Preface

In the past three decades, we have experienced unprecedented progress in information and digital technologies. Until the early 1990s, the Internet was not a familiar term to many people. The introduction of the World Wide Web (WWW) indeed accelerated the growth of Internet usage. In 1990, there were only 10 million Internet users in the world, but worldwide Internet users have grown exponentially since 1996: 40 million users in 1996, 100 million in 1998 and 350 million users in 2000. The WWW, which began to take shape in 1989 stemming from a primary creator, Tim Berners-Lee, was designed specifically to allow easy linking (called hyperlinks) from any user to any set of data, demonstrating the importance of multimedia content (digitalized text, audio and video files) and user-friendly interfaces.

It is not a surprise that firms and governments began to explore the opportunities created by the development of the Internet and information technologies (IT). In the public sector, the operation and the organization of the government have been in transformation for e-government. In the private sector, firms first utilized the Internet and IT for more efficient management of inventories, information and knowledge. Soon, firms realized and began to explore the commercial opportunities generated by the Internet and the WWW, which led to the advent of e-commerce. Furthermore, the Internet began to change the nature of political campaigns, everyday lifestyle and the social structure. Korea, for instance, has recently experienced a new political campaign via the Internet, and the Internet community, which has had substantial influence on the way that people interact with each other.

As is well known, the Internet can be understood as a network of networks. What distinguishes the Internet is the way traffic is handled: A message is broken down into many chunks of data called packets, each of which contains necessary information such as an IP address, and then the packets are routed through many alternative routers to the destination. However, due to not only the growing Internet user population but also the emergence of home networks, new forms of media, and the convergence of fixed and wireless networks, the demand for IP addresses will outpace supply under the current IPv4 regime in the near future. Hence the Next Generation Network or Broadband convergence Network began to take shape, aiming to offer Internet security, enhanced quality of service (QoS) and mobility features along with the 128-bit IP system called IPv6.

Indeed, the innovations in VoIP (Voice over IP), digital TV and wireless communications lifted the Internet and IT revolution to digital convergence. VoIP and digital TV digitalized the voice information and TV contents in IP packets, causing not only service convergence in data, voice and video information, but also industry convergence, especially between the broadcast and the telephony sectors and the consumer electronics and computer industries. On the other hand, a deep penetration of the second-generation (2G) of mobile communications highlights demands for “mobility” in the digital age. It is widely believed that 3G and 4G mobile communications will enable users to enjoy a variety of wireless services including mobile Internet access and two-way multi-media services. The commercial DMB (Digital Multimedia Broadcast) services were already launched in 2005 in Korea, which made digital media contents mobile. Wi-Fi and Wi-Bro are expected to compete with 4G mobile communications in two-way multi-media services as well as mobile Internet access. The convergence in wired/wireless and data/voice/video services prods a convergence of IP, broadcast/cable and mobile communications networks into the Broadband convergence Network. The Broadband convergence Network is expected to be the key infrastructure of digital convergence over which Telematics, Home Networks and other convergence services can be provided.

Digital convergence which we witness now is only in the beginning stage and is expected to have deep and wide impacts on economies, politics and our daily lives. This convergence will foster new opportunities and
challenges in private and public sectors. This book aims to address and position the issues in business strategies and public policies rising from digital convergence. This book is organized into three sections with twelve chapters.

Section I provides a comprehensive overview of the deployment of broadband technology and business strategies and public policy in the allocation of radio spectrum.

Chapter I views challenges and opportunities of broadband technology. The chapter discusses the control of transmission capacity with the coalition in favor of an open network (network neutrality) and its impacts on the future of the global Internet and implications for terrestrial networks, radio spectrum and satellite broadband.

Chapter II pays attention specifically to the social and cultural impacts of VoIP in the age of digital convergence. Through convergent systems and wireless means, VoIP is expected to alleviate economic or geographic restrictions, enabling individuals to communicate on a broader scale at a reasonable financial cost. This chapter explains the core components of VoIP and how it facilitates communication, and examines whether we are entering a truly “global village” through greater use of VoIP technologies.

