Preface

For centuries, products have been tangible and physical items. They could be viewed and touched at a market prior to purchase, and the creation of these products required some combination of raw materials, people, machines, time and money. It took a great deal of effort to move products from where they were created to where they were sold and consumed. Sellers and buyers knew that the price paid had to cover all of the fixed and marginal costs to make the product or the producer would not survive for very long. The economics and operational decision-making associated with these tangible goods have been extensively studied which resulted in a pretty good understanding of how these products should be managed. Today, traditional products are not gone; in fact they still make up most of the products sold worldwide. But a few decades ago something changed. An array of computer and information technologies created a world where some products could be digitized. Most impacted by this change were industries where the product was information content, multimedia, or software. Newspapers, magazines, book publishers, music, movies, games, and all forms of software have all been dramatically affected by digital technologies and this transformation will continue in the future.

Digital product managers are not able to rely on the same rules that would have been used to manage traditional products. Digital products can be stored on a computer or other digital device for very little cost, new units can be easily and cheaply produced by using a computer to make another copy of the product, and the digital product can be quickly and cheaply distributed to consumers worldwide. Digital products typically have high fixed development costs, but their marginal costs are near zero. These differences impact most business functions (accounting, finance, legal, marketing, manufacturing, logistics, customer service, and so forth) and strategies (operations, tactical, and strategic-level) because they introduce new opportunities and challenges. Companies found that they could get some benefits from translating their product into a digital form, but the best companies knew that this was just the beginning. Digital products can be delivered in many different ways to many different devices. They may also be extended by combining existing digital products with other digital products or services. Digital product companies can cross over into other digital product industries, and they can also create entirely new industries and business models. Further, the explosion of activity surrounding digital products will also have a profound impact on individuals and our global society today and in the future.

Digital Product Management, Technology, and Practice: Interdisciplinary Perspectives covers a wide range of digital product management issues and offers some insight into real-world practice and research findings. Experts in several disciplines from around the world offer their views on the technical, operational, and strategic challenges that face digital product managers and researchers now and in the next several decades. The following are some of the broad questions addressed in this book:
• What is digital technology? What are its capabilities and limitations?
• How can digital assets be protected?
• What are the legal issues associated with digital products?
• How does a company determine the appropriate price for a digital product?
• What are the unique financing issues facing digital product companies?
• How is accounting for digital products different from accounting for traditional products?
• How should social media technology be used by digital product managers?
• What is digital convergence? How does digital convergence enable digital product horizontal integration strategies? What are some of the other strategic alternatives that may lead to a competitive advantage?
• How has digital technology affected the role of regional newspapers?
• Should software be offered as a service? How should software as a service be priced?
• How can the rights of digital product producers and consumers be balanced?
• Can service systems be managed like digital products?
• What are some of the lessons learned from running a software company that uses a “software-as-a-service” business model?
• What are the important digital product research issues that need to be addressed in the future?
• How will new digital technologies impact businesses, people, and society, in the 21st century?
• What are the digital technology trends for the 21st century?

The following describes how the chapters in this book are organized and what topic is covered in each chapter. The topics and sections are shown in Figure 1.

The foundation for all digital product companies is the digital technology itself. This first book section is about the characteristics of digital technology and how digital products can be protected.

In Chapter 1, Digital Technology: Capabilities and Limitations, Philip Houle from Drake University provides a survey of digital technology capabilities including how they can be used to represent simple informational forms such as text and numbers, and how they are also capable of representing

Figure 1. Book sections and chapter topics
more complex multimedia such as still images, moving images, and sounds. The chapter also identifies some of the limitations for current digital technology. This chapter provides the background necessary to understand the issues and challenges discussed throughout the remainder of the book.

In Chapter 2, *DRM Protection Technologies*, Gary Hack Barth from Northern Kentucky University provides a review of issues associated with protecting digital products. Digital rights management (DRM) is concerned with ownership and access to information. Methods used for securing digital products are discussed along with the important issue of balancing access and security. The chapter discusses current protection issues and future directions for digital security.

