

Mobile Broadband Matures: At the Cusp of a Revolution

By Godfrey Chua, Research Manager, Wireless and Mobile Infrastructure, IDC

Several years ago, I was chairing a telecommunications conference in Hong Kong where I had the privilege of hearing James Murdoch speak on his vision of the convergence of media and telecommunications. James, who is Rupert Murdoch's son, was at that time the CEO of Star TV, one of the region's premiere content providers. Together with James was a panel of speakers hailing from some of Asia's most innovative mobile service providers, including such stalwarts as NTT DoCoMo and PCCW. During the Q&A session, I asked James and the panel members, "When would I be able to see *Ally McBeal* (then a rather popular primetime U.S. TV show) anytime and anywhere I want on a portfolio of relevant devices, such as a mobile phone and laptop? Wasn't this, after all, the vision behind convergence?" A mobile network able to deliver this would imply an infrastructure sufficiently powerful and ubiquitous that it would open the floodgates to a plethora of applications and services that could truly change, by several orders of magnitude, the value and utility of the mobile network.

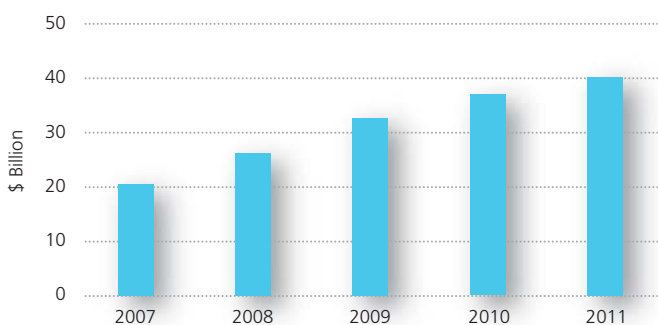
The answer to the second part of my question was a consistent and resounding "yes." However, there was also a unanimous caveat. Despite what some advertisements may have been showing at that time in Asia and in the rest of the world, the mobile technology available at that time could not deliver on such a vision. It could not furnish the necessary bandwidth, let alone bring it at compelling price points. This was true for other elements of the mobile network, including limitations to device functionality and capabilities. Mobility and broadband were not synonymous with each other. The panel cautioned that it was thus important to manage customer expectations, challenging their technology providers to help them in delivering the vision while at the same not "hyping" up the potential. This was, after all, during the height of the dot-com frenzy. This was December 1999.

Seven years and a dot-com crash later, I find myself thinking once again about the vision James and the panelists imparted. What is remarkable is that it has, fundamentally, not changed. Both the media and mobile communications industries are, more than ever, pursuing convergence. In fact, we are getting close. I can now watch, with some limitations, my favorite TV shows anytime on the Internet on my "second screen." This second screen is a laptop PC (I have personally eschewed a DVR) typically connected via broadband wireline or when traveling via WiFi. With the advent of the SlingBox and AppleTV, cellular subscribers can also record their favorite shows and stream it to their mobile phones. More and more service providers are offering mobile TV services. As for the vision of ubiquity, we are now on the verge of achieving the previously unimaginable milestone of three billion mobile subscribers across the globe.

Indeed, what has changed the most in the last seven years is wireless technology itself. The IT transformation of the telecommunications industry has resulted in unprecedented economies of scale and pace of innovation that have vastly improved the price to performance metrics of wireless infrastructure. In many respects, Metcalf's Law – that the value of a network is proportional to the square of the number of users of the system – has met Moore's Law – that the number of transistors in an IC doubles approximately every two years (this has implications for such items as processing power and capacity). The result today is an emerging portfolio of wireless technologies that are at the cusp of delivering on the vision that the industry has held for a long time. Wireless base stations continue to get smaller, lighter and less costly to procure and deploy. This is what makes these times a particularly dynamic and interesting period for the industry. Technology was not ready for the vision back in December 1999, but it is today.

