additional revenues to a global music market of € 30 billion. And the mobile music market is forecasted to double until 2008 to €6 billion.

Bottom line

To sum up, I am very sure that Japanese keitai users get more value for their money and that's why I like the mobile ecosystem in Japan very much. I do strongly recommend

visiting Japan to study the Japanese market. Learning from Japan makes sense as there are basically no differences between end user cultures in Japan and other countries, but many differences between management cultures.

The mobile music market segment drives 3G and generates around 50 % of the mobile

premium content revenues. The current mobile music highlight in Japan is the recent launch of Chaku-uta Full, the full track download service of KDDI. It will be exciting to watch how quickly European operators will manage to make their mobile music shops successful, too.

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Turning infringing users into paying customers - A new trend in anti-piracy

By: Ernő Jeges, SEARCH Laboratory, Budapest, Hungary

Abstract: Copy protection of digital content is moving from a concept of inhibiting consumers from making copies (or at least trying to do so) by technological protection measures (TPM) towards a concept of detecting illegal use. In case illegal use is detected, a type of "punishment" may follow: the content may suffer quality degradation, or – in the case of software – it may behave in a strange, annoying manner. In the best of cases the infringing user facing this kind of punishment is at the same time encouraged to obtain a legal copy. The article reviews the present state of this new concept in the area of game software.

Keywords: technical protection measures, anti-piracy, games, software

Introduction

Up till now anti-piracy measures have been attempting to prevent users from making

copies of intellectual works. Most of the introduced technical solutions have been cracked quickly. In addition legitimate users

have complained since the used techniques have restricted them in several ways. The market has finally realised that this concept does neither protect intellectual property nor is it accepted by customers, who do not want to spend money on something they cannot use in the way they want.

This insight has led to a new approach: detecting illegal use and make the infringer feel uncomfortable. We can find examples of such anti-piracy measures in a number of recent software releases, especially in games both for personal computers and mobile phones. The present article will introduce some ways used in practice to annoy infringers and to make them feel uncomfortable.

The expectation is that this kind of penalty imposed on the consumer can achieve more than just annoying infringing users. With smart prodding, users are to be pushed to buy the product they have illegally used before. Thus vendors want to make illegal copies work for them. It is assumed that consumers, who have got into the habit of using a certain product, will possibly be ready to pay for it, when their user experience becomes disappointing due to the anti-piracy measure employed.

Some history of annoyance

As a matter of fact, the concept is not as new as it may seem. Similar measures have been used by shareware programs since their existence, as their developers had no other chance to recover at least some fraction of their expenses. Nag screens were the first implementation based on the new concept: annoying users in order to make them pay for the software.

In the simple case a screen pop-ups at the application start or while using the application. More sophisticated cases need the interaction of the user, for example unregistered Total Commander (Total Commander 2004) users have to push one of three numbered buttons at the start of the application – the correct button is chosen randomly each time by the program itself, thus preventing the user to do this subconsciously after a certain period of usage time.

Besides nag screens, punishment can also mean some degradation of functionality. In this case the user can do almost anything with the application for a while, but sooner or later he or she comes to a point, where some functionality is missing, or becomes faulty. A good example of this is the *Adobe InDesign* desktop publishing application (America 2003), where files saved with a cracked beta version of the software can not be opened with a legally purchased release. Not only are the users of the unlicensed copies punished this way, but anybody who wants to use the document.

Nowadays, as network bandwidth of the Internet increases, the spread of illegal content is made extremely easy via P2P networks. One of the obvious methods to prevent users from downloading and using cracked games is to require the original CD to be in the drive while playing the game, as for example the *Warhammer 40k Dawn of War* game release (Kobrano 2004). This measure is much about preventing the copying. However, illegal copies are often available on P2P networks as downloadable ISO CD images, that one can burn to a blank disc directly, having a spitting image of the original media. Furthermore, there are some utilities that can simulate an optical drive; thus users can play the games directly from their hard discs without having to copy the ISO image to a CD. To avoid this vendors use an anti-piracy method, in which these utilities are removed automatically, or the disc burning software or hardware is disabled while the game is running. We can interpret these measures as a very weird way of punishing infringing users. Some consumers even complain that doing this automatically is nothing else but a Trojan horse, and they might be right.

Punishment to push purchases of legal copies

The most sophisticated and most promising measures are those where the developers introduce slight differences in the application's behaviour once the illegal copy is detected, which from the point of view of the user's playing experience make a big difference.

One of the first titles that involved this kind of anti-piracy measure was the second release of the strategic game *Settlers*. The playing experience was reduced near to zero when playing an illegal copy, as the player's gunsmiths produced pigs instead of swords. It is not hard to imagine, what the combat strength of soldiers strapped with pigs is against the computer driven and well-equipped armies.

Another, recently released title using this kind of protection was the first-person-shooter game *Operation Flashpoint* from *CodeMaster*, which used *Macrovision's Fade* anti-piracy solution. The player had to face some strange things after a certain time when playing an illegal copy: not only that sometimes the empty clip could not be filled with ammunition, but the controlled character seamlessly dropped down dead occasionally. Some other game releases based on *Fade* technology involve progressively decreasing gravity on a snooker table, cars that do not steer, footballs flying away into space, or army units exploding without warning (Fox 2003). These behaviours are of course not documented. Keeping them secret means that crackers can never be sure, whether they have found all of them.

