

## WiMAX – AN ALTERNATIVE TO WIFI?

By Stefan Brämberg, CTO, Ascom Wireless Solutions

WiMAX is nowadays frequently mentioned in media; but what is it really, and what importance will it have in relation to WiFi and IP-DECT? Let's have a look into the technology.

WiMAX (**W**orldwide **I**nteroperability for **M**icrowave **A**ccess), is a telecommunications technology aimed at providing wireless data over long distances in a variety of ways from point-to-point links to full mobile cellular type access. It is based on the IEEE 802.16 standard, which is also called Wireless MAN.

WiMAX is not a replacement for WiFi; it's a technology for wide area distribution of high speed data. WiMAX provides services similar to a cellular/GSM phone and is optimised for wide area coverage, while WiFi is more similar to a cordless phone, optimised for short range and high user density.

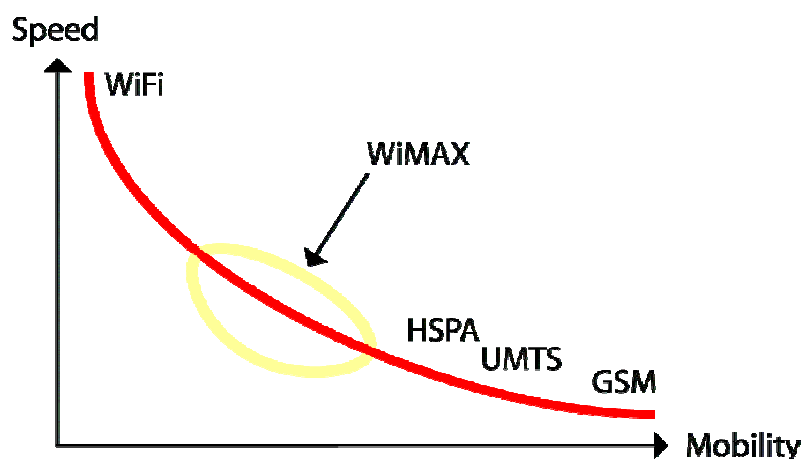
In forthcoming years we will see a battle between WiMAX, Cellular technologies and to some extent fibre optical networks, to provide internet access.

The two major 3G systems, CDMA2000 and UMTS, compete with WiMAX. Both aim to offer DSL-class internet access in addition to phone service. UMTS has also been enhanced to compete directly with WiMAX.

3G cellular phone systems usually benefit from already having an installed infrastructure, being upgraded from earlier systems. Users can usually fall back to older systems when they move out of range of upgraded equipment, often relatively seamlessly.

The major cellular standards are being evolved to so-called 4G, high bandwidth, low latency, all-IP networks with voice services built on top.

In rural areas and in developing countries wireless technologies can provide a cost efficient solution to distribution of data and internet access, whereas fibre networks will be a tough competitor in urban areas, especially combined with WLAN hotspots.



A commonly held misconception is that WiMAX will deliver 70 Mb/s, over 48 kilometres. Each of these is true individually, given ideal circumstances, but they are not simultaneously true. WiMAX has some similarities to DSL in this respect, where one can either have high bandwidth or long reach, but not both simultaneously.

## FREQUENCY ISSUES

WiMAX is specified for a large frequency range (10 to 66 GHz). However, specification is not the same as permission to use. There is no uniform global licensed spectrum for WiMAX. In the US, the biggest segment available is around 2.5 GHz, Elsewhere in the world; the most likely bands used will be around 3.5 GHz, 2.3/2.5 GHz, or 5 GHz, with 2.3/2.5 GHz probably being most important in Asia.

It seems likely that there will be several variants of 802.16, depending on local regulatory conditions, even if everything but the underlying radio frequencies is the same. WiMAX equipment will not, therefore, be as portable as it might have been – perhaps even less so than WiFi, whose assigned channels in unlicensed spectrum vary little from jurisdiction to jurisdiction.

In some areas of the world, the wide availability of UMTS (3G system) and a general desire for standardization has meant that spectrum has not been allocated for WiMAX: in July 2005, the EU-wide frequency allocation for WiMAX was blocked.

## THE IMPORTANCE OF WIMAX FOR ON-SITE MOBILITY

WiMAX will most probably be *one* of the different technologies that provide internet access in the future. But it will not be the only one and it's important to understand the limitations with wireless technology; there is always a trade off between range, data speed and number of users.

For the onsite mobility solutions and systems, WiMAX will have little or no influence in the coming years. The main deployment will most probably be back-haul for WiFi hotspots in cities and "last mile" carrier in rural areas.