



Advisory Report

2007: What Lies Ahead in Wireless Networks

Peter Jarich

Research Director, Telecom Infrastructure, Mobile Networks and Carrier Core

January 3, 2007

■ Summary

Issue

From a sentimental perspective, the holiday season represents a time to look back on the achievements of the past year while basking in the promise of the year that lies ahead. From a technology perspective, the same pretty much holds true.

That's correct; the end of the year is a favorite time for making predictions. In turn, "What can we expect from wireless networking in 2007?" is a question that will doubtless be asked and answered many times over in the next few weeks of the new year. The interest is understandable. End users want to know what they can look forward to. Operators want to know what to expect and what they should start planning for. Vendors want the reassurance that their R&D dollars are being spent in the right places.

So, with 2006 behind us, the question bears repeating, "What can we expect in 2007 as mobile networks and mobile services continue with their ceaseless evolution?"

■ Current Analysis Perspective

As one year turns into another, there is no shortage of pundits espousing their hopes, dreams, and expectations for the near-term of wireless networking.

With the luxury of looking at the wireless infrastructure market from a 50,000 foot level, we have our own expectations. Some will be fairly obvious to anyone who followed wireless in 2006. Others, however, track particular niches within the market. Others, still, treat topics of recent controversy. In a recent RCR Wireless column, I outlined a number of these predictions. What follows is a recap, including additional insights...and food for thought.

- **Mesh Fall Out - Not.** Muni WiFi is an undeniably hot market. It's also a very crowded



Current Analysis

Outsmart your competitors

Report:

2007: What Lies Ahead in Wireless Networks

market on the vendor side. This makes it one of those markets where everyone is waiting for suppliers to start dropping like flies. Well, it probably won't be happening in 2007. Yes, you could easily count a dozen vendors chasing an uncertain market opportunity. However, that uncertainty (i.e., the possibility of a huge opportunity) will encourage VCs, boards, and chief strategy officers to keep R&D and sales efforts alive...at least for one more year.

- **WiMAX Consolidation.** Like metro-scale WiFi, the WiMAX market is over-populated. Unlike metro-scale WiFi, it's got even more players – small and large, chipset and equipment, infrastructure and device. What's more, major WiMAX networks will require much more than access nodes: deployment support, BSS/OSS solutions, transport, and IMS in the core. Many of the smaller vendors now targeting WiMAX have been around for years. Some are approaching their fourth or fifth round of funding. Not all will be around for the next holiday season.

- **CDMA Femtocells.** We've said it. Others have said it. Femtocells are a warming topic today. They're likely to be a hot topic next year. Yet, while there are lots of femtocell vendors in the market (five announced, at last count), none are targeting the CDMA market. This isn't particularly surprising given the larger global GSM/UMTS opportunity. Of course, to the extent that the femtocell model is compelling, CDMA operators want in on it too, and they won't want to be too far behind their GSM-track brethren. Though picoChip and Dekolink Wireless have hinted at a solution, nobody has stepped up to the plate by announcing a product...much less trials or deployments. My money, however, is on DO-specialist Airvana to help make it real (it has even got IMS assets to support a core integration story).

- **CDMA Survival.** On the topic of CDMA2000, the big news in 2006 was about CDMA potentially losing ground to GSM/UMTS. In a game of bluster-tag, the GSA noted how operators are giving up on CDMA in favor of GSM/UMTS...followed by the CDG noting that GSM operators are rolling out CDMA. Nobody in their right mind should expect to see CDMA wither away in the next few years (major operators have just spent lots of money on network upgrades and I still have two years left on my contract!). The real question, however, is how scale and momentum will impact the plans of greenfield operators, the pace of CDMA-based innovation, planned upgrades to 3G (today), and anticipated upgrades beyond 3G (LTE vs. UMB).

- **LTE & UMB Demos.** Last year, vendors began talking about LTE and EV-DO rev. C (re-branded by the CDG as Ultra Mobile Broadband - UMB). In part, these 3G evolutions are an obvious reaction to the momentum behind WiMAX. In part, today's 3G vendors just want customers and prospects to know what comes next. Prototypes have been promised for 2007. Unlike optimistic promises in years past, they will come to pass; the R&D is in place, we've seen initial demonstrations and the threat from WiMAX has not abated. In particular, it will be very important for the CDMA industry to prove its mettle since, beyond 3G, a flat IP core makes it easy for CDMA operators to move to OFDM-based technology like WiMAX or LTE while leveraging a common IP core. Just ask Sprint.

- **IMS Apps, Really. At its core, IMS is about applications:** rolling them out, managing them, and leveraging a common set of enablers (location, presence, etc.). For the past two years, however, IMS has been less about application rollout and more about network development. In part, you can blame this on the need to germinate applications and garner device support. Regardless, operators want to start making money with (not just spending money on) their IMS networks while preparing to compete with aggressive cable and fixed-line telcos. Based on this year's network tests, video sharing is likely to be one of the first

Report:

2007: What Lies Ahead in Wireless Networks

mainstream consumer applications.