As the market for mobile platform games is increasing, it is facing the problem of piracy more and more. However the hardware environment is different from home computers. An illegal copy can be easily detected, as every game issue can be linked to its carrier media, the memory card (MMC). A release of the *Athena Space Impact* game for *N-Gage* utilized the described anti-piracy measure. The game became too hard to play, e.g. the player could not collect bonus items providing some special functionality, or the enemy aliens could be destroyed only with

many more shots than required when using a legally purchased copy of the game.

Vendors can think about this new method in terms of a "demo version" of their product, which is *almost* perfectly beneficial to spread freely. The software is the promotion tool for itself, as people, who have got crazy about a game, are more likely to buy the legal copy, as they want to have a version without those annoying things happening (Fox 2003).

"That's the beauty behind it – if you make a copy of a CD protected with our technology, there's no sign that you haven't been successful," said *Bala Vishwanath*, the chairman of *Smarte Solutions*, a company that deploys anti-piracy solutions (Willem 2002). "The pirate user all along thinks they made a copy, until they reach the point you decide to stop them. That's the optimal moment to capture that pirate user and turn them into a paying customer."

The "tried and liked" experience is probably also of advantage for consumers, as the new concept offers them more freedom of choice.

Bottom line

Until now, anti-piracy mainly aimed to prevent illegal copies from running. This made the work of crackers relatively easy: they were successful if they managed to make one illegal copy run. Following the new approach of "slight modifications", a cracker can never be sure, whether he has found them all. The approach described above seems to hold some promise in the field of computer games, where playful measures meet playful users. However, how much of this approach can be extended to cover other types of digital content, like music or video, remains to be seen.

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Chiariglione's vision: An interoperable DRM platform to the benefit of all

By: Leonardo Chiariglione, Digital Media Project, Geneva, Switzerland

INDICARE-Interview by Knud Böhle, ITAS, Karlsruhe, Germany with Leonardo Chiariglione, Digital Media Project. The purpose of the interview is to get a better understanding of the project's work, and to find out how consumer concerns are addressed within the project.

Keywords: Digital Media Project, interoperability, standardisation, consumer rights

About Leonardo Chiariglione: *He is a renowned expert in the standards setting community, most notably as convenor of ISO's Moving Picture Experts Group (MPEG) and as first Executive Director of the Secure Digital Music Initiative (SDMI). He worked for more than thirty years for Telecom Italia within CSELT, the corporate research centre of this group, which was later named Telecom Italia Lab, of which he became Vice President Multimedia in 2001. In 2003 he left Telecom Italia to run his own consulting business. In December 2003 he spearheaded the establishment of the Digital Media Project, a non-profit organisation promoting the take-off of Digital Media on the basis of interoperable DRM systems considering the interests of all actors.*

INDICARE: The Digital Media Project (DMP) has been under way (publication of the "Digital Media Manifesto" 30.9.2003; established as organisation 1.12.2003) for a year or so. The mission of the project and the work done are well documented (see DMP website and document list). Therefore to start with, let me briefly summarise the rationale of DMP as derived from public sources. DMP advocates standardised and interoperable Digital Rights Management (DRM) – as opposed to common practice – to enable a real take-off of digital media. The initiative aims at developing technical specifications for Interoperable DRM. As a necessary com-

plement to a successful deployment of these specifications DMP also intends to recommend actions to policy makers, legislators, and other authorities. In the Manifesto, the need to agree on end user rights in a digital environment is highlighted; further issues are the phasing out of legacy systems (in particular levy schemes), the need to remove the obstacles to broadband access and to enable a "full-blown digital media market", the reorganisation of the standards making process maintaining fair access to intellectual property, the need for DRM platforms to be interoperable along the entire value chain, accordingly new B2B relationships, and interoperable end-user devices and competitive consumer markets. Please correct me if I am wrong.

My first question is if new issues arose during the last year and what topics you are currently focussing on?

L. Chiariglione: In the past year DMP has held four General Assemblies, reviewed and confirmed the outcome of the Digital Media Manifesto, progressed the development of requirements for the Interoperable DRM Platform (the name of the DMP specification, IDP for short) using inputs from a large number of sources, issued a first Call for Proposals, received and reviewed a large number of responses and created a first

working draft of the IDP specification with the goal to publish it in April 2005.

On the policy side DMP has identified and described a sizeable number of Traditional Rights and Usages (TRU) and is in the process of issuing a Call for Contributions on that work. These will be used to draft a TRU Recommended Action. On the other policy issues DMP has already started work by organising two workshops on "Development of and access to standards" and on "Analogue legacies in the digital space". A workshop on "Deployment of Broadband Access" will be held at the January meeting.

INDICARE: What's particularly interesting for INDICARE is the claim that your approach will favour consumers. What are the benefits of DRM you envisage for consumers, and to what extent are consumers and consumer organisations involved in DMP?