Chapter III concerns public policy in the allocation of the radio spectrum. Digital convergence requires an efficient utilization of the radio spectrum. As one possibility, the paper proposes a modified lease auction (MLA) in which the government leases the spectrum competitively to business and public users and the process of transition from the current system to MLA. The chapter also discusses a provision of insurance as a way to protect incumbents from excessive risk of losing spectrum rights.

Chapter IV focuses on the Mobile Virtual Network Operators (MVNOs) as an alternative way to efficiently utilize the radio spectrum and to increase competition in the mobile communications industry. In many countries, the 3G licenses have been assigned to existing 2G operators, and the reserved 2G radio spectrum band is nearly saturated at least in the urban areas. Hence, not much room is left for new players to enter the 3G mobile communications market. The chapter considers MVNO as an alternative way for firms to enter the 3G mobile communications market, and presents quantitative figures such as net present value, pay-back period, investment cost, revenues and running cost under different MVNO business cases.

Section II takes on new business opportunities generated by digital convergence and related issues in business strategies and public policies.

Chapter V examines Internet auctions and provides some intuitive views on the evolution of e-commerce. The chapter finds the existence of the network effect between Web site usage and listings, which explains the dominance of eBay even with higher fees in the Internet auctions market. The first-mover’s advantage of eBay established by network effects is suggestive of the possible evolution of e-commerce in which clicks generate some values.

Chapter VI analyzes mobile payment issues and policy implications in Korea. As digital convergence proceeds, m-commerce takes shape and mobile banking becomes a front runner of m-commerce. In the mobile payment system, mobile network operators are on the verge of turning into non-bank financial institutions. Hence, mobile banking services raise a serious public policy issue in financial and banking sectors, which will substantially affect the evolution of these new services in the future.

Chapter VII studies the innovation strategy of Nokia, a major telecom company, in the emerging digital home market. The chapter finds that on one hand, Nokia follows a niche creation strategy, relying on its existing technological competencies in the areas of handset design and open device architecture, and on the other hand, Nokia builds new market competencies either developed in house or through collaboration with its industry partners.

Chapter VIII directs our attention to the importance of a variety of systems in digital convergence, and precedes further to put an emphasis on open systems which assure variety and interoperability. Then the chapter explores the different meanings and criteria suggested by the term “open systems” and the many ways openness is viewed. However, it should be noted that open systems will affect firms’ incentives for innovations and pricing behavior, and thus the welfare consequences of open systems are not definite.

Section III raises governance issues in digital convergence. Successful governance is a key element of the realization of digital convergence.
Chapter IX deals with issues in the governance of the Internet, which is the core of the infrastructure of digital convergence. Internet governance refers to the complex interaction of root servers, software, and public and private entities through which content is made available over the World Wide Web. This chapter discusses the outcome of largely libertarian origins of Internet management and the future structure of Internet governance, which will have significant geo-political repercussions in the process of digital convergence.

Chapter X takes on the major regulatory challenges for the development and the effective provision of audio-visual or other forms of digital content services in the continuing digital convergence. The paper details a more proactive and consistent regulatory approach of the European Union in the wider electronic (mainly Internet-based) communications areas, including a variety of modern broadcasting activities. These recent regulatory developments aim to promote those different forms of content should be legally available for use, treatment, storage and distribution in various technological platforms.

Chapter XI considers the challenges that the Internet and IT present to the traditional copyright legal system. This chapter reviews and compares the copyright history in the US and China, and explores major rationales behind copyright policies of these two countries as well as the main reasons why they were able to avert potential Intellectual Property trade wars in recent years. The author makes some specific suggestions on how to achieve a sound balance of Intellectual Property protection and social development in the digital age.

Chapter XII explains the public policy constraints on the deployment of most technology in digital convergence. Specifically, privacy and security are a balance between individual interests in secrecy/solitude and society’s interests in security, order and efficiency. This chapter explores the key political, legal and regulatory means for resolving conflicts between privacy rights and security methods to encourage convergence success.

Digital convergence is only in the nascent stage. By nature, unexpected is expected in the parade of convergence. Business strategies and public policies will also play a substantial role in taking the forms and paths of digital convergence, a progress which, in turn, will bring new opportunities and challenges in private and public sectors. The book provides a critical overview of the issues in business strategies and public policies of digital convergence from the perspective of where we stand. It is my wish that this book can be a foothold for better understanding of many facets of digital convergence which are yet to come.

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