Foreword

Due to the large spread of the Internet, e-commerce systems are getting more and more important as a new and effective method to distribute, transact, and exploit digital multimedia content. Interactive applications and graphic user interfaces, digital image, sound and video databases, e-payment systems, and e-licensing mechanisms are only a minor element of the existing and arising possibilities. At the same time, intellectual property rights (IPR) protection and management of multimedia content has gradually become a critical issue.

• Advances in technology have improved the ability to reproduce, distribute, manage, and publish information. Reproduction costs are significantly lower for both legitimate IPR holders, (content owners) and those infringing intellectual property legislation. However, digital copies are perfect replicas. Computer networks have changed the economics of distribution; networks enable the worldwide distribution of multimedia content on a rapid and low cost basis. As a consequence, it is easier and less expensive, both for the legitimate rights holder to distribute their work, and for an individual to create and distribute unauthorized copies. Finally, the World Wide Web has fundamentally altered the publication channels, allowing everyone to become a publisher with global reach. This causes severe scepticism to the Digital Content Industry’s organizations, which are consequently reluctant to distribute digital content through e-commerce systems, unless certain technically secure protection mechanisms are being implemented.

• The production and sharing of information in electronic form has been integrated into modern life, directly affecting intellectual property legislation. Today, common everyday activities such as file downloading or forwarding information retrieved from the Web may sometimes violate intellectual property laws. Other activities such as making copies of information for private use may require difficult interpretation of fair use provisions of the law to simply justify their legality. As a consequence, individuals in their daily lives have the capability and the opportunity to access and copy vast amounts of digital information, yet lack a clear picture of what is acceptable or legal. On the other hand, the necessary amendments of legislation in several cases do not fully cope with the problem, resulting in certain legislative weaknesses.

• A fundamental problem is that institutions of the Digital Content Industry want to make information widely available for educational or commercial reasons, but the legal environment renders this difficult. Where the rights-holders are known, this can be negotiated, but the costs of clearing the rights for digital images obtained by an individual for non-commercial purposes can be prohibitively expensive. The rights can be categorised as legal, transactional, or implicit. Legal are those rights that are got automatically (e.g., inherent copyright) or by some legal procedure (e.g., by applying for a patent). Transactional rights are those that are got or given up by buying or sell-
ing them (e.g., buying a book or selling a manuscript). Finally, implicit rights are defined by the medium that carries the information.

Digital rights management (DRM) refers to controlling and managing rights to digital intellectual property. The need for control and management has increased now that digital network technologies have taken away the implicit control that content owners get with legacy media. DRM systems combine a handful of technological solutions such as watermarking, data encryption, information systems, databases, e-commerce applications, so as to deal with the issue of the protection and management of copyrighted digital content.

The aim of this book is to investigate the field of DRM systems by giving an understanding of many relative publications appeared in the past 10 to 15 years, an overview of previously obtained, but also new results, and acquainting readers of active interest with the main approaches in this fascinatingly interesting and complicated direction. It intends “to open the door” for various specialists of different areas to this new and stimulating field of research activity. Design, implementation, and application through e-commerce systems and recommendations, key points, case studies, disputes, and limitations of these technological solutions, are thoroughly discussed in this book.

Each chapter of the book describes a part of this challenging area. The book is structured in five sections that deal with subjects ranging from purely low-level technical subjects to legislative and high-level systemic and procedural details. Of course the task of the authors is very hard, since each of these chapters could be an entire book by its own; to give important and comprehensive information that covers each subject in a satisfactory way.

Section I of the book provides an overview of the terms, methodologies, architectural issues, and technological perspectives of DRM in e-commerce systems. In Section II, an in-depth analysis of technological means for copyright protection of multimedia files is given. Section III deals with the issues of distribution, management, and exploitation of copyrighted material and its digital rights through e-commerce systems. The strategies and case studies of the use of DRM in organizations and sectors like cultural heritage are presented in Section IV. Finally, in Section V, the legal issues and the most crucial legislative parameters affecting DRM and the online distribution of copyrighted material through e-commerce systems are analyzed.

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