Digital rights management: the four perspectives of developers, distributors, users and lawyers.

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Digital Rights Management: The Four Perspectives of Developers, Distributors, Users, and Lawyers

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Abstract

Digital Rights Management (DRM) refers to a collection of security mechanisms that are widely deployed on a number of copyright-protected digital assets. However, despite the existence of a number of studies of the technical architectures of rights management security systems, there is little scholarly/academic literature dedicated to the human aspects associated with circumvention of DRM security. Using videogames as a case study, this paper discusses how DRM is perceived differently depending on where one's stake in the use of DRM security lies. This paper concludes by proposing questions that could be used to aid content distributors and security practitioners in the creation of a fairer DRM framework.

Keywords

Digital Rights Management, Human Aspects, Privacy and Fairness, Game Security.

1. Introduction

Copyright infringements and the evolution of digital rights management (DRM) have been among the most antagonistic points of the digital age (Anderson, 2008). It is questionable whether a flawless rights protection system can ever be accomplished when drawing on the analogy that, in the traditional sense of security, you are protecting your asset from an attacker, but in DRM scenarios the authorised user and attacker may well be the same individual. Therefore, there is surprisingly little literature around the human aspects that influence this area of rights protection circumvention. In software development security requirements should be addressed as early in the design process as possible. However, all too often, security is considered an after-thought (Adams, A and Sasse, M. A. 1999) and DRM security is often added to protected content after the development phase is complete.

Computer/video games outsold video and music content during 2014. For example, the UK games market grew by 7.5% to reach £2.5bn, while video decreased by 1.4% to reach £2.2bn and music fell by 1.6% to reach £1billion (Butler 2014). Because games currently have the largest market share compared to these other aforementioned creative industries, our research is centred on game DRM. (Butler 2014). The debate surrounding the effectiveness and future of rights protection

mechanisms has been closely aligned to the subjects of interoperability, user privacy, user acceptance and maintenance of secure systems. Some of the lesser explored areas have been the human aspects of DRM from the involved stakeholder groups: a) the game developer; b) the game rights holder/distributor; c) the games user and; d) the legal profession. The remainder of this paper is organized as follows: Section 2 explores the background of game security circumvention; Section 3 introduces the justification for research. Section 4 introduces the methodology. Section 5 discusses the DRM stakeholder groups. Section 6 discusses the need for balance, Section 7 introduces the human difficulties, and, finally, Section 8 concludes this paper.

2. Background

Piracy is the use of a copyrighted material without paying for it (Nagesh, 2011). Digital piracy occurs regardless of what type of media is being developed or for what distribution platform it is intended for. The factors influencing the user's desire to circumvent DRM in acts of piracy can be construed as a social problem driven by human aspects such as intent, motive, moral judgement and social consensus. Possible reasons behind the circumvention of DRM go beyond any technological weaknesses of the security into the human aspects of security. The growth of online gaming, the uptake of faster internet connections along with the rise of initiatives such as the 'Occupy Movement' against corporatism and economic inequality (Townsend, 2015) have provided opponents to DRM with more ways to present themselves in terms of the justification for their circumvention actions. Organisations distributing games view DRM as a necessary instrument in the fight against copyright violation. However, the critics of DRM allege that it stifles innovation and fair competition by quashing lawful uses of digital content, and, as such, is creating economic and social inequality regardless of the context of the intended use. (Litlow, 2012)

Because of this perceived economic and social inequality between rights holders and users of games, it becomes imperative for the legal system to ensure that there is fairness for all in the event of a legal dispute. Fairness is achieved when people restrain their liberty in ways necessary to yield advantages for all (Hart, 1955). Fairness in the English legal system is underpinned by the principle of Equity. This is described as "the means by which a system of law balances the need for sufficient judicial discretion to achieve fairness in individual factual circumstances" (Hudson, 2012). Because of the perceived bias towards the rights holders, it is essential that justice should be seen to involve procedural fairness and fair decisions being reached by an objective decision-maker, whilst protecting the rights of individuals and promoting public confidence in the legal process (Chang, 2007)

Perhaps the most serious drawback to the debate surrounding the effectiveness and future of DRM is that fairness for all, as defined by Hart, may never be achievable

across groups serving such different interests. Consequently, "the monopoly on restrictions of use sought by many distributors extends beyond any concept of a monopoly in intellectual property and is often at the expense of user satisfaction" (Darroch, 2012). Because of these restrictions, DRM can seem inequitable and unfair when applying Hart's principle of fairness. This apparent lack of fairness and bias in the direction of rights-holding organisations "results in DRM, gaining a large share of attention from copyright scholars, the content industry, and the media" (Diehl, 2012). It is questionable whether game developers should be leaving DRM to the publisher to deploy. There is need for clarity in regard to DRM responsibility; after all, the developer cannot be expected to have the market knowledge of a distributor/publisher.

