ABSTRACT

This chapter explains the fundamental principles of audiovisual content protection. It explains the basic knowledge that is needed to understand the fundamentals of digital rights management (DRM) systems and their problems. Starting with a general introduction about copyright and content protection, available protection technologies are described and analyzed. The basic concepts of DRM solutions are explained and problems discussed. Potentials and practical limitations are analyzed based on the digital music industry value chain. An outlook is given on solutions that are under development and that stronger consider the needs of the customers. In the conclusion, future solutions are discussed.

INTRODUCTION

I am about to put forward some major ideas; they will be heard and pondered. If not all of them please, surely a few will; in some sort, then, I shall have contributed to the progress of our age, and shall be content.

Marquis de Sade

Social and technical progress is one of the key issues of mankind. It is driven by the desire to disburden and to beautify life. Technical progress can be perceived in tangible goods like new devices, tools, and machines, while social progress cannot be perceived as easily. Both are based on a creative process resulting in new inventions and new ideas.

In law, the importance of this creative process is reflected by intellectual property (IP). “The term intellectual property reflects the idea that this subject matter is the product of the mind or the intellect” as explained in “Intellectual prop-
As the aim of IPR protection is to encourage new inventions, inventors, as well as authors, are granted (time-limited) exclusive rights for the exploitation of their works. Wikipedia identifies different intangible subject matters that are protected by IP laws:

- Copyright
- Patent
- Trademark
- Industrial design right
- Trade secret

As this chapter deals with digital (audiovisual) content, its focus is on copyright. The reader, however, should be aware that the described technologies are protected by patents and the mentioned products are protected by trademarks. This chapter is an updated summary of the technical report by Schmucker (2005c).

Copyright's main purpose is to prevent people from copying a person's original work. Copyright lasts for a specific duration. After this well-defined period of time, the work enters public domain. The term copyright is generally equivalent to author's rights. Although certain organizations, like World Intellectual Property Organisation (WIPO), prefer the term author's rights, copyright is used within the area of DRM. The United States Copyright Office provides some general information on copyright and related issues (http://www.copyright.gov/).

Cohen (2002) describes how copyright changed due to the appearance of online work: Initially, copyright did not control access to, or private use of, an already purchased copy. Neither did copyright interfere with fair use derivatives. Nowadays, content owners claim the rights to control the access to, and the use of, content.

Music Copyright

Music copyright is a negative right, which means it gives the composer the right to restrict others from certain activities including copying music. Third parties who do not acknowledge these restrictions are liable for copyright infringements. Copyright automatically arises upon the creation of content without any formal registration process. Thus, copyright is distinct from other subsequent copyrights.

Music copyright includes different exclusive rights. As described in detail by Bell (2007), according to the U.S. copyright, a copyright owner has the right to:

- Reproduce copyrighted work
- Prepare derivative works
- Distribute copies
- Perform the work publicly
- Perform sound recordings of the work publicly

Further information on (music) copyright can be found at:

- World Intellectual Property Organization (http://www.wipo.int/)
- Euro-Copyrights.org (http://www.euro-copyrights.org/)
- United States Copyright Office (http://www.copyright.gov/)
- Copyright for music librarians (http://www.lib.jmu.edu/org/mla/)
- “Copyright Issues for Music” at University of Buffalo Libraries
- 10 Big Myths about copyright explained by Templeton (2007)

Publishing Rights and Licensing

Copyright owners have the exclusive right to reproduce or make copies of their work. The copyright owner also has the exclusive right to