



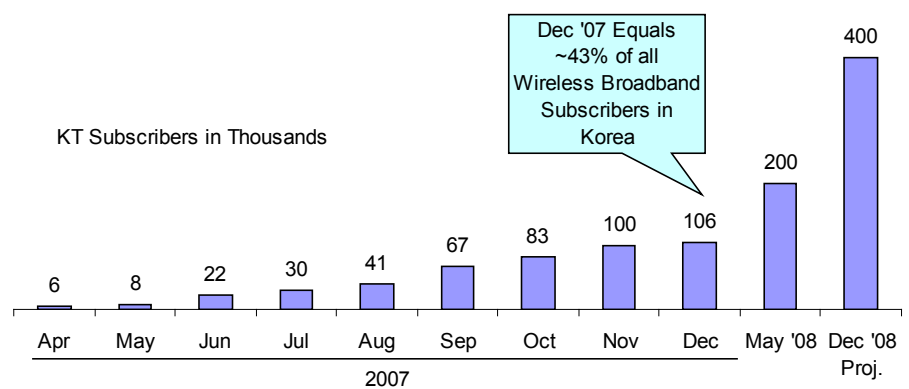
# WiMAX Enables Wireline Incumbent to Become Leading Provider of Broadband Wireless Data Services in Korea

## The Company

KT\*, then known as Korea Telecom, was founded in 1981 as a wireline operator. In the past several years, KT, leveraging its wireline network, has emerged to be a leading broadband provider for DSL services. In January 2005, KT was one of three companies awarded a nationwide license for 27 MHz of spectrum in the 2.3 to 2.4 GHz band for the delivery of wireless broadband (WiBro†) services. In December 2005, KT conducted a trial demonstrating mobile broadband performance up to 120 km/hr with average data rates per user of 3 mbps in the downlink and 1 mbps in the uplink. A soft commercial launch of WiBro services occurred in June 2006 followed by a full commercial launch in April 2007 making KT the first company in Korea to commercially launch WiBro services.



By the end of 2007 KT had deployed approximately 600 base stations covering 12 million people and had established itself as the wireless broadband leader with 106,000 subscribers representing a 43% mobile broadband data market share. As of June 2008 fourteen months since their commercial launch, KT has acquired



over 200,000 customers. With attractive pricing, aggressive promotion and data rates that far exceed alternative mobile data services such as HSDPA; KT WiBro has become the fastest growing wireless data service in Korea.

\* [www.kt.com](http://www.kt.com)

† WiBro is the acronym used to describe mobile broadband services in Korea using the Mobile WiMAX technology based on the IEEE 802.16e Air Interface Standard.

With plans to expand network coverage to reach 24 million pops in 27 cities nationwide by the end of 2008 and continued market focus on early adopters which tend to be college students and the younger segment of the population, KT expects to have 400,000 subscribers by the end of the year.

## WiMAX Broadband Services Offered

In the timeframe of this case study, KT provides 1 Gigabyte per month for an introductory rate of \$10.84 and 30 Gigabyte per month data service for an introductory rate of \$21.45 per month. Services provide an average of 3 Mbps in the DL and 1 Mbps in the UL per user.

KT also offers a range of bundled plans providing a discount over the individual plan prices. These bundled packages include:

- WiFi + WiBro
- Fixed Broadband Access (ADSL, VDSL, or FTTH) + WiBro
- Fixed Broadband Access + WiFi + WiBro



KT also has agreements with EV-DO and HSPA network operators and currently offers dual mode 3G/WiBro devices. These dual mode devices enable greater overall coverage for voice and lower bandwidth data, while providing users with higher throughput when in the service area of the broadband WiBro network. Service packages that take advantage of an agreement with KT Freetel (KTF), a subsidiary of KT are:

- KT WiBro + KTF HSDPA for USB Dongle users and
- KT WiBro + KTF EV-DO/.CDMA for Smartphone users

These plans provide a 20% discount for the KT WiBro services and a 20% discount for the KTF basic data service. The USB dongle is the most popular access device since almost 80% of KT subscribers access the WiBro service with their notebook computers. Some of these devices can also operate as an MP3 player, mobile TV (T-DMB) receiver or a data storage unit. Other user devices include smartphones and ultra-mobile personal computers (UMPCs) with embedded WiMAX, Wi-Fi and mobile TV capability.

