

LTE: Serving up a new generation of possibilities

Fred Wright, general manager of Motorola's networks business talks about his vision for global LTE and its peaceful co-existence with WiMAX.

For many in the industry, the 4G wireless environment is couched in terms of the kind of technology battle that was the hallmark of the 2G era, and the early transition to 3G. Back then the GSM and CDMA camps traded jibes on an almost daily basis on which technology was superior in capacity and performance. Now 2 generations of technology later, we see a similar battleground forming between the LTE camp and the WiMAX camp with regards to whether only a single technology will survive and dominate the global market for broadband wireless service delivery.

But this is not how everybody sees the sector evolving and, for Fred Wright, senior vice president at Motorola and General Manager of the firm's networks business, peaceful co-existence is the most desirable outcome, as well as the most likely.

Motorola has spread its bets across WiMAX and LTE and Wright is emphatic in his assessment that one will not destroy the other.

"LTE is not going to squash WiMAX; that is just not going to happen," he says. "They both are great technologies, but they serve different customer sets and provide different business solutions. Plus, WiMAX is at least two years in advance of LTE. While it's true that LTE has better performance on the downlink and uplink, WiMAX will improve over time."

In fact, says Wright, the development work Motorola had already put into

WiMAX was of considerable benefit when it came to beginning work on LTE. "We knew these technologies were very similar, with both of them based on OFDM. So we made sure we developed common platforms to allow us to share the development between LTE and WiMAX. So our baseband radio unit is a common platform, our flex modem technology is a common platform, we share much of the basic application software and MIMO technology, operations and maintenance and some of the basic operating functionality of the two technologies," he says.

While Motorola views the two technologies as suited to different operator business models, and therefore not in competition, Wright predicts that LTE will become the global cellular mobile telephony broadband solution over time, given that it is the evolution path for the dominant GSM/UMTS technologies and has attracted carriers from the CDMA community. CDMA carriers are motivated to adopt LTE, he says, because "they want to hop on the bandwagon of a global standard that will provide multiple supply sources for infrastructure, lots of device alternatives and multiple chip supply sources. All those things are good from the operators' perspective because, with more volume and more scale, they get better pricing and more alternatives. As good as CDMA/DO-A is—and it's really a wonderful technology—there is no next step on its roadmap."

CDMA carriers have lacked access to the benefits of scale, he says, because the technology was dominated by one chipset vendor and, the lack of competitive chip pricing kept handset prices very high compared to GSM. "You had one chip supplier that had all the IP combined with high royalty rates resulted relatively few devices suppliers and fairly expensive devices in a global environment where the lowest price seems to win."

LTE deployments will be driven by different factors in different parts of the world, but a common thread will be the burgeoning demand for mobile data and video services at the lowest cost per bit, Wright says.

The 700MHz auctions in the US are opening the path in that market, he says, along with multi-billion dollar US government initiatives to stimulate and subsidise rollout of broadband wireless service to rural areas where fixed services have yet to reach. In China the carrier is keen to move to TD-LTE as a natural migration path from TD-SCDMA. In Japan, NTT DoCoMo had a history of running ahead of the game and Wright speculates that KDDI will be motivated to launch the technology out of competitive necessity. Motorola plans to offer a full end-to-end portfolio of LTE solutions for FDD and TDD, with initial products ready for commercial shipment in Q4 2009.

In Europe, he says, LTE rollouts will depend on spectrum allocations and opportunism »

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from carriers. Many believe that European players can afford to wait a little longer before moving to LTE, given the performance that is achievable from HSPA and HSPA+. “I think that HSPA+ has very good performance, but not every network will be easily upgradeable to it because of older vintage HSPA hardware that already exists in many networks,” commented Wright.

“Older generations of hardware can’t be upgraded to get the same level of performance that the newer generations of hardware can and, frankly, most of the networks out there have older generations of hardware,” he argues. “I’m not saying it’s not do-able, I’m just saying it’s not as simple as some might make it sound. So if you haven’t yet deployed HSPA, or you’re looking at having to make any hardware change-outs to implement HSPA+, there’s an inflection point where you might say you’d be better off to go with LTE instead.”

When carriers do turn their attention to LTE rollout, he says, they will encounter substantial improvements in the ease of deployment. “In an LTE environment, a base station is a radio head that can be mounted outdoors in many cases. It uses a fibre connected cable back to a baseband unit that’s a single rack unit in size, about the same as a medium pizza box. That’s all the equipment there is other than backhaul gear,” he says.

“The most costly factor in building a future broadband cell sites will be the

backhaul cost and technology to be used so you can get enough bandwidth to match up with the capacity of the broadband radio gear.” Our company offers an OFDM-based IP wireless backhaul technology solution that can achieve 300Mbps of throughput over fairly long distances. And you don’t have to use microwave dishes like you used to, you don’t have a load of electronics sitting in an equipment shelter somewhere, you don’t have to aim this stuff with the same precision that you have to aim traditional microwave. With this new technology you can use a compass to set up the link up; it’s awesome.”

As impressive as the technology improvements may be, the mobile industry, like all other sectors, is to a great extent beholden to the wider financial environment—and, at the moment, that’s not too healthy. “You can’t borrow money in the capital markets today in most parts of the world because banks have clamped down,” says Wright. “That’s going to slow things down until we see the global economy start to pop out of the recession.”

There are exceptions; however, as some vendors may be in a position to offer attractive vendor finance deals to carriers in a bid to win contracts. “They have to be willing to fund the entire project, though,” Wright warns. “It’s not just about the equipment, they’re going to have to fund all of the land, buildings and towers and everything else that goes with it, because electronics

only accounts for 25 or 30 per cent of a big project,” he says.

Even in happier financial times, new technologies have always been held back by the lag in handset development. Highlighting WiMAX as the most recent example, Wright points out that infrastructure was in place long before chipsets were mature and a wide range of devices available commercially.

“With LTE it will be the same. If we look at initial LTE roll outs, we expect operators like Verizon to be selling simple single mode laptop modems and dongles for the first few months of commercial service until multi-mode, multi-band chipsets become available that can be incorporated to more complex mobile devices capable of supporting handover to DO-Rev A and 1X, or UMTS and GSM. The creation of the complex chipsets and devices will take some time.”

That said, development cycles for new technologies are improving all the time, he says, and LTE’s journey from conception to delivery will be significantly less than 2G and 3G technologies that preceded. Plus, he says, LTE will be around for a long time. “The standards were nicely written to accommodate voice, data and multimedia. It will take eight to 10 years just for the technology to be deployed on a broad basis around the world and, even by that time; you’ll still have room for growth. With improvements, it will be around for 15 – 20 years,” he says. □