Digital products have an impact on all business functions. The second book section includes chapters about digital product business functional issues from four perspectives: legal, marketing, finance, and accounting.

In Chapter 3 entitled *Legal Issues Facing Companies with Products in a Digital Format*, J. Royce Fichtner and Lou Ann Simpson from Drake University provide a survey of legal issues associated with digital products and technology. Digital product companies face unique legal challenges as they sell or license products that are in an informational, multimedia, or software form and can be easily copied and reproduced. This chapter surveys four categories of intellectual property law: patents, trade secrets, trademarks, and copyrights, and describes how laws in these areas apply to digital products. The chapter concludes with a discussion of how views of copyright infringement are changing and directions for future research.

Chapter 4, *Pricing in the Digital Age*, by Chip Miller from Drake University, focuses on the unique issues faced when pricing digital products. Online markets provide vast amounts of information to consumers and this has increased their ability to do price comparisons. Consumers also know that the cost of each additional digital product is very low which may impact the price they feel they should pay. From the seller perspective, pricing strategies must take into account these issues, but also they must factor in the ease with which their digital products may be pirated. The chapter begins with an overview of traditional pricing strategies. This is followed by a discussion of versioning, windowing, bundling, and unbundling, with examples of pricing strategies used by digital product companies. Novel digital product pricing strategies are also identified.

In Chapter 5, *Financing Digital Product Companies*, Richard Carter and Frederick Dark from Iowa State University discuss some of the financing issues associated with managing a digital product company. The unique cost structure of a digital product company impacts their financing decisions in both the short-term and long-term. The primary focus of this chapter is on one financing option – the initial public offering (IPO) – and the factors that impact timing for IPOs. They utilize an empirical and case study methodology to identify the results produced by IPOs that were too early in a company’s life cycle, and those that were too late. These are important issues because many digital product companies require financing early in the life cycle to cover their large fixed cost expenditures. A successful IPO can provide funding through the turbulent early days and give them a chance to survive and prosper in the marketplace.

In Chapter 6, *Accounting for Digital Products*, Yasemin Zengin Karaibrahimoğlu from Izmir University of Economics in Turkey provides an overview of accounting issues faced by digital product companies. One issue addressed in this chapter is the accounting treatment for digital products including regulations for recognition, measurement, valuation, reporting and taxation. Suggestions are proposed for how to properly account for digital products given their differences from traditional physical goods. The chapter concludes with implications and directions for future research.
Moving beyond the functional issues addressed in the previous section, the third section encompasses a set of chapters for other important digital product issues and overall strategies.

In Chapter 7, *It’s all About the Relationship: Interviews with the Experts on How Digital Product Companies Can Use Social Media*, Delaney Kirk from the University of South Florida at Sarasota-Manatee provides insights from several interviews with social media experts. The lessons they have learned are discussed along with ideas for how social media may best be utilized in support of a digital product. Techniques that work, and do not work, are discussed. The chapter concludes with a discussion of managerial implications and directions for future research.

Chapter 8, titled *Digital Convergence and Horizontal Integration Strategies*, describes the concept of digital convergence. The unique characteristics of digital technology enable three forms of digital convergence: technological convergence, content convergence, and industry convergence. The strategic management process is briefly reviewed in the chapter and digital convergence is shown to be both a potential external threat and an external opportunity for digital product companies as they strive to achieve some form of competitive advantage. Many companies have determined that horizontal integration is the best strategy for taking advantage of digital convergence opportunities. Real-world horizontal integration strategy examples from several digital product industries are discussed including the rationale for why these strategies were chosen. In addition, a wide range of other potential digital product strategic alternatives are discussed along with their associated benefits and risks.