3. Justification for Research

This paper is part of a larger study on DRM security identifying and communicating how game developers make sense of DRM technology when developing video games. The worldwide DRM market is said to be worth 2.9 billion US dollars and is estimated to grow at a compounded annual growth rate of around 16% between 2015-2020 (Egar 2015). While this has obvious positive consequences for growth and innovation, such an expansion should be matched by a period of extended attention to the fundamental values and the social interactions impacted by these technologies. The perspectives in this paper are limited to games, but the questions posed in this paper could potentially be applied to any type of rights protected digital content.

4. Methodology

This paper is part of a project building empirical evidence on the way content producers "make sense" of DRM. The human aspects revolving around content protection will be identified and analysed. To this end, the project will first review the discussion surrounding fairness and DRM from the point of view of the main stakeholders groups. Data was retrieved from Scopus, IEEE's Xplore, book chapters, journal articles and the conference proceedings of the ACM Digital Library. The data selection utilised Google Scholar and Scopus to identify the most frequently cited material. 22 journal articles, 11 conference papers, 3 case reports and 2 working papers were coded into the NVivo qualitative analysis software using an open coding technique with a hierarchal structure with four master codes of Developer view, Distributor view, User view and Legal view. The sub-code structure was then broken down into: a) Constraints of DRM, b) interoperability of DRM, c) opinions on DRM, and, finally, d) reasons for DRM. This socio-legal approach identifies and explores the elements of law and the human behavioural aspects in rights protection security by exploring the perspectives and opinions of the stakeholder groups.

5. The DRM Stakeholder Groups

The selected scholarly literature highlights four main DRM stakeholder groups. The chosen business model and financial situation of the stakeholder will influence the level of reliance on DRM. Despite the potential financial impact of the business model on DRM, there is little literature to the best of the authors' knowledge dedicated to the relationship between business model choice and DRM deployment. In essence, "DRM requires a complex system of technical, organisational and social elements" (Mayer-Schonberger, 2006). The practical implications of stakeholder opinions and interaction towards DRM security needs to be carefully considered and may go some way towards the creation of a fairer, more equitable DRM framework.

5.1 Game Developers

The developer's interests are the first part of DRM. Although not a game specific statistic, digital content developers only accounted in total for "6.7% of lobby meeting requests with the evaluation rapporteur of the EU Parliament Copyright Directive 2001/29/EC" (Reda, 2015). It is inevitable that some users will try to use digital content without paying the appropriate fee, unless they are prevented from doing so by societal rules and social consensus (Mayer-Schonberger, 2006). However, there is very little work on precisely which societal rules might be used to prevent the social perception that circumvention of DRM security in acts of piracy is a fair or a victimless act. Additionally, the game developer's perception of DRM may be influenced by what business model they are basing their business on. One question that should be addressed is the following; do content developers view the content they produce as a product that will generate a recurring income stream or as a product that can be traded at a one-off price to a distributor, who will then take ownership of the rights and entitlement to the recurring income stream, in return for distribution of the product to a much wider audience than the developer alone could reach? Many developers are nascent and often backed by external investors who have a financial interest in DRM deployment in order to maximise the return on investment. Additionally, the practical implications of these ever-changing business models need to be carefully measured in relation to the wider DRM debate centred on the effectiveness and future of game security. This raises the following questions, are developers creating products with a business model clearly defined from the outset and if so, are they considering future industry changes when developing? During the last two decades the digital content industry has undergone a period of significant change in both social and business strategy (Reda, 2015), and, as such, the current legislation in the area of content rights protection may still be some years behind the industry in terms of development.

5.2 Game Distributors

The selection of literature reviewed shows the distributors to have the strongest interests in DRM deployment. Developers have seemingly "given distributors unprecedented levels of power and control over the use and distribution of their works" (Darroch, 2012). For developers to advance the gameplay experience continually, they need a recurrent income stream or a large preliminary investment from a content distributor with a large market reach. Consumers now have a greater than ever choice of content through multiple merchants such as Google's Google Play, Apple's App Store, Microsoft's Xbox Live etc. As a consequence, one of the emerging business models for games is the 'freemium model' where the core game content is offered for free but value is added by optional in-game purchases such as in-game characters, extra content, cheats or game customizations. Because of the growth of this model, the consumer of games should no longer be considered a mere submissive receiver of products through an initial one-time purchase. The freemium model appears to eliminate the need for DRM in the traditional anti-piracy sense, as wider distribution of the core free game content targets a wider market share of potential customers resulting in a higher probability of in-game purchases. However, under the traditional purchase business model, the distributor appears to be shouldering the entire burden of rights protection and security.

