2 Digital Rights Management: Technological Aspects

2.1 Definition, Aspects, and Overview

Niels Rump

Abstract: Digital Rights Management is a fairly recent technology — it came into use only in the mid 1990s. Nevertheless, it has already lived through a life cycle of ups and downs that many technologies would require decades for.

Digital Rights Management, or DRM, has been called “the saviour” of intellectual property rights as well as “completely useless” in protecting assets; it has been said that it is “accepted and is used” by the participants in the content value chain while others say DRM is “not used at all”.

This paper takes a closer look at the role of DRM in distributing content through networks such as the Internet and indicates what types of technology are available, in what environments they exist and how well today’s DRM systems fulfil what is expected of them by various members of the content value chain.

I Introduction

Before embarking on the discussion about “Digital Rights Management”, the term itself needs defining. Unfortunately there are many definitions, depending of the viewpoint of the person providing the definition. One such definition is given in whatis.com:

Definition 1.

“Digital rights management (DRM) is a type of server software developed to enable secure distribution — and perhaps more importantly, to disable illegal distribution — of paid content over the Web. […]”

While this definition is definitely true, and it represents a fairly dominant view on what DRM is and provides, it does not give the full picture as it omits looking at the environment in which DRM Systems are to be used. Figure 1 shows this environment by providing the steps that most content goes through when being traded: production, digitisation, identification, ascription of descriptions, distribution, use (by a consumer), monitoring of use, and collection of money. Any of these steps may be omitted in certain circumstances. For example, if content is distributed “for free” the step of collecting money will not need to be executed.

Digital Rights Management plays a role in every step depicted in the diagram and listed above. Hence, a more generic definition can be given as follows:

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4 Rightscom Ltd.
5 See: Günnewig within this book on page 528.
7 The term “trade” includes commercial trade for money using a variety of business models as well as peer–to–peer distribution where usually no money changes hands and other non–revenue generating trades such as “promotion”.

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Definition 2.
“DRM covers the description, identification, trading, protecting, monitoring and tracking of all forms of usages over both tangible and intangible assets. […]”

Fig. 1. Different Steps of Trading Content

In short, DRM includes everything that someone does with content in order to trade it. These DRM functions can be split into two groups as depicted in Figure 2:

Fig. 2. The two Parts of DRM

Firstly, DRM is about managing digital rights (depicted as the “Management” box in Figure 2). Rights holders need to identify their content (how else does a content or rights owner know what right he really owns?), they need to collect metadata\(^9\) to the content (how else should potential customers of such content be able find what they want to obtain?), they need to assert what rights they have in the content (only when knowing this can he actually attempt to distribute content), and they need to develop business models for distributing their assets\(^10\).

Secondly, DRM is about digitally managing of rights, or enforcing exploitation rules as determined by the rights holder (or any of the rights holder’s business partners, such as distributors, wholesalers, e-sellers, etc.). This second group of DRM functions is what Definition 1 speaks about; it is also this definition, with most people have in mind, when discussing DRM. Most of the “DRM technologies” (as briefly introduced in Section III of this article) fall into this second group of DRM functions.

II Environment for DRM Systems

Different elements of DRM systems are used in different stages of content trading as depicted in Figure 1. This already shows that these technical elements are not operating in isolation. In fact, the technologies used are dependent on the business models in operation and these, as well as the technologies themselves, depend on the legal system that prevails. For example, it would be imprudent to use high-security technology to protect content with comparatively low value or to use technology that offers little

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\(^9\) The physical ascription of metadata falls into the second group of DRM functions.

\(^10\) The expression of such permitted forms of exploitation using a “Rights Expression Language” falls, again, into the second group of DRM functions.