L. Chiariglione: The basic DMP position, inherited from the Digital Media Manifesto, is that digital media technologies are an asset of mankind and that everybody in the value-chain – creators, end-users and all other intermediaries offering services in between – should benefit from them. But we have seen enough of the results of the wild use of digital media technologies to understand that this is not happening. DRM is the technology that can, on the one hand, let rights holders receive a just remuneration for their efforts and, on the other, let end-users fully exploit the potential of digital media.

DMP keeps working contacts with its grass root base developed at the time of the Digital Media Manifesto. Participation in DMP meetings was open to anybody until October and e-mail reflectors are also open with the exception of those dealing with technology choices. It has also started a dialogue with BEUC, witness the BEUC speaker who attended the Analogue Legacies workshop held in October.

INDICARE: Taking a look at the DMP member list the support by grass root organisations and consumer organisations is not apparent...

L. Chiariglione: As I said the dialogue with consumer organisations has barely started.

There are several very active individuals populating our email reflectors, some of them even attending our meetings.

INDICARE: One intriguing strand of work within DMP is in my view the analysis of traditional rights and usages (TRU) in order to figure out in which way they may survive in the digital environment. Are there rights which won't survive in a digital environment, e.g. the right to private copy, so fiercely debated in public?

L. Chiariglione: The analysis of how TRUs can be mapped to the digital space is still ongoing, but a priori there is no reason why a TRU listed on the DMP web site cannot be preserved in the digital space. In most cases it cannot be, however, an automatic translation.

"Copy" is not necessarily a major concern for DMP. If you call "TRU to copy" as "TRU to access", you have started to clear the ground.

INDICARE: That's a delicate point. Digital media consumption and use requires again and again technical access and this fact can be exploited to generate streams of income – in a way that's a basic function of DRM. In addition new techniques are developed (e.g. streaming, rights lockers) which might even render copying obsolete. Nevertheless good old purchasing and enjoying traditional rights like making copies for friends or the right to resell may remain important. Maybe my reasoning is going astray, so please continue to clear the ground a little bit further...

L. Chiariglione: I see no reason why purchasing physical media should not continue to be possible. This, however, is not a technology issue, because what you ask can be easily achieved. The point is again the collision of technical possibilities with TRUs. As I said before DMP is preparing a document that will be published with a Call for Contributions. Anybody can join the discussions on this document now and can respond to the Call when it is published.

INDICARE: Mhm, I was thinking of the purchase of digital online media in first place...

L. Chiariglione: Copy still makes practical sense when you buy something physical with digital media on it. In that case it is understandable that some people may want to be able to do the same that they did with analogue media. If we talk about digital online media, however, then "copy" is a solution, while the problem is, as DMP has identified it with its TRU #19, "ability to make continued access".

INDICARE: Consumer organisations like BEUC and experts ask to clearly state what consumer rights are and to declare these user rights explicitly in legislation. I can imagine that you support this idea, but I am not sure...

L. Chiariglione: Making pompous statements a priori on rights and wrongs will not take us very far, as we will immediately be bogged down in discussing first principles. We have to concretely see on a case-by-case basis how individual TRUs can be mapped to the digital space.

INDICARE: There is an interesting statement (see Essentials of DMP) that end-users now have at their disposal manifold means to acquire digital content media inexpensively or even for free, and that common sense suggests that some of those means should be illegal. What exactly do you mean by "common sense" here? Common sense might be a difficult concept when common practice differs from common sense. You also say law clashes with common sense? But again, many scientists and civil rights advocates are unhappy with e.g. the anti-circumvention provisions of the EU Copyright Directive. Are there two types of common sense?

L. Chiariglione: Getting thousands of music or video files for free, when they are supposed to be on sale, clashes with my sense of justice. Bringing 12 year old kids to court is a shame for a society that lets this happen. My article that you quote above has nothing to do with the EU Copyright Directive.

INDICARE: Let me turn to another subject. In the INDICARE Monitor we published an article by Stefan Bechtold about "value-centred design" of DRM, i.e. a DRM solution able to balance interests of all actors along

the value-chain and also of end users. Do you as a technical expert think that this concept can be implemented? How can content protection by DRMs and the granting of exceptions be put under one hat?

L. Chiariglione: You seem to assume that there is a DRM technology with nuts and bolts that is designed in such a way that every business in the value-chain has its turf protected against intrusions. This can hardly be the case. Digital technologies have intrinsically disruptive effects as much as past waves of technologies, starting from Gutenberg's, had disruptive effects, actually more. What should be done – and that is indeed what DMP is doing – is to design a DRM platform that provides a level playing field. The most important feature of such a platform is interoperability. This is good for business players in the value chain but for creators and end-users as well.

INDICARE: DRM means different things to different people. Some think of "forensic DRM", of Light Weight DRM, others of Trusted Computing (TC) platforms as a prerequisite for efficient protection of digital content. What is your definition of DRM systems, and what do you think of the potential of Light Weight DRM on the one hand and TC on the other hand. How are these options reflected in the work of DMP?

L. Chiariglione: Your question gives me the opportunity to give more details about the approach that DMP is following in designing the Interoperable DRM Platform specification. As I said before, and because value chains are so diverse and business player attitudes are countless, it is impossible to design a "one size fits all" monolithic DRM solution. So what DMP is doing is to develop an Interoperable DRM Platform specification that is a toolkit. Those who want a lightweight DRM solution can find it in the toolkit, those who need a heavyweight solution can find it there as well.

