Preface

The constantly changing landscape of Digital Rights Management makes it challenging for experts and practitioners to stay informed of the field’s most up-to-date research. That is why Information Science Reference is pleased to offer this three-volume reference collection that will empower students, researchers, and academicians with a strong understanding of critical issues within Digital Rights Management by providing both broad and detailed perspectives on cutting-edge theories and developments. This reference is designed to act as a single reference source on conceptual, methodological, technical, and managerial issues, as well as provide insight into emerging trends and future opportunities within the discipline.

*Digital Rights Management: Concepts, Methodologies, Tools, and Applications* is organized into eight distinct sections that provide comprehensive coverage of important topics. The sections are: (1) Fundamental Concepts and Theories, (2) Development and Design Methodologies, (3) Tools and Technologies, (4) Utilization and Application, (5) Organizational and Social Implications, (6) Managerial Impact, (7) Critical Issues, and (8) Emerging Trends. The following paragraphs provide a summary of what to expect from this invaluable reference tool.

Section 1, **Fundamental Concepts and Theories**, serves as a foundation for this extensive reference tool by addressing crucial theories essential to the understanding of Digital Rights Management. Introducing the book is “Legal Protection of the Web Page” by Mirko Luca Lobina and Davide Mula, a great foundation laying the groundwork for the basic concepts and theories that will be discussed throughout the rest of the book. Another chapter of note in Section 1 is titled “DRM Protection Technologies” by Gary Hackbarth, which is another good introductory chapter discussing the terminology and frameworks in place for digital rights protections. Section 1 concludes, and leads into the following portion of the book with a nice segue chapter, “Law, Architecture, Gameplay, and Marketing,” by Magesh Chandramouli and Bo Huang. Where Section 1 leaves off with fundamental concepts, Section 2 discusses architectures and frameworks in place for Digital Rights Management.

Section 2, **Development and Design Methodologies**, presents in-depth coverage of the conceptual design and architecture of Digital Rights Management, focusing on aspects including hardware implementations, authorization models, ethical issues, emerging models, unified approaches, and many more topics. Opening the section is “EDUPMO” by Joni A. Amorim and Rosana G.S. Miskulin. This section is vital for developers and practitioners who want to measure and track the progress of Digital Rights Management on a local, national, or international level. Through case studies, this section lays excellent groundwork for later sections that will get into present and future applications for Digital Rights Management, including, of note: “Geometric Distortions-Invariant Digital Watermarking Using Scale-Invariant Feature Transform and Discrete Orthogonal Image Moments” by Shiraz Ahmad and Zhe-Ming Lu, and “Medium Access Protocols for Cooperative Collision Avoidance in Vehicular Ad-Hoc Networks” by
Md. Imrul Hassan and Hai L. Vu. The section concludes with an excellent work by Victor Pomponiu, Davide Cavagnino, Alessandro Basso, and Annamaria Vernone, titled “Data Hiding Schemes Based on Singular Value Decomposition.”

Section 3, **Tools and Technologies**, presents extensive coverage of the various tools and technologies used in the implementation of Digital Rights Management. Section 3 begins where Section 2 left off, though this section describes more concrete tools at place in the modeling, planning, and applications of Digital Rights Management. The first chapter, “Advancement on Damage-Less Watermark Extraction Using Non-Linear Feature Extraction Scheme Trained on Frequency Domain,” by Kensuke Naoe and Yoshiyasu Takefuji, contains a great example of the types of works that can be found in this section, a perfect resource for practitioners looking into new technologies within the field. Section 3 is full of excellent chapters like this one, including such titles as “Massively Threaded Digital Forensics Tools,” “Spread Spectrum Watermarking,” and “Deterring Text Document Piracy with Text Watermarking” to name a few. Where Section 3 described specific tools and technologies at the disposal of practitioners, Section 4 describes successes, failures, best practices, and different applications of the tools and frameworks discussed in previous sections.

Section 4, **Utilization and Application**, describes how the broad range of Digital Rights Management efforts has been utilized and offers insight on and important lessons for their applications and impact. Section 4 includes the widest range of topics because it describes case studies, research, methodologies, frameworks, architectures, theory, analysis, and guides for implementation. Topics range from open innovation, practical experiences, intellectual property law in computer games, biopharmaceutical drug innovations, legal perspectives, and piracy behavior to e-government and cultural heritage. The first chapter in the section is titled “Research on Open Innovation in China,” which was written by Zhu Naixiao and Huang Chunhua. The breadth of topics covered in the chapter is also reflected in the diversity of its authors, from countries all over the globe, including China, Belgium, Greece, Germany, Portugal, Taiwan, India, Indonesia, the United States, and more. Section 4 concludes with an excellent view of a case study in technology implementation and use, “Application of Error Control Coding for Multimedia Watermarking Technologies” by Mehul S. Raval.