If DRM is considered as a collection of security mechanisms designed to protect the game assets, then the developers are basically saying that the distributor takes full responsibility and, as a consequence, liability for the security of the game. If this is the case, distributors are seemingly accepting responsibility for any possible security vulnerability associated with the development code, the game engine, or indeed any aspect of the game. Distributors may see this differently in terms of their vicarious liability, and this then raises the issue of who should be liable for security breaches, if the distributor is able to absolve themselves from vicarious liability through the use of contractual terms in place with the game developer upon agreement to distribute the content.

5.3 Game Users

DRM is a variety of security mechanisms designed to prevent users from carrying out action that may breach rights protected by copyright and IP law (Qun, 2010). However, this system of restrictions often fails to account for the permitted copyright exceptions granted to users in the EU or the fair use allowances granted in users in the USA (Favale, 2008). Both of these rights permit backup copies for personal use, or for the purposes of educational use. Users of rights protected content accounted for only 20% of the total lobby meeting requests with the evaluating rapporteur of the EU European Parliament Copyright Directive 2001/29/EC (Reda, 2015). Regardless of the size of the stakeholder's interest in DRM there is an underlying sense of an imbalance of power with the bias falling in the direction of rights holders. The rights holders appear to be free to undermine a number of lawful copyright

exceptions granted in law to the users. For example, the game World of Warcraft (prior to the freemium model version) could not be successfully bought used, because of a DRM-based one-time installation key policy. (Dusollier, 2003) The literature suggests that overly restrictive DRM systems are likely to be counter-productive as they provide little in the way of an incentive for users to purchase legitimate, paid-for content (Darroch, 2012). It may be the case that the financial motives for user piracy or circumvention of DRM would be less prominent, if the pricing policies set by the content distributors were more aligned with the current economic climate. At present, these distributors have unprecedented levels of power over the distribution methods of the products in the portfolio. This power has had a negative impact on the user's attitude towards the use of and acceptance DRM technologies from a consumer perspective (Darroch, 2012).

5.4 The Lawyers

From a legal perspective the existence of DRM can create a variety of different fee-earning disputes including copyright, IP, privacy, contract and which legal jurisdiction should ultimately apply in a dispute. Advances in the future user acceptance of DRM will be determined not only by technology implications, but also by the current and emerging economic and legal developments. (Heileman and Jamkhedkar, 2005) Additionally, changes in the game development market, such as the development of new hardware platforms, different distribution methods and new payment technologies all carry risks and legal challenges that require access to legal professionals for those involved in disputes involving DRM. When markets go through rapid change such as the gaming sector has, it takes time for legislation and regulations to catch up (Samuelson, 2003). These market factors aid the need for legal professionals specialising in these disputes. Furthermore, the business models of the stakeholders involved in disputes around rights protection will also have an influence on the legal outcome and access to justice. For example, the complexity of disputes in copyright law, along with the nebulousness of the fair use exceptions, combined with the struggle of negotiating licensing agreements, mean that non-experts such as fledgling game developers are often at an informational disadvantage when they face a dispute involving DRM. In any type of legal dispute access to high quality legal advice is vital but also dependent on having the financial means to defend one's position and seek the necessary expert guidance prior to litigation. Financial health and the ability to seek high quality legal advice is more commonly found in larger more established organisations than smaller nascent organisations (Davies, 2006). Consequently, the lack of a clear definition between fair uses and acts that would constitute copyright infringements does not help the status of DRM security. Although some uses are clearly fair and others clearly not fair, there is essentially a large grey area of uses that may or may not be conceived as fair and could only ever be settled with the assistance of a court ruling. Even a well-

accomplished copyright lawyer cannot say with absolute certainty where the line between fair and unfair use is really found. (Felten, 2003) The very existence of DRM security and the complex legal arguments DRM can create add to the justification and commercial viability for legal professionals working in this field of practice.