I believe that this possibility of building DRM solutions "à la carte" is one of the most promising aspects of the DMP Interoperable DRM Platform specification. This entails a number of technical problems that affect interoperability, but is the only way to create

a DRM solution that is not going to be forced on users against their needs and is future proof.

INDICARE: Another interesting interoperability issue which you raise is interoperable end-user devices and your demand for competitive markets for these devices. I do not see very clearly what you have in mind. If I think of the MP3-player market, it seems to be quite competitive, and with regard to the proprietary portable music players (iPod, Sony, etc.), can't we be confident that market dynamics will achieve interoperability in the mid term.

L. Chiariglione: Yes, the MP3 player market is very open and competitive. So, would it not be great if we could have a market for players of governed content that is as open and competitive as the MP3 player market? This is what DMP intends to achieve with its end-user device specification.

Your hint that "market dynamics will achieve interoperability in the mid term" has value as a hope, but is not substantiated by any proof. Just see what has happened to the market of pay TV set top boxes. Ten years after it started it is still very closed and controlled by the service providers (who, BTW keep on losing money 10 years after they started this type of business).

INDICARE: In many respects I see your vision close to the official EC policy, thinking of the new EU Copyright directive and its commitment to DRM, the phasing out of levy systems, the eEurope 2005 Action Plan pushing broadband. What actions would you rec-

Sources

The following background material does not appear in alphabetical order as usual. Here we prefer to refer first to the personal webpage of our interview partner, then to the DMP website and further documents making the progress of DMP clear, before we make reference to documents explaining in more detail the rationale behind the project. Finally we refer to some documents related to the issue of "Traditional Rights and Usages", so important for consumer acceptability of DRM solutions.

- ▶ Webpage of Leonardo Chiariglione with biography, publications and more: <http://www.chiariglione.org/leonardo/>
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- ▶ The Digital Media Project: Purpose, organisation and work plan (revised 2003/10/21) <http://www.chiariglione.org/project/dmp.htm>

ommend the European Commission to better meet your vision of the digital media market take off?

L. Chiariglione: My philosophical position is that public authorities should not impose standards, with the exception of very special cases like safety etc. On the other hand if standards do not appear by themselves public authorities should promote their establishment. So, if the European Commission is serious about Interoperable DRM – as the Final Report of the High Level Group seems to confirm – and no other body – but DMP – is working on an Interoperable DRM standard ...

INDICARE: OK, last question, anyone will wonder what an impact a non-profit organisation with c. 20 members might have in a world of transnational corporations, media and software giants, think tanks, and powerful lobbies... .

L. Chiariglione: One year after its establishment MPEG had about the same number of members as DMP today and MPEG succeeded in doing what other well-established and supported organisation had failed to achieve.

INDICARE: Time will tell. In any case, I have learnt about the importance of DMP for all concerned with DRM standards and interoperability. I am also looking forward to the envisaged Recommended Action documents and expect that they might also stimulate the discussions at INDICARE. Thank you very much for this interview.

- ▶ The Digital Media Manifesto (last update: 2003/10/21) <http://www.chiariglione.org/manifesto/>
- ▶ The Digital Media Manifesto. Frequently Asked Questions (2003/09/30) <http://www.chiariglione.org/manifesto/faq.htm>. This document can be read as a type of interview answering many basic questions about DMP.
- ▶ Essentials of the Digital Media Project: <http://www.dmpf.org/open/dmp0188.doc>
- ▶ DRM the Saviour of Digital Media – If only it were that easy (by Leonardo Chiariglione) http://www.dmpf.org/documents/DRM_saviour.htm
- ▶ Collection of Traditional Rights and Usages (TRU) templates <http://www.dmpf.org/open/dmp0270.doc>
- ▶ Analysis of Traditional Rights and Usages (TRU) identified by DMP: <http://www.dmpf.org/open/dmp0201.doc>

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Content protection comes first. A report about the Fourth ACM Workshop on DRM

By: Kristof Kerenyi, SEARCH Laboratory, Budapest, Hungary

Abstract: This year's ACM Workshop on Digital Rights Management, which took place in Washington, DC, was an opportunity to find out what is going on in the technical field and what the research priorities of DRM specialists are. The following report points out the issues I found most interesting for INDICARE. It is telling that neither privacy enhancing technologies nor end user centred design of acceptable DRM systems were among the issues dealt with. The primary and enduring concern was still, and for obvious reasons, content protection technologies.

Keywords: content protection, security, watermarking, fingerprinting, standardisation, trusted computing

Introduction

The ACM (Association for Computing Machinery), the foremost society in computing, organised its eleventh Conference on Computer and Communications Security on October 26-27, 2004, in Washington, DC. In conjunction with this conference, several workshops were held on hot topics of applied computer security, one of them focussing on DRM. The vast majority of attendants were IT experts from the United States investigating more secure ways of digital content protection. There were only few researchers from other countries and with a different focus of research.

