

Digital Right Management

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Abstract

Digital Right Management is playing an important role in data security system. DRM is used as a tool to secure the copyrights issues of digital media as well as multimedia. Digital Right Management schemes have various access control technologies which are being used to restrict usage of proprietary hardware and copyrighted works. DRM system controls the uses, modifications and distributions of copyrighted works such as software and multimedia content as well as system within the devices which enforce these polices. In this paper we will discuss about DRM systems, its features, benefits and challenges.

Key Words: Digital Right management, Copyright, Intellectual property, Digital Format editing, Digital Environment, Orphan work

Introduction

Copyright is a chain of rights that assure acknowledgement of creator's attempt, creativity and expression. 'Copyrights can be granted by public law and are in that case considered "territorial rights'. Copyright is limited to public interest consideration where society is entitled for the benefits of copyright protected works, subject to certain restrictions which a copy right holder or creator may impose. It helps in achieving a fair balance between competing interests of copyright holders in our society at large. According to section 13 of the copyright act, 1957, copyright subsists only in certain classes of works. They are

- 1 Original Literary, dramatic, musical and artistic works.
- 2 Cinematography films and
- 3 Sound recordings
- 4 Literary works
- 5 Musical works including any accompanying words
- 6 Dramatic works including any accompanying music
- 7 Pantomimes and choreographic works

- 8 Pictorial, graphic and sculptural works
- 9 Motion picture and audio visual works

In context of digital content or media, an effortless digital replication of copyrighted content is to be achieved for a balance between the contesting claims of copyright holder. Worldwide many laws have been created, some laws are part of the United States Digital Millennium copyright act, and the European Union's copyright Directive (the French DADVSI is an example of a member state of the European Union (EU) Under international and federal law most of the soft wares those come under DRM restrictions are not legalized. In US, the digital millennium copyright act passed in 1998, considers it a crime to disseminate technology allowing users to circumvent DRM.

Utilization of the technologies has the limits for the use of copyrighted works and proprietary software. DRM technology has not only conquered those who are engaged in piracy but also prohibit from copying or codes that limit the time or number of devices on which a certain product is accessed but also restricted the stealing knowledge and information sharing. DRM attempts to control the use, modification and distribution of copyrighted works such as software and multimedia content as well as system within devices which enforce these polices

Literature Review

Deardroff (1992), the empirical studies show that relationship between IPRs and innovations or economic development of countries (Maskus& McDaniel, 1999& Crosby, 2000). Debates on enforcement of IPRs in less developed economies is also more about politics and morality since it is the way in which scarce resources may be deployed which would limit the availability of resources for important public programs (Yu,2010).

Panda, K.C., et.al. (1997) examined copyright law in the electronic age and noted that proliferation of electronic information creating interest about copyright laws in the minds of authors, publishers, users, and intermediates. IFLA discuss about the protection of copy right in the global scenario and concluded that there is an urgent need to reconsider the existing copyright law to make it suitable in electronic age.

Bomanwar (1998) studied intellectual property rights in the context of new information society, noted that thrust in the area of economic activity shifted to knowledge based industries and intellectual goods, described impact of piracy of intellectual property act viz. biopiracy, geopiracy and IT products of new information society. He noted that developed countries demand protection against piracy while developing countries feel that such protection will prevent entry of new comers and felt that in the free flow of information IPR was hurdle to it.

Lakshman Moorthy, A. and Karisiddappa, C.R. (2001) noticed while discussing copyright and electronic information the main objective of copyright laws as promoting the access, use for information, protecting the work from infringement and for encouraging the authors for pursuit of knowledge. They discussed on Indian Copyright law 1957 and it's amendments, mentioned major worldwide projects to protect copy right of electronic information and concluded that the library professional should negotiate few electronic copying privileges for legitimate non-commercial usage of electronic information similar to the kind of fair use as in the case of printed materials.