In Chapter 9, *The Role of the Internet in the Decline and Future of Regional Newspapers*, Gary Graham from the Manchester Business School in the UK discusses the impact of digital technology on the newspaper industry. The chapter discusses the role of the Internet in the declining social and business influence of regional newspapers. It then provides an assessment of the impact of new technology developments, such as Web 2.0, on the future of regional newspapers. The chapter concludes with suggestions for how new technology may be utilized by news media organizations to co-create content with their readers.

Chapter 10 is titled *Software as a Service and the Pricing Strategy for Vendors*. In this chapter Nizar Abdat and Marco Spruit from Utrecht University in the Netherlands, and Menne Bos from Accenture in the Netherlands, provide an in-depth description of the phenomenon called Software as a Service (SaaS) where software is installed in data centers and delivered as a service instead of selling software like a traditional product. The chapter discusses the scientific and business perspectives on SaaS and identifies managerial and research implications. It discusses the benefits and risks associated with SaaS from the perspectives of all of the organizations that could be involved. The chapter concludes with a framework that can be used by vendors to identify appropriate prices for their SaaS services.

In Chapter 11, *Piracy, Copyright and Consumers’ Rights: A European Perspective on the Private Copy Issue*, Pedro Pina from the Polytechnic Institute of Coimbra in Portugal provides a European perspective on digital copyright issues. The chapter describes the conflicts between the exclusive right to exploit a digital product and the private copy issues. The chapter concludes with suggestions for how the rights of digital product developers and consumers can be balanced.

In Chapter 12, *Service Systems as Digital Products*, Hsin-Lu Chang from the National Chengchi University in Taiwan, Michael Shaw from the University of Illinois, and Feipei Lai from the National Taiwan University present the concept of services as digital products. In the chapter they focus on a remote healthcare platform developed at National Taiwan University Hospital. The chapter identifies several important issues in this area including the development of service value models, the development of service metrics, and the management of service systems.
The fourth and final section in this book includes visions for digital product management, research, and technology in the future.

Chapter 13 by Dave Sly, President of Proplanner.com, is titled *Transitioning to Software as a Service: A Case Study*. The chapter provides an executive’s perspective on the benefits, challenges and lessons learned from managing a digital product (software) company. The case describes the transformation of the company from a traditional “software as a product” engineering software company into a company that utilizes a “software as a service” business model. Technology issues and recommendations are discussed based on actual company experiences.

In Chapter 14, *Digital Media: Future Research Directions*, Anthony Hendrickson, Trent Wachner and Brook Matthews from Creighton University provide some directions for the future of digital media research. They explore how digital technologies are challenging business models and processes. They conclude by identifying several themes for future research that address important issues for how technological innovations will impact the global workplace. These themes include digital products as operant resources, issues for user-generated content and data quality, impact of network externalities, and challenges for digital product business models.

Chapter 15, titled *Digital Technology in the 21st Century*, provides a vision for the future of digital technology. The chapter begins with a review of current digital technology used for basic input, process, output, storage, and wide-scale networking (Internet and Web) tasks. A number of new digital technologies that are currently under development are identified and their potential benefits are discussed. These new technologies will create opportunities and threats for digital product managers in the coming decades and several possible impacts on digital product industries are discussed. These technologies will also impact societal issues such as healthcare, government services, higher education, political campaigns, cybercrime law enforcement, and life at home. The chapter concludes with several research issues and philosophical questions that must be addressed to determine the best uses for the relative advantages of technology and humans in the future.

Technology’s future is exciting and scary. Digital product companies are operating in a hypercompetitive world where everyone has access to the same technology, differentiation is becoming more difficult, consumers have increasingly high expectations, and the lines between industry sectors is blurring because digital technology enables companies to grow by crossing traditional boundaries. I hope that this book can provide some insights and suggestions for how to manage digital products in the future. I also hope that the book has generated ideas for digital product management research so that answers can be found for important technical, business and social science questions.

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