Trusted hardware solutions for better protection

Most speakers aimed to contribute to higher security for content protection. So far, technology has contributed very little to reduce piracy, and on open system architectures it is very difficult to achieve high-security DRM

solutions. Software-based protection is not enough. What seems to be required are therefore either "unbreakable", tamper-resistant devices, or advanced protection methods. Most participants even shared the belief that in order to achieve secure systems, trusted hardware solutions were needed. In the following, I will touch upon a range of suggestions made during the workshop on how to improve content protection.

Bertrand Anckaer from Ghent University, Belgium, came up with the idea of diversification of software upon distribution, before and after installation, upon software activation, and of course with the help of tailored updates. *Weidong Shi*, a researcher from Georgia Institute of Technology, claimed that today's microprocessors are already "too powerful", and if the pace of development continues, in fifteen years they will be thousand times faster than today, and he asked: What are we going to do with the computational power then? He suggested incorporat-

ing PKI into trusted computing: software (and content) should be encrypted with public-key cryptography characteristic to the particular microprocessor, so that software running on one computer wouldn't run on another computer. Of course, security and performance are opposing things, but future chips – as the speaker pointed out –, will have the power to achieve this higher level of security.

Global record keeping of secure devices and revocation of tampered devices was proposed by *Bogdan Popescu* from Philips as another way to achieve higher security. Philips' system of "anytime anywhere" home networks is a case in point, in which content can only be played by online authenticated compliant devices. A similar approach including secure key handling also underlies AACS (Advanced Access Content System), the content protection system of the "next generation DVDs", aiming to enhance the current movie protection which can easily be circumvented. I am sure many INDICARE Monitor readers will remember that the person, who had cracked the first generation DVDs' copy protection system (CSS), argued that he did it, because Linux and other open source operating systems had been excluded from media consumption by content industry before. So I asked about open-source software and the play-back of next generation DVDs, and *Jefferey Lotspiech* from IBM Almaden Research Centre replied that IBM was going to provide an open-source implementation of the key handling for Linux. This seems to me a very welcome development holding the promise of more acceptable systems.

Virtual machines (software, which behaves like a computer able to run programmes) are also of high concern. Today, more and more hardware and software emulators can be found for personal computers, which can in many cases render copy protection measures useless: A computer with a DRM system integrated at the operating system level may "think" that it has implemented secure copy protection, while in fact the whole operating system might just run as a process of another operating system, which eventually extracts digital content from its protected form. All that is needed to rip protection measures off

is a right for a single play-back on the virtualised device, possibly a try-before-you-buy right. During this single play-back the digital output, which passes through the underlying virtual machine, can be captured by the host operating system. This exploit is similar to the analogue hole, but more efficient. The speaker even claimed that a "Trusted Computing Base" would be "virtualisable". In this sense not even Trusted Computing is sufficient to resolve this problem – food for thought for its advocates.

Digital fingerprinting and watermarking

Before the workshop it was my belief that fingerprinting and watermarking can only be used to trace copyright infringers ("forensic DRM"), I learnt however that these technical means can have a wider use and can also be used to prevent illegal content use. At the workshop fingerprinting methods were shown, which are e.g. immune to rotation and recompression of digital movies. Fingerprinting, as demonstrated, can also be used to detect illegal copies and request removal, or even to filter internet traffic containing potentially copyright infringing material.

Watermarking, as one speaker claimed, can be so effective today that watermarked information can even be recovered from a camcorder-captured and recompressed movie. Watermarks can also be used to ensure data integrity. *Huiping Guo*, from George Mason University in Fairfax, Virginia, talked about so-called "fragile watermarks", which unlike robust watermarks, used for ownership verification, can detect tampering of digital data. When for example a database is kept at an insecure server of a service provider, the owner of the database has to be able to verify the integrity of the data. Tamper detection by means of fragile watermarks is a way to do so, and it is a better way compared to just digitally signing a database to detect the fact of tampering, because fragile watermarks allow the localisation of modifications in the database. This way the intact parts of the databases can still be trusted.

Standardisation

The importance of standardisation was emphasised in several speeches. It was noted

that it is unlikely that the whole industry will come to a common conclusion, and accept a common standard. Instead, market needs will determine compatibility – or incompatibility – of devices and services, and vendors and manufacturers will not heed much the interests of their competitors.

Two possible solutions were outlined, which could solve the question of interoperability, or at least provide a means to reduce the negative effects of device incompatibility. *Gregory L. Heileman*, professor at the University of New Mexico, recommended a completely new way to look at DRM systems: just like all telecommunication systems more or less follow the ISO/OSI seven-layered system, the functionalities of DRM should just as well be divided into layers, governed by the International Organization for Standardization. The top and bottom layers could vary from application to application and for each method of content distribution, but there should be one middle layer, namely the rights expression and interpretation layer, which would need standardisation to achieve interoperability of different systems.

The other suggestion is based on a scenario in which no common industry standard exists: it was about creating an import/export functionality for each DRM solution, by means of which users could exchange content between different devices. If a common format can be agreed on, then most manufacturers could create an export function which would transform the usage rights and content to this common format, and the other device could import content in this form to achieve interoperability of devices. *Reihaneh Safavi-Naini* from the University of Wollongong, Australia, investigated two current, widespread DRM solutions, and concluded that they were basically compatible, and import/export functionality would be achievable.

