The term Digital Rights Management - DRM - has its origins in the combined efforts of some vendors, their marketing staff and some other industry analysts in the late 1990s [1]. It is a breakthrough in the evolution of Conditional Access Systems (CAS). CP, for Copy Protection, often completes the DRM acronym although CP should be part of a DRM system for Rights Enforcement.

DRM spans a broad array of technological and business concepts. It includes relatively specialized technologies such as watermarking, Public Key Infrastructure (PKI) and encryption, as well as other business areas such as pricing, terms, and conditions for use [1].

A main issue for DRM is the lack of a standardized definition for the process and for the key concepts involved [2]. Different interpretations of the term abound, including:

- "Digital Rights Management refers to controlling and managing rights to digital intellectual property." [1]
- "Digital Rights Management is "the description, identification, trading, protection, monitoring and tracking of all forms of rights usages over both tangible and intangible assets including management of rights holders relationships...it is the "digital management of rights" not the "management of digital rights."" [3]

Digital Rights Management (DRM) involves the description, layering, analysis, valuation, trading and monitoring of the rights over an individual or organization's assets; both in physical and digital form; and of tangible and intangible value [4]. DRM covers the digital management of rights - being them rights in a physical manifestation of a work (e.g. a book), or being them rights in a digital manifestation of a work (e.g. an e-book). Current methods of managing, trading and protecting such assets are inefficient, proprietary, or else often require the information to be wrapped or embedded in a physical format [4].

The copyright environment consists of three main aspects: rights (what can be protected by copyright) and exceptions (e.g. copies for private use or for public libraries); enforcement of rights (sanctions for making illegal copies and for trading in circumvention devices); and management of rights (exploiting the rights). In the online world, management of rights may be facilitated by the use of technical systems called Digital Rights Management (DRM) systems [5] [6].

DRM consist broadly of 2 elements: the identification of intellectual property and associated rights and the enforcement of usage restrictions. The identification consists in the attribution of an (standard) identifier (such as the ISBN numbers for books) and the marking of the property with a sign (such as a watermark). The description of the rights relies on Rights Expression Languages (REL). The enforcement is based on encryption and key management, by i.e. ensuring that the digital content is only used for purposes agreed by the right holder.
DRM is the chain of hardware and software services and technologies governing the authorized use of digital content and managing any consequences of that use throughout the entire life cycle of the content [6].

**Generic DRM Functional Architecture**

Any DRM architecture is composed of a standardized set of different building blocks. Two different visions from DRM can be presented: an architectural view and a functional view.

From an architectural view, three major components can be identified: the content server, the license server, and the client [6].
The **content server** is a server component on the DRM architecture that consists of the actual content, information about products (services) that the content provider wants to distribute, and functionality to prepare content for a DRM-based distribution.

The **license server** is responsible for managing licensing information. Licenses contain information about the identity of the user or device that wants to exercise rights concerning the content, identification of the content to which the rights apply, and specifications of those rights.

The **client** resides on the user's side and supplies the following functionalities: DRM controller, the rendering application and the user’s authentication mechanism [7].

From a functional point of view, the following diagram can resume the most important functions of any DRM architecture:

- Content Creation and Capture
- Content Management
- Content Use

**Content creation and capture:**

![Generic DRM functional architecture](image-url)

*Figure 1 – Generic DRM functional architecture*
Managing the creation of content to facilitate trading, including asserting rights when content is first created (or reused and extended with appropriate rights to do so) by various content creators or providers. This module supports:

- Rights validation - to ensure that content being created from existing content includes the rights to do so and that the rights are consistent.
- Rights creation - to assign rights to new content, such as specifying the rights owners and allowable use (permissions).
- Rights workflow - to process content for review and/or approval of rights.

Content management:

Managing and enabling the trade of content, including accepting content from creators into an asset management system. This module supports:

- Repository functions - to access content and the "metadata" that describes the content and the rights specifications (see Information Architecture).
- Trading functions - to assign licenses to parties who have done deals for rights over content, including, for example, royalty payments.

Content use:

Managing the use of content once it has been traded. This module supports:

- Permissions management - to enforce the rights associated with the content. For example, if the user has only the right to view the document, then printing will be prohibited.
- Tracking management - to monitor the use of content where such tracking is a requirement of the user’s agreement. This module may need to interoperate with the trading functions to track use or to record transactions for "per use" payments [6].
Digital Rights Management
Contributors: Jean-Marc Boucqueau

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