

Mobile Wireless Happenings

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While Voice still pays the bills, mobile wireless operators are looking to messaging & multimedia applications for future growth.

To this end, as well as to add capacity for increased voice traffic, US operators continue to invest in network upgrades.

On the GSM side, Cingular has started to deploy *Wideband CDMA HSDPA* (High Speed Downlink Packet Access) which will support 400-700 kbps average and 1Mbps peak data-rates.

On the CDMA side, Sprint reports that its deployment of *CDMA2000 EV-DO* (Evolution Data Optimized) now reaches 141 markets with 90M pops and is expected to cover 143M pops by eoy2005. EV-DO supports 300-400kbps average and up to 2.4Mbps peak data-rates. Verizon Wireless' deployment of *EV-DO* now extends to 171 markets covering 140M pops. Within the next 2 years, both operators will begin to deploy *EV-DO RevA* in order to increase network efficiency for voice traffic as well as supporting higher data rate applications.

Even more efficient air interfaces that are in the wings include the mobile WiMax 802.16e standard championed by Intel and Flarion's Flash-OFDM (orthogonal frequency division multiplexing), each of which will support all-IP multi-mbps voice and data applications. The first commercial deployment of mobile WiMax will likely be in Korea using the WiBro version of the WiMax standard. The first commercial implementation of Flash-OFDM has been announced in Slovakia and this technology is now being taken more seriously as an alternative next gen option since Qualcomm acquired Flarion earlier this year.

Among non-voice applications, downloading ringtones has been a surprise hit with consumers albeit not an application that needs enhanced network capacity. Other applications that do and will need such capacity include picture and video sharing, multimedia messaging, videophone, MP3 music downloads, podcasts, games, Internet

access, and TV. Capabilities for these applications are being built into a wide range of mid- and higher-tier terminal devices. Also increasingly carried on the enhanced wireless networks is business-oriented Internet and VPN traffic from nomadic laptop PCs and PDA/smartphones.

A high proportion of Sprint subscribers pay for the operator's Vision package which provides Internet access, text messaging and picture sharing. Sprint also offers numerous multimedia content options ranging from daily comics downloads to MobiTV for TV news, sports and entertainment. Once Sprint's EV-DO network is in place, streaming video will be more viewable on the small handset screens and should become more attractive to users.

Verizon's V-Cast – with 2-5 minute TV clips from news, music and entertainment providers -- reportedly offers relatively smooth & clear reception over VZW's *EV-DO* network although V-Cast content is not yet compelling enough to entice most users to pay the \$15/month price.

Given reasonable pricing, take-up of video streaming services is likely to become widespread, potentially causing a spectrum crunch. Hybrid network models will help to deal with this by shifting video streams to separate video spectrum dedicated to video broadcast. Qualcomm's proprietary "MediaFLO" system will stream audio and video channels to handsets using 6MHz of spectrum in the 700MHz band. Crown Castle International proposes to transmit live TV and audio channels via CCI's 5MHz of nationwide spectrum formerly used by weather balloons.

Another hybrid network model now under development will supplement wireless operators' wide area networks with WiFi. When users equipped with hybrid phones enter WiFi-enabled homes or other hotspots, their traffic will be re-channeled via cable and other fixed networks. This will relieve pressure on precious wireless spectrum, thus both reducing cost and providing headroom for more advanced services.