Other suggestions

Boris Margolin from the University of Massachusetts introduced a very interesting suggestion about using financial incentives to discourage consumers from exchanging content with each other. He focussed on valuable content to be shared between just two parties

only, which needs to be protected for a limited amount of time. Examples given include passwords to a subscription service, prerelease of media for review, or content bound to nondisclosure agreements. The idea is to have a deposit of money from everyone who legally obtains some form of permission to do something with a given content. When "returning" the token of authorisation, the deposited amount of money will be given back. If someone shares his or her permission with others, then the deposited amount will be divided between all those who can present such a token: this way the incentive to share is discouraged. The interesting thing is that this solution does not use watermarking or any other form of DRM to prevent sharing.

Bottom line

From the point of view of technology the ACM workshop on DRM was very interesting and informative. Several new suggestions were made to better protect content from unauthorised use. However, if we consider consumer interests, we have to conclude that the end users of content are still looked at as "the enemy" by technicians. Their major problem is still how to achieve better content protection, and as long as this central question is not solved, little effort will be put in making DRM systems more consumer friendly, implementing more privacy or respecting the interests of disadvantaged groups.

This, however, is not a purposeless proceeding. The development of DRM, as everything else, must be a market-driven process in order to ultimately achieve consumer-friendly systems. For the supply side of the market, namely content providers, the most important thing today is safe content, which guarantees their financial compensation. Content providers will not flood the market unless better and more secure copy protection is implemented. Then, in a next step, the fight for customers will shift the focus of development to create more acceptable and consumer-friendly systems.

That is my conclusion from the workshop leading to the intriguing question about the real use of approaches like "user-centred design" of DRM.

Sources

► The official web site of the workshop: <http://mollie.engr.uconn.edu/DRM2004/>

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DRM strategies debate in the US A report from a JupiterMedia Conference

By: Kristóf Kerényi, SEARCH laboratory, Budapest, Hungary

Abstract: JupiterMedia's Digital Rights Management Strategies Conference was announced as "the most comprehensive event on DRM business and technology issues ever held". This statement weighs even more as the US DRM market is more mature than the European market. Although the two day conference explicitly targeted consumer issues, it is safe to say that consumer-friendly DRMs are not the most important thing for American players in the DRM and content industry.

Keywords: user-friendliness, P2P, fingerprinting, watermarking, conference

Introduction

The DRM Strategies 2004 Conference, organised by JupiterMedia, was held on October 25 and 26, in Los Angeles. The majority of the attendees were from the United States, with just a couple of guests and speakers coming from overseas. The main event was split into parallel tracks. In the "media track" over one hundred participants discussed about DRM for digital content, mainly entertainment like music and movies. In the much smaller "enterprise track", probably with a few dozen participants, there was discussion on how valuable business and client information can be managed and protected with the help of new rights management technologies. I attended the media track which comprised among others a keynote debate about consumer friendly DRMs. By the way, this is the second time that INDICARE has reported about a Jupiter DRM conference (Helberger 2004).

General questions of DRM

P2P and limits of DRMs

Peer-to-peer file sharing networks were a general topic, and they were mentioned both

as good, creating new opportunities if they are applied with the right business model, and also as the "dark side", against which the content industry has to protect itself. Michael Einhorn, a consultant and economist argued that as long as peer-to-peer networks exist, no DRM would present a real alternative to consumers. He went as far as saying: "Peer-to-peer is a hydrogen bomb to every business model." The two sided P2P topic has also been analysed in depth by Bill Rosenblatt, chair of the conference, in a recent INDICARE article (Rosenblatt 2004).

There was agreement that DRM cannot reach everywhere. If the content industry outlaws big networks then people will move to smaller networks, which cannot be monitored. As Khaja Ahmed from Microsoft said, "Bullet-proof protection of media is cost prohibitive. Keeping honest people honest is the level we can realistically achieve." Another voice said "We do not have to block content leak to Kazaa, we have to compete with Kazaa's offering."

One creative use of new technology was called "viral marketing". John Beezer, presi-

dent of Shared Media Licensing, recommended recognising what people using peer-to-peer file sharing networks were doing: they put a lot of effort into spreading content and providing information to others, effectively doing the marketing instead of the content owners. Viral marketing is based on a revenue system, where instead of punishing wrong behaviour, good behaviour should be rewarded. In this model a recommendation system is set up, where a user recommending a track to a friend would get 20 percent of the price of that track if the friend buys it, 10 percent if the friend recommends the track further, and 5 more for a third level endorsement.

For me, the essence of debate was that new business models are needed to exploit opportunities created by new technology rather than fighting against them.

Alternative compensation schemes

As expected there were discussions about levies and compulsory licensing as alternative compensation schemes. Compulsory licensing means a flat fee charged to ISP subscribers for unfettered content usage, while levies are like taxes on blank digital media, computers or other types of hardware. The former was strongly rejected by Electronic Frontier Foundation's representative, Wendy Seltzer. Instead, she suggested to offer "darknet"-users the possibility to share music for a low subscription fee (e.g. \$5 per month), collected by their internet service providers or college network. This idea of a "voluntary collective license" was strongly criticised by other participants. They said that there is no difference between voluntary and compulsory licensing from the industry's point of view: content providers who do not agree with the terms of voluntary licensing, will get none of the collected money; so at the end of the day it is compulsory, too, if one wants to get revenue.