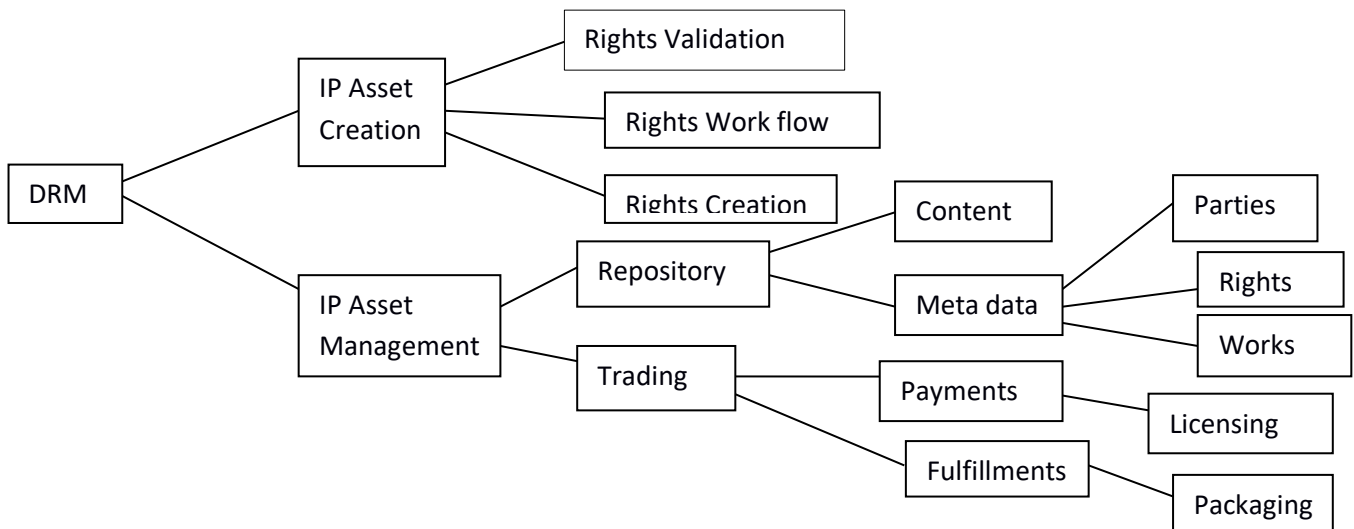
Auriol et.al (2012), in their study relating to incentives that developing countries require in order to enforce IPRs, argue that the incentives depends on the maturity of the Research and Development (R&D) system and on the size of the internal markets of the developing countries. There also might be a reduction in the investment cost of R&D while it may increase the indirect cost in these countries. In opening up a debate on whether it is advantageous for developing country to strengthen its own IPRs regime and to make it conform to specific standards operating in developed countries, (Mrad, 2012) argues that a strong regime of IPRs may be necessary for economic development while a weak IPRs protection/absence will allow rapid dispersion of knowledge and the building up of local capabilities. Due to IPRs protection there will be a rise in prices in developing countries and strengthen the power of markets in the innovating firms

Chattopadhyay, S. (2013) explains that Intellectual property refers to the ownership of intangible goods. This includes ideas, designs, symbols, writings and creations. It also refers to digital media such as audio and video clips that can be downloaded online. Since intellectual property is intangible, if it is stolen, it may be difficult to recover. Say for example, a person comes up with a great idea for a new invention. Copyright originated in an age where the expression of the intellectual product in physical form, such as a book. Today, in the information age where digital information can be easily copied at minimal cost this natural physical limitation to unauthorized copying is removed. It is therefore time to reconsider the principle of the copyright model. The purpose of copyright law is to balance the rights of copyright holders and users. Existing copyright law is applicable in the digital age also. As more and more information becomes available in digital format, libraries must be ensure that public can enjoy the same access rights as with printed information. This paper deals with scope and coverage of various concepts connected with IPR, such as intellectual product, patents, copyright, designs, trademarks, computer software, databases, Internet and cyber laws for copyright issues associated with digital / electronic information and protection of digital right.

Objectives

The objective of Digital Right Management is to provide the essential services to digital format.

- To protect the Intellectual Property Right
- Without permission of content creator, restrict the access of any digital media, work and device
- To restrict the free use of content
- To prevent the piracy issues, loss of revenue, Tax.
- To prevent the use of false ownership and duplication of artistic works



Functional Architecture of DRM

How Digital Rights management works

DRM ensures that Digital media is in encrypted format (i.e. MPEG-DASH or HLS) it requires a license key to play the content. Digital right management involves the codes that abolish copying or codes that limit the time or a number of devices on which certain product can be accessed. An application that encrypts the digital media data, e book content, software hardware music song games or any other copyrighted material with the help of decryption keys and only through these decryption keys data can be accessed. Publisher, author and other content creators use this tools to limit or restrict the users who may be the prospective inf-ringers.

DRM with Video Games, Music and Software

When a copyrighted song, video, music, movie, software, games are freely downloaded or used the content without any subscription or download the version on free and share it without taking the permission from the author or developer, all these activities comes under the illegal activities because the producers, developers, authors or company of that content who generate or produce it, come under the monetary loss. To avoid these activities, company or producer of digital media using a technique that is called DRM Digital Right Management. DRM Technology used to control/restrict the usage of the media songs, software, games and hardware without permission of respective developers. It restricts unauthorized use of copyrighted content. DRM provides the way of secure distribution and copyright protection of digital media. For example DRM controls how many times software can be used. If a user purchase a song on I tune then he can listen the song only on that device and can't do his further sharing, If we buy an e book on kindle, user can not be able to redistribute or reproduce it because it is protected by DRM. If user buy a single device of a DVD game to play, the user have to verify its account as well as restriction on the usage of number of times user can access or install software. Big companies Google, Microsoft apple F airplay, Amazon, Microsoft Play already protected their software and product through DRM for its genuine use. A programme of encryption is embedded on the content or software to avoid their further sharing and copying. An expiry date of that software or content is also fixed, means after a

fixed period of time it would not be possible to access the same. DRM is act as a lock system in a house to protect it from trespassers. Earlier DRM system provided digital content protection through code but presently it is served through verification of account. NETFLIX App also started using DRM Protection system to avoid the use of rotated device. Netflix has used Microsoft's Play Ready DRM since 2010

Kindle E books and DRM for self publishers

In case of Kindle e books, when we upload an e-book, we find a check box in some section as 'DRM enabled'. Kindle e books have lots of restriction. It do not allow to be lent out as physical books. Buyers of kindle books can read the books only on their own device or kindle app.. DRM enabled Kindle books provide protection from hackers, stealing, sharing or reselling. Hacking of digital format is easy in compare to printed material. It is easier to steal, share and send around digital materials without getting required permission which cause lose of cost and royalty of the legal permission. DRM enabled e contents prevent people from unauthorized transfer or downloads of the material in two different places. It gives a small layer of protection. Some challenges are also there for the people who want to read the digital materials on multiple devices or accidentally the material/s is deleted then it would not be possible to get it back without payment second time for same material.