6. The Need for Balance

If the future acceptance levels of DRM are to be viewed as effective, it is vital that a greater degree of balance needs to be struck between the stakeholders (Dusollier 2003). As can be seen from the discussion in this paper, rights protection security is a complex topic with multiple viewpoints and social arguments for and against its implementation. As far as the law is concerned, the issue of DRM has been examined at the highest level with regard to circumvention on games consoles. This circumvention is sometimes achieved through the use of modified chips ('mod chips') which allow the user to play unauthorised games.

The European Court held that the protection of 'effective' Technological Protective Measures (TPMs) can be extended to external hardware devices such as mod chips because there is nothing in the Information Society Directive 2001/29/EC of the European Parliament that forbids it, especially when considering the broad definition of TPMs provided by the directive. The Court however specified that a number of conditions need to be satisfied in order to allow the protection of TPMs. In particular, a) the aim pursued by the manufacturer implementing TPMs must be legitimate (e.g. it must seek copyright protection and not competition hindrance); b) TPMs must be suitable for the task (e.g. 'effective'); c) certain proportionality criteria must be met, which includes a number of considerations: the volume of infringing behaviours compared to legitimate behaviours, and whether a different protection technology 'could cause less interference' with legitimate uses.

It is unlikely that DRM systems will ever be able to accurately predict or read human intent and, as such, there is a very fine line between legitimate fair use actions (i.e. hardware modifications to allow bespoke home-brewed content to run or be used for backup purposes) and those actions that have a secondary purpose that can carry out unlawful circumvention of DRM and breach TPMs. Ultimately, the DRM system cannot ever know enough about the circumstances outside of the computer (Felten, 2003). However, human intent is only one part of the problem. Copyright infringement can be determined objectively, irrespective of the human intent, when the unlawful acts are clarified by law. As this is not the case currently, legislative reform in this area is urgently needed.

7. The Human Difficulties

The human-related social difficulties of DRM are notably less discussed in the literature than the technical aspects (e.g. effectiveness) but nonetheless appear to be an underlying theme running through the debate surrounding DRM. It should come as no surprise that language difficulties between developers, lawyers and rights holders appear to be another problematic area that is less well-studied. Terms and conditions of use for rights-protected content are often written using legalistic language and there is an apparent disengagement by content users of anything that appears written in that manner. In many cases the contractual relationship and legal terms that the user enters into with the rights holder are not given a second glance. Another difficulty is the use of abbreviations in language used by stakeholder groups. In the legal sector the abbreviation TPM stands for Technological Protective Measure, but in the field of software development TPM is the abbreviation for Trusted Platform Module which "is a crypto-graphic coprocessor chip that has been included on most enterprise-class PC and laptop motherboards produced in the past decade" (Challener, 2013). This is but one example of language difficulties across the stakeholder groups.

8. Conclusions

Legal norms and social behaviours are some of the human aspects surrounding the effectiveness and future of DRM security. Understanding the human perspectives behind the circumvention of games security may have a significant impact on how DRM technical issues are addressed in future. Further exploration of the human behavioural aspects influencing DRM would help unravel the complexities of the interaction of rights protection security and law. Although there have already been projects on the acceptability of rights protection security by consumers e.g. The Informed Dialogue About Consumer Acceptability of DRM Solutions in Europe (INDICARE) (Böhle, 2008), it is shown that there are multiple stakeholder views, from different viewpoints, associated with DRM security. While other papers have investigated the impact of DRM from the perspective of consumer acceptance and, whether certain acts which are permitted in law are being adversely affected by the use of DRM (Akester, 2009), this paper, as part of an ongoing project, adds to research in this field with the exploration of the different stakeholders human centric perspectives of what DRM should be and whose interests DRM should primarily serve. It is evident that a greater degree of balance and fairness needs to be present in any DRM framework developed for use in the videogame marketplace. Developers of content should ask the following human-centric questions to guide problematic and complex human aspects of deploying DRM security. The data analysed in this part of the project so far has produced the following questions:

- What are the users' motives for circumvention of current DRM?
- What is the incentive for user circumvention?

- Can this incentive be combated through fair use/copyright exceptions or pricing structure or business model changes?
- What is the motive for deployment of DRM in this scenario?
- Is this motive for deployment sufficiently valuable or can value be added to the content in other ways e.g. in game purchases, extra content?
- Are the terms and conditions and end user license agreement of this rights protected content undermining legislation (e.g. copyright law, privacy norms, competition law, etc.?)
- Is enforcement of this DRM solution legally viable?
- Are the fair use/copyright exceptions entitlements properly designed for the type of protection technologies we are deploying?

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