
INTRODUCTION

The telecommunications industry has evolved to a point in time when the wireless elements of the global network have eclipsed the legacy wired networks in terms of reach and adoption by the world's population. There is now a growing tension between the original vision of the cellular network as simply a mobile extension of the traditional wired telephone network that is operated as a closed system under the unilateral control of the service provider and its role as a leading access platform for the global Internet. The powerfully established business and regulatory model of the legacy telephone network operators is now bumping up against the dramatic expansion of the global Internet into a broadband data system that can provide alternatives for virtually every legacy communications service. A historic conflict is evolving over how these two mammoth environments will converge and overlap. Will the well-established institutions that hold sway over the legacy telecommunications networks and service providers capture control of the Internet by leveraging their existing gatekeeper position for access and termination? Alternatively, will these well-established habits of operation yield to creative new forces and competitors who will grow and thrive by implementing new business models that make obsolete the business practices of the incumbents? This conflict is well under way, and its outcome will have tremendous influence on the future of the global economy, the evolution of human rights and freedom, and the daily lives of virtually all the world's citizens.

The core theme of this book is an examination of contesting factors that have influenced and will continue to influence the deployment and adoption of the broadband Internet Protocol (IP) wireless infrastructure, its devices and its services, which will mark the next major steps in the evolution of wireless worldwide. The implementation of the ubiquitous wireless broadband Internet will reach into every corner of global society. Every segment of the wireless industry will ultimately have to view and plan for its future prospects from the perspective of how it will fit within the emerging IP ecosystem growing out of this major change of state for the entire telecommunications industry. We will consider the impact of new entrants and operators, versus new

innovators and the current market leaders in each sector of the industry. We will also examine how the future technology road maps of the 3GPP (Third Generation Partnership Project) and WiMAX (Worldwide Interoperability for Microwave Access) standards promoters will conflict, compete, and ultimately converge. Our efforts will also seek to penetrate the noise and hype, both positive and negative, that presently cloud the perceptions of both industry insiders and the larger publics who will be impacted by this insidious and inevitable broadband evolution.

New broadband wireless deployments will find market share both among and beyond the current base of 3 billion subscribers, most of whom are on second generation (2G) versions of the global system for mobile communications (GSM) systems. The installed base of GSM infrastructure is presently undergoing a slower than anticipated, but inevitable transition to third-generation (3G) platforms. This step along the trajectory to true broadband IP-centric fourth-generation (4G) networks can be viewed as the transition from the narrowband 2G environment to the wideband 3G era, which will evolve into the true broadband future matching the vision of the 3GPP technology Long Term Evolution (LTE) for GSM systems, and the emergent Mobile WiMAX standards based on OFDMA (orthogonal frequency division multiple access) technology. The emergence of OFDMA as the technology of choice for the next-generation mobile platforms is a by-product of the dramatic increases in microprocessor power over the past decade that finally enabled OFDMA technology to become practical for application in wireless platforms. These systems will come into existence under the sponsorship of existing cellular operators, and through major telecommunications and computing industry organizations that have to date been essentially left out of direct participation in the wireless industry. Included among these new contributors to the wireless broadband future are the cable television operators, Internet portal and search companies, computer and digital appliance manufacturers, software concerns, and content developers.

Much of the momentum driving mobile wireless broadband services is being created by the widespread adoption of wired broadband Internet services by a large portion of the population. The experience and convenience of broadband access have extended from their original presence in the workplace into approximately 60% of all U.S. households, primarily through digital subscriber line (DSL) and cable modem services.* We are now at the tilting point when it is both practical and logical to seek access to our broadband services and applications wherever we may be, regardless of whether we are at the office, at home, traveling to a remote destination, or mobile betwixt and between these locations. We will address the nature of network and service convergence and the interrelationships that exist between and among each of the broadband network service domains, including all types of wired and wireless networks.

There is a pending collision between the traditional telecommunications industry closed system approach to the market and the open platform environment of the Internet. As broadband wireless service delivery networks proliferate, the

* World Broadband Statistics—Q2 2007, Point Topic Limited.

migration to expanded openness will accelerate. The traditional “walled garden” environments of the legacy wireless service providers are already breaking down, with pledges to remove existing carrier-defined constraints that only allow network access to user devices obtained from the underlying carrier coming from both Verizon and Mobile WiMAX proponents. How these deeply established traditions of the telecommunications industry are relaxed and eliminated in whole or in part and at what pace over time will mark the next era of the wireless industry.

Numerous contributing factors will impact the pace of the ubiquitous availability of wireless broadband services. These include: (1) the need to resolve a wide range of regulatory constraints and protectionist policies on literally a global basis; (2) the existence of enabling technology development for pending broadband wireless expansion in an increasingly complex intellectual property environment that requires equipment manufacturers to be sensitive to potential business risks, which are very difficult to quantify in advance of drawn-out contentious legal processes; (3) the need for substantial increases in the amount of radio spectrum allocated to existing and new service providers with sufficient contiguous bandwidth to support truly broadband services; and (4) the need for non-discriminatory standardization of networks and user equipment across commercial and political boundaries, which will likely take many years to resolve.

We will attempt to handicap the field contending to be the future winners and losers among the numerous competing factions participating in the broadband convergence movement. Included among the participants for next-generation network services leadership are the reconsolidated and expanded (wireless, Internet, video and long-distance-enabled) legacy telephone companies, called the incumbent local exchange carriers (ILECs), non-ILEC cellular network operators (Cellcos), the multisystem operators (MSOs) in the cable industry, wireless internet service providers (WISPs) led by the new Mobile WiMAX system operators, the direct broadcast satellite (DBS) service providers, and the competitive local exchange carriers (CLEC).

Our direct experience over the past 20 years of the evolutionary march of progress towards a wireless broadband future has revealed many of the obstacles and obstructions that have emerged either as defensive acts of commission by established operators, or acts of omission on behalf of regulators and vendors, which have resulted in a seemingly never-ending series of chicken-or-egg phenomena. Inefficiencies impacting progress abound, including how wireless spectrum is allocated and licensed, how capital formation is organized and aligned with new network requirements, and how the numerous “standard” obstacles that mark the implementation of wireless infrastructure are overcome, such as site acquisition in a crowded market, local zoning obstacles including NIMBY (not in my back yard) issues, and the growing challenge of provisioning broadband backhaul and interconnection for cell sites with vastly increased capacity requirements compared with legacy voice cellular systems.

We are attempting to cover a very wide swath of the issues facing decision makers within the impacted sectors of the economy, with the intention of broadening their awareness of emerging competitive factors and potential

opportunities that will decide their future success or failure. In addition, we hope to add worthy contributions to the policy making process to add additional insight and information to the impacted publics on every side of these often polarized issues.

We all share responsibility for the future we create as members of our respective professions and societies as well as members of the global community of nations. Our world is shrinking rapidly, and few technologies are contributing to this evolution of global interaction and interdependency as completely and cogently as broadband communications in all of its multivariate forms.