From the competing third generation (3G) standards, to WiFi and the much hyped Worldwide Interoperability for Microwave Access (WiMAX), comes a portfolio of wireless broadband technologies that serve as the foundation for delivering on the vision of media and mobile communications convergence. 3G cellular technologies already bring broadband connectivity, while their evolutions, such as Evolution-Data Optimized Rev B, Ultra Mobile Broadband, HSPA+¹ and Long Term Evolution, promise even greater bandwidth. Both WiFi and WiMAX deliver multi-megabit access rates, with each also possessing roadmaps toward higher performance (802.11n and 802.16m). Looking further down the road, in fact likely in another seven years, the real fourth generation (4G) mobile technology will emerge via IMT-Advanced. IMT-Advanced is the standards that will specify the fourth generation of mobile communication. Ultimately though, it will not be about one standard winning it all, but rather ubiquitous connectivity will come by way of the co-existence of, as well as the competition among, these differing wireless access technologies. The investments in these technologies will be enormous. Over the next five years, IDC expects that an excess of \$50 billion will be spent annually on wireless infrastructure (Figure 1). The majority will be spent on 3G. WiFi and WiMAX will comprise a small portion but will nonetheless exhibit some of the most rapid growth.

Figure 1: Worldwide wireless broadband* infrastructure spending



Source: IDC

* Wireless Broadband includes spending in 3G cellular as well as WiMAX

The rest of the network has evolved, too. IMS (IP Multimedia Subsystem), despite the disappointment around the lack of market opportunity thus far, is an important development at the core of the network that provides the architectural framework within which rapid service creation, delivery and convergence itself is and will be enabled. Mobile devices have seen processing power, screen resolutions, battery life and form factors improve substantially since 1999. This all happened while costs also came tumbling down. Of course, no discussion of mobile devices would be complete without mentioning Apple's iPhone. The iPhone, ironically, is not even a 3G phone. However, its user interface, form and function have further heightened the competitive environment, creating innovative new approaches to the way in which users interact with multimedia applications on a handheld device. In essence, the ecosystem behind mobile broadband infrastructure has also advanced significantly.

Finally, an equally important element defining the market context today is that customers themselves have also changed, and rather significantly, over the last seven years. Web 2.0 and the proliferation of the Internet have primed the customer base for adoption. In addition to widespread familiarity with the Internet, broadband connectivity is worth much more today because of the specific applications and services the additional bandwidth enables. Dial-up access is insufficient, and ubiquitous connectivity, the same notion that made emerging markets leapfrog from and essentially forgo fixed telephone lines for mobile phones, is becoming increasingly important. That this is coupled with regulators across the globe advocating and enabling broadband connectivity adds to the momentum. In fact, it was also around seven

1 High-Speed Packet Access

years ago that I participated in studies related to the global “digital divide.” Regulatory authorities as well as multi-lateral organizations such as the World Bank continue to be highly concerned with this issue. This concern has, however, smartly shifted from basic connectivity to one of inclusion in the digital revolution enabled by broadband access.

Having said all this, it is of course important not to fall prey to unnecessarily “hyping up” the mobile broadband market. Perhaps this enthusiasm is colored somewhat by having just observed the first commercial launch of an 802.16e 3.5 GHz network in the CALA² region and successfully “road-testing” it via a video Voice over Internet Protocol call in a moving vehicle. The carrier, ONEMAX, a competing carrier in the Dominican Republic, noted that while initial launch focused on a value proposition premised on broadband connectivity, it also envisioned that down the road applications such as IPTV and the availability of more devices would further enhance the utility of the mobile broadband network. The vision is thus not held exclusively by service providers in the OECD (Organization for Economic Co-operation and Development) markets. Still, mobile broadband networks cannot be built overnight. The complexity in building a network is enormous. The challenges span issues such as regulatory policies on spectrum allocation and planning, to local zoning and construction laws that can impede the construction of new cell sites. Networks will need to be optimized and some of the newer technologies will certainly have growing pains as they scale. It also takes time for users to adapt to new services, behaviors and usage patterns. The mobile broadband revolution is something that cannot and will not happen overnight. In fact, it won’t even happen in the next year or two. Rather, what exists today is the technological foundation and a vision that will take us there. ●

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