Interoperability

The ever returning question of interoperability was raised almost at every discussion panel. My conclusion on the discussion is that while everyone is talking about interoperability as a technological question, it is rather a business model issue: whenever the

industry comes to the conclusion that they have to create interoperable services, the problem is solved. For example, Brian Lakamp, a representative of Sony Pictures, argued that in home networks a set of devices has to behave as one device. Therefore a consistent usage model (e.g. DVD) is an absolute necessity. From the consumer perspective, as someone from the audience pointed out, full interoperability is less important. Consumers just want point-to-point interoperability. In other words, if they can transfer content between their living room and their bedroom, the content format can be proprietary, it will satisfy them.

Fingerprinting and watermarking

The conference devoted two sections to fingerprinting and watermarking, focussing on the opportunities these complementary techniques can provide. As the participants learned, watermarking is not just another method to make piracy more difficult, it has a lot of different functions. The list below was presented by Reed Stager, vice president of Digimarc, and gives an idea of the multiple uses:

- ▶ Copyright communication – identification data of the content owner and granted usage rights can be included in the content.
- ▶ Copy protection – watermarks can control recording and playback.
- ▶ Monitoring – to monitor broadcast and internet use.
- ▶ Classification/filtering – content can be classified based on included metadata and filtered based on this.
- ▶ Authentication/integrity – Genuineness of the content can be guaranteed.
- ▶ Forensic tracking – identifies where content has left the authorized domain.
- ▶ Asset/media management – links content to DRM system.
- ▶ Remote triggering – automatic actions during distribution.
- ▶ Linking/e-commerce – enables access to additional information and purchase of related content.

The importance of "information" was underlined by Michael Einhorn. He said that a considerable part of the money that consumers pay for legally obtained music does not go for the music itself, but the information about the music. This includes everything from making the tracks known by playing them in radio stations, to filling the correct tags (artist, title, genre, year of appearance, etc.) in digital music files. Such data can be embedded in the content as a watermark.

Fingerprinting, on the other hand, can not only be used for forensic identification or tracking the path of a specific digital file, Vance Ikezoye, president of Audible Magic, said. It can also be used for monitoring peer-to-peer networks blocking the spread of infringing content. "Peer-to-peer networks are a market of 60 million people", John Beezer said, so it has to be regulated and business opportunities in such networks have to be exploited.

Gracenote's idea of a media library could bring a revolution to peer-to-peer file sharing networks. This revolution is about filtering network traffic based on intelligent fingerprinting techniques, and if someone wants to download a piece of music from a fellow file sharer, traffic will be stopped by the Gracenote system and the downloader will be redirected to a legitimate music store where he can buy the content.

There are, however, two main problems with network filtering. On the one hand, applying filters everywhere would need a huge regulatory overhead, so it is almost impossible at the moment. On the other hand, client side encryption of network traffic renders fingerprint-based filtering useless, and anyway, with the spread of non-networked connections, where devices are "talking" directly to each other (e.g. over Bluetooth), there is nothing to filter. We have already discussed issues of filtering the network traffic in an INDICARE article (Kerényi 2004).

Consumer-friendly DRM systems

There was a panel which investigated whether consumer-friendly DRMs are an oxymoron or an inevitability. The discussion, moderated by Bill Rosenblatt, managing

editor of DRM Watch and chair of the conference, unfortunately did not attract a large audience.

The first big issue was to find out what is the value consumers want? What is consumer-friendly? There was no definite answer to this question, because DRM was invented by the content industry, and it was not motivated by consumer needs. As someone from the audience noted, "DRM is not about end users' experience, its starting point was the competition with the file sharing world". However, everyone agreed that consumer acceptance is indeed a very important issue. DRMs should be invisible to the consumers, while the consumer should know exactly what they are allowed or not allowed to do. This was the criterion used to define user-friendly DRMs.

A big debate emerged on the topic of fair use. One party concluded that fair use was not really supported by the industry with technical means. It would rather incorporate narrow "fair use" rules into the present DRM platforms, so that new legal fair uses defined later cannot impede them in implementing their original intentions. Another group of people argued that ultimately the consumer would determine fair use, and not content owners, distributors, legislators or courts. Consumers vote with their wallets, and if they feel wronged they will look elsewhere for content. But this is not bad, because if the industry pays attention to lessons that can be learned from the "free world", they can develop better business models. As Todd Chanko, an analyst from JupiterResearch noted, "piracy is another way of understanding consumer demand".

One more important question was whether there will ever be a technologically enforced way to control fair use? Both answers from the panel concluded the same. One said that fair use is not the same everywhere in the world, thus it is quite fuzzy and cannot be enforced. The other answer was that fair use is basically about unauthorized uses of content, basically exceptions, which cannot really be built into systems. Personally, I think that symmetric rights expression languages could solve this latter problem.