The availability of a compact design and functional convergence (T-DMB, HSDPA, MP3 player, and removable disk functions in USB modems) has been important for subscriber adoption. Broadcast mobile TV service content over T-DMB<sup>‡</sup> is free in Korea; so many devices incorporate the T-DMB interface for that reason. T-DMB service in South

‡ Terrestrial Digital Multimedia Broadcasting

Korea currently consists of 7 TV channels, 12 radio channels, and 8 data channels broadcast in the VHF band. Going forward KT plans call for many new multimode subscriber devices including:

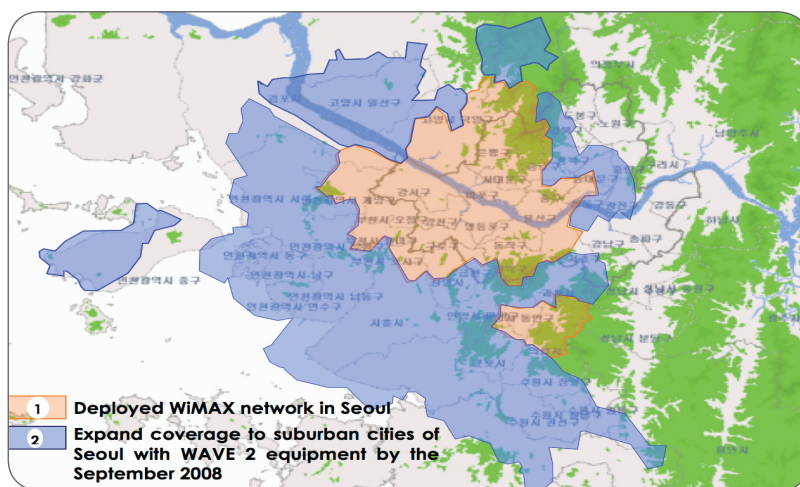
- Handsets with MP3 Player + WiBro
- Handsets with GPS Navigation + WiBro
- Digital Camera + WiBro
- Personal Multimedia Player + WiBro
- Expand Smartphone and UMPC availability
- Game Player + WiBro



## The End-to-End Network

KT was able to build on its existing wireline core network to deploy WiMAX for the delivery of WiBro services. Additionally, its PCS subsidiary KT Freetel (KTF) provides KT the opportunity to reuse many existing cell sites. This has obvious economic advantages but more importantly facilitates time to market by eliminating the time-consuming process of site development.

Stage 1 deployment of the KT WiBro network was completed in March 2007 providing coverage for about 12 million people in Seoul. Stage 2, to be completed by September 2008 with WiMAX Wave 2 equipment, will provide coverage to an additional 20 suburban cities surrounding Seoul. By the end of 2010, KT WiBro services will be accessible to more than 40 million people.

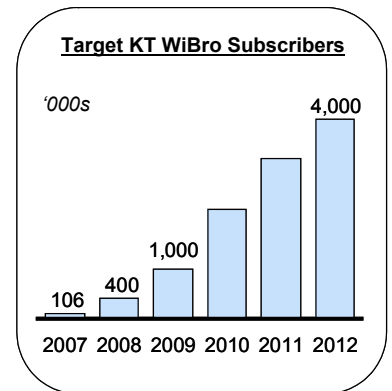


## Market Opportunity and Company Vision

According to the OECD's Employment Outlook, from 1994 to 2005 Korea ranked second in productivity growth with annual average gains of 3.9 percent. Over 97 percent of the labor force has a college education or vocational training background. With a growing and prosperous economy, the 48 million consumers in South Korea have a huge and growing appetite for goods and services. Korean consumers have a high propensity to spend and are "early adopters," making the country an ideal test-bed for new information technology such as WiBro.

South Korea is a prime example of the insatiable demand associated with mobile broadband data services. It is also interesting to note that about 80% of KT WiBro subscribers keep their DSL service (also from KT) for home fixed use. By the end of 2012 KT expects to have nationwide WiBro coverage and 4 million subscribers. In addition to simply providing more coverage KT will focus on several areas to achieve these goals including:

- Continued aggressive marketing with increased focus on enterprise users
- Gain regulatory approval to enable mobile VoIP over the WiBro network
- Introduce new applications including user generated content
- Expand range of available multimode user devices
- Work with vendors to develop multiband user devices to enable global roaming
- Improve in-building coverage



This case study is based upon research performed by McKinsey & Company during the first half of 2008.

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