Section 5, **Organizational and Social Implications**, includes chapters discussing the organizational and social impact of Digital Rights Management. The section opens with “Trustworthiness of Pervasive Healthcare Folders” by Tristan Allard, Nicolas Anciaux, Luc Bouganim, Philippe Pucheral, and Romuald Thion. Where Section 4 focused on the broad, many applications of Digital Rights Management technology, Section 5 focuses exclusively on how these technologies affect human lives, either through the way they interact with each other, or through how they affect behavioral/workplace situations. Other interesting chapters of note in Section 5 include “An Evaluation of User Password Practice” by Kay Bryant and John Campbell, and “Opening the Content Pipeline for OpenSim-Based Virtual Worlds” by Shenlei E. Winkler. Section 5 concludes with a fascinating study of a new development in Digital Rights Management, in “Intellectual Property Issues for Digital Libraries at the Intersection of Law, Technology, and the Public Interest,” written by Dionysia Kallinikou, Marinos Papadopoulos, Alexandra Kaponi, and Vassiliki Strakantouna.

Section 6, **Managerial Impact**, presents focused coverage of Digital Rights Management as it relates to effective uses of enterprise intellectual property rights, trust calculation, piracy policing, collaborative production, and much more. This section serves as a vital resource for developers who want to utilize the latest research to bolster the capabilities and functionalities of their processes. The section begins with “Urban Geospatial Management System,” a great look into how city planners and civil engineers
can use the latest geospatial technologies to more effectively practice their work. The 15 chapters in this section offer unmistakable value to managers looking to implement new strategies that work at larger bureaucratic levels. The section concludes with “The Effect of Business Characteristics on the Methods of Knowledge Protections” by Xu Bin and Tan Kay Chuan. Where Section 6 leaves off, section seven picks up with a focus on some of the more content-theoretical material of this compendium.

Section 7, Critical Issues, presents coverage of academic and research perspectives on Digital Rights Management tools and applications. The section begins with “Knowledge and Intellectual Property Rights,” by Geraldine Ryan and Edward Shinnick. Other issues covered in detail in Section 7 include legal and ethical aspects and much more. The section concludes with “Preservation of Cultural and Scientific Heritage by Means of Digital libraries” by Stylianos Korres and Eva Kokotsaki, a great transitional chapter between Sections 7 and 8 because it examines an important question going into the future of the field. The last chapter manages to show a theoretical look into future and potential technologies, a topic covered in more detail in Section 8.

Section 8, Emerging Trends, highlights areas for future research within the field of Digital Rights Management, opening with “Information Agents, Social Web and Intellectual Property” by Áurea Anguera de Sojo and Francisco Serradilla. Section 8 contains chapters that look at what might happen in the coming years that can extend the already staggering amount of applications for Digital Rights Management. Other chapters of note include “Challenges to Intellectual Property Rights from Information and Communication Technologies, Nanotechnologies and Microelectronics” and “Challenges and Solutions in Multimedia Document Authentication.” The final chapter of the book looks at an emerging field within Digital Rights Management, in the excellent contribution, “Innovation or Imitation” by Madjid Tavana, Soheil Ghili, and Hengameh Shams.

Although the primary organization of the contents in this multi-volume work is based on its eight sections, offering a progression of coverage of the important concepts, methodologies, technologies, applications, social issues, and emerging trends, the reader can also identify specific contents by utilizing the extensive indexing system listed at the end of each volume. Furthermore to ensure that the scholar, researcher, and educator have access to the entire contents of this multi volume set as well as additional coverage that could not be included in the print version of this publication, the publisher will provide unlimited multi-user electronic access to the online aggregated database of this collection for the life of the edition, free of charge when a library purchases a print copy. This aggregated database provides far more contents than what can be included in the print version, in addition to continual updates. This unlimited access, coupled with the continuous updates to the database ensures that the most current research is accessible to knowledge seekers.

As a comprehensive collection of research on the latest findings related to using technology to providing various services, Digital Rights Management: Concepts, Methodologies, Tools, and Applications, provides researchers, administrators and all audiences with a complete understanding of the development of applications and concepts in Digital Rights Management. Given the vast number of issues concerning usage, failure, success, policies, strategies, and applications of Digital Rights Management in countries around the world, Digital Rights Management: Concepts, Methodologies, Tools, and Applications addresses the demand for a resource that encompasses the most pertinent research in technologies being employed to globally bolster the knowledge and applications of Digital Rights Management.