The question arose why someone would want to buy a product with DRM. Ultimately – according to the querying person – DRM functionality decreases the value of the product, at least from the consumer’s perspective. The answer from the panel was that this was true, and “consumers hated DRM”, therefore providers would have to give them something in exchange. This could be any advantage over non-DRM capable devices, for example a selection of colours, better features or smaller files size. Therefore, as Mike Godwin from Public Knowledge stated, “competing with free, forcing industry to add value, is the healthiest idea”. The main problem, however, is that “while consumers are the market, consumers are also the threat to the market”.

Bottom line

All in all, the conference was a very interesting event. The most interesting point for

INDICARE was the discussion about consumer friendliness of DRM. The conclusion is that while originally DRM was not motivated by consumers, to be accepted it has to become consumer friendly. This means that it has to be seamless, minimally intrusive, and at the same time it has to provide full transparency. Ultimately, consumers are the customers of content, and they will choose the best fitting solution, be it free of charge or for money and DRM protected. Digital rights management solutions need to provide advantages over free content. My conclusion on the conference is that decision makers in the United States have realised that just as in every service in the world in DRM the consumer is the one to satisfy. Therefore creating acceptable systems is the most important issue.

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State-of-the-Art Report Released

By: INDICARE Team

The new INDICARE report demonstrates that interests and concerns of consumers are insufficiently considered in the context of DRM-protected digital content. The present publication is the first State-of-the-Art Report by the INDICARE project. You are kindly invited to download the report from the INDICARE website: <http://www.indicare.org/soareport> (PDF, 1011 KB). Your feedback on the report is appreciated, please use the “Read More & Comment” option.

Although consumer acceptability of DRM has started to draw wider attention, the report shows that there is still little knowledge and empirical evidence with respect to consumer concerns and expectations regarding DRM. The low level of active involvement of consumer advocates can explain to a certain extent the unsatisfactory degree of responsiveness of existing business models, technical systems, legal instruments and political initiatives.

The authors point out: “DRM is a topic that goes far beyond piracy prevention and has to be seen in a broader social, economic, legal and technical context. From the legal point of view, many of the identified issues go beyond the scope of copyright.” The report highlights the increased importance of consumer protection and contract law. Furthermore: “The technical solutions that could respond to some of the consumer concerns have not been fully exploited yet. In the report we show already existing technical possibilities to resolve these issues.” Major concerns are fair conditions of use and access to digital content, privacy, interoperability, transparency, as well as various aspects of consumer friendliness. The authors are convinced that the consumer acceptability of DRM is crucial for the economic success of different business models based on DRM: “Fair and responsive DRM design is the key to a profitable strategy.”

The first State-of-the-Art Report on “Digital Rights Management and Consumer Acceptability. A Multi-Disciplinary Discussion of Consumer Concerns and Expectations” is available for download at: <http://www.indicare.org/soareport> (PDF, 1011 KB)

You are kindly invited to give us your feedback, please use the “add comment” button below. Your feedback will be considered in an update of the report.

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Report on the 1st INDICARE Workshop: Business Models for Mobile Music and DRM

By: SEARCH Laboratory, Budapest, Hungary

Abstract: The first INDICARE Workshop in a series of five was held September 30, 2004 in Berlin, Germany. The workshop was on "Business Models for Mobile Music and DRM". It was organised by INDICARE partner Berlecon Research. The results of the workshop are now available in a report, prepared by INDICARE partner SEARCH, and we invite you to download it from the INDICARE website: [download](#) (PDF, 669 KB)

Keywords: INDICARE, mobile music, standards, mobile operators, consumer, superdistribution

In order to stimulate the Informed Dialogue, INDICARE partners are organising five workshops during the project's lifetime. These events aim to deal with topics, which have to our understanding not been discussed sufficiently in public: Business Models and Rights Management; e-Payments for Digital Content; Consumer Perspectives on DRM; Social Exclusion by DRM; and Human Factors of DRMs. On September 30, 2004, the first workshop was held in Berlin, Germany.

The first workshop titled "Business Models for Mobile Music and DRM" targeted the field of mobile music. Many of the problems providers face today are already known from previous experience in music distribution on the Internet, but new technologies also raise new problems which have to be solved to successfully exploit opportunities in an expanded market. The topics discussed at the Workshop included:

- ▶ The current state of the mobile music market
- ▶ Technological developments
- ▶ Legal issues
- ▶ Business models / case studies
- ▶ Consumer acceptance and consumer concerns
- ▶ Future trends

The first workshop of the project showed that there is considerable demand of stakeholders – positioned differently in the value chain and with different opinions about DRM – to come together and discuss current problems, trends and strategies. The workshop report informs about the presentations, opinions brought up during the panels, and lessons learnt. The full Workshop report is now available:

Source

- ▶ Kristóf Kerényi (ed.): Business Models for Mobile Music and DRM, Report of the 1st INDICARE Workshop, Budapest November 2004; Download: http://www.indicare.org/tiki-download_file.php?fileId=49 (PDF, 669 KB)

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Masthead

The INDICARE Monitor is an electronic periodical of the EU-funded project INDICARE being published every last Friday of a month. Articles having passed an internal review process are immediately posted at the INDICARE homepage for public debate. Authors are encouraged to revise their articles in the light of previous discussion before publication in the monthly issue.

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