Features of Digital Right Management

- Encryption, Off line viewing, Regulate off line viewing, screen record protection
- DRM provides many ways to protect the creator content, software or any media product.
- The programming codes that restrict or prevent the users from editing or saving and sharing the content.
- DRM prevent the user for printing the content of the document or may allows only to be printed up to a limited numbers of times.
- DRM also rejects the users from taking the screen shots or screen grabs of the content.
- DRM provides a facilities to the creator to set a expiry date of the document or media after that user will not be able to access it. This could be done by the limiting the number of user.
- For a moment DRM protected document can be canceled in case of over use of the e documents from the permitted access.
- DRM can lock the access through IP address, location or the devices. If a digital media is permitted for the US resident then it will restrict or prevent access of the document by the people of other country.
- To establish honor ship and identity to the document, watermarks are provided.
- DRM facilitate the creator publisher and author to access the record of the people and time of access when a certain digital media content or software was used. A creator can have a watch on accessed or downloads of e documents protected by DRM.

Digital Rights Management use cases

In present day digital world, Digital right management proves a milestone not only for the digital content creator but also for the firms, for the users who use licensed digital resources. Few examples

- Digital rights management controls unauthorized use of the literary works , musician, movies, professional content as well as illegal distribution of their product.
- DRM could help the firms to prevent access of confidential information and restrict access of sensitive data and at the same time it helps in sharing the data securely. A DRM technology makes it easier for the creator to identify the leaks.
- DRM ensures that digital tasks remain uninfluenced from the creator perspective and often want their work to be distributed in its original form. Federal deposit Insurance Corporation (FDI) uses digital right management to prevent the unauthorized redistribution of sensitive digital information.

Benefits of Digital Right Management

- DRM protects the copyright holders from piracy as well as it prevents unauthorized users from watching and reading the important files.
- DRM helps the creator to communicate with the user about their expectations.
- DRM helps to make a better agreement and techniques with the creator. It aims to restrict the access through different method from using the documents in illegal way.
- DRM stops altering the content.
- DRM facilitate creator by ensuring it that only payable user are able to watch the videos or movies It also ensures that theses digital media is accessible by certain audience. The adult oriented content videos should be accessible to adults who can verify their age..In this way DRM protects the income flow of the creators'

Challenges in Digital Right Management

- The use of digital right management is not accepted universally. Proponents of DRM argue that it is necessary to prevent intellectual property from being copied freely, it needs to prevent personal property from being stolen, it help the copyright holder to maintain artistic control.
- It would not be possible for a paid user who wants to listen the music on I tune on any other device.
- Business that pay thousands of dollars of a high value industrial reports are willing to use DRM so that their competitors should not get the same report for free. Some cities DRM have pointed out that this creates a unfair advantage for the business that have money to burn because smaller operation may not be able to afford the information that they need to grow that business.
- There are free tools to remove the DRM codes which actually unethical but are readily available.
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What is not acceptable?

- Papers that are routine extensions of the previous reports and that do not have advance fundamental understanding or knowledge in the area.

- Incremental/ fragmentary reports of research result
- Poorly organized paper or poor quality illustration
- Violations of ethical guidelines including plagiarism

What is punishable?

- Published articles in journal that are widely read and useful to the user.
- Original and authentic papers, reports those widely in the interest of users.
- Papers that are well organized and well written with clear statement regarding how the finding related to evidence and understanding and development of the subject
- Papers that concise and yet to complete their presentation of the findings.

DRM freely Removal Tools & software

- Requiem 4.1
- My Fair Tunes
- Calibre
- Note BurnerM4V Converter Plus
- Aimer soft DRM Media Converter
- Au dials Tune bite 10Platinum
- Sound Taxi
- Pavtube Chew Tune

Conclusion

Those who oppose to DRM protection system of e-contents, states that ‘there is no evidence that DRM helps to prevent copyright infringement.’ They argue instead that it serves inconvenience only to legitimate customers. DRM serve only to big business innovations and their competitions. Furthermore, work can become permanently inaccessible if the DRM changes or the service is discontinued. DRM can restrict users from exercising their legal right under the copyright law such as backing up copies of Cd's , DVD's lending material through the library accessing works in the public domain or using copyrighted material for research and education under the fair use doctrine and under French law. The Electronic Frontier Foundation (EFF) and free software foundation (FSF) consider the use of anti competitive practice.

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