- **3GPP Evolution – More Than Just LTE.** Years before we all start talking about them, the 3GPP – driven by operators and vendors - starts work on new technologies. Consider LTE, IMS, HSPA, and multicast video. Of course, once vendors get the technologies built, they want to talk about them. Again, LTE is high on everyone's lists of hot topics for 2007. Yet, System Architecture Evolution (SAE) and Evolved EDGE should also make it into the mainstream this year. SAE – essentially, an access-agnostic packet-based mobile core – goes hand in hand with LTE, but the application of all-IP networking for current 3G networks is bound to get attention. Evolved EDGE is about squeezing as much life as possible from existing networks. Vendors have been talking about it for a while, but with deployments possible in 2008, demos and messaging needs to begin in 2007. With promises of HSDA-like spectral efficiencies, the interest is out there.

- **NSNSN = No Stopping Nokia Siemens Networks.** Nokia Siemens Networks (NSN) – the networks JV between Nokia Networks and Siemens Communications – was set to begin operations on January 1st 2007. Then, news of a potential corruption scandal at Siemens Communications broke. Logically, Nokia moved to slow down the process while an investigation explored the extent of any wrongdoing and its impact on Siemens' operations. Illogically, some analysts began suggesting that NSN could be called off. Yes, Nokia could move to renegotiate the JV's terms. It could even move to cancel the deal. However, the basic need for scale and a product portfolio that stretches from wireless through fixed products remains intact for Nokia. Given the clear value of NSN along with the time and resources both have put into the deal, a complete cancellation is unrealistic.

- **A Less Threatening Chinese Threat.** 2006 will be heralded as the year in which Chinese telecom vendors made real inroads in wireless. More precisely, it was a year for credibility building. Huawei closed a UMTS network deal with Vodafone in Spain and a broader deal with Vodafone for 3G devices. ZTE trumpeted a "leading" position with new CDMA rollouts. Both vendors closed deals in the highly competitive U.S. market. This might seem like a frightening prospect to most established wireless vendors. Instead, 2007 should prove that the Chinese are just new competitors, not super-competitive vendors with a super-natural market advantage. UTStarcom proves that low-cost R&D is not enough to support a successful, sprawling product line. Emerging market deals prove that 2G and 3G incumbents are preparing to match the pricing of their Chinese counterparts.

- **Operators Find Their Voice?** Traditionally, vendors have driven the pace and makeup of technology evolutions. The WiMAX Forum and Next Generation Mobile Networks (NGMN) initiatives both promised to change that. In the Forum, operator participation has famously impacted certification plans (the makeup of certain profiles). NGMN, in turn, promises to get a consensus on what major operators want from their 4G networks. The shift is intriguing – logical, even. With standards nearly set and networks being built, will input continue to flow? If so, will it matter?

Recommended Actions**Vendor Actions**

- Given an ongoing fraud investigation, Siemens must be willing to make concessions on its JV agreement to move the deal forward. Nokia, like any responsible company, has

Report:

2007: What Lies Ahead in Wireless Networks

delayed the formation of NSN while a, “compliance review” takes place. The assumption is that Nokia could place additional conditions (financial or otherwise) on the deal. Moving forward with promised NSN synergies – and customers who have put purchase decisions on hold – may require Siemens to bend.

- If not already planned, Airvana should consider the development of an EV-DO femtocell. It's got the EV-DO know-how and, with its existence tied to EV-DO, it needs to tap all available market opportunities. More importantly, a solid femtocell offer would require Airvana to pull in CDMA2000 1x assets and build partnerships with new silicon vendors; it would have to move quickly to get this entire process underway.
- Qualcomm and the CDMA Development Group need to spend 2007 explaining the technical benefits of UMB vs. LTE. With LTE as a follow-on to UMTS, it should enjoy the WCDMA's scale benefits. Based on a flat IP core, it should also be possible for CDMA2000 operators to evolve their networks in this direction...and enjoy the same scale benefits. To combat this move – and protect the value of its IPR – Qualcomm must explain how UMB is the best option for 4G. In the process, it could actually drive HSPA evolutions in an unexpected direction.
- Nokia Siemens Networks should consider a push on Evolved EDGE messaging in 2007. Once NSN starts business, it will be busy with product line and organizational rationalization. It will also be important for the new JV to prove that it's looking forward, ready (and able) to leverage its combined assets to meet new operator demands. Given Nokia's past messaging and NSN's position in GSM, Evolved EDGE seems like a natural focus.
- Smaller WiMAX vendors should move to differentiate themselves through regional or vertical market efforts. Most legacy fixed-wireless vendors have “bet the farm” on WiMAX. Still, competing with entrenched 2G and 3G vendors will not be easy. To avoid being consolidated out of the market, untapped markets – new geographies or new applications – could yield much needed momentum. If nothing else, this momentum could make smaller vendors more attractive as acquisition targets when consolidation does begin.
- Huawei and ZTE need to re-focus their telecom R&D efforts. Each company targets literally dozens of markets, with hundreds of products. Trimming portfolios would likely result in a smaller revenue base, but allow them to focus R&D more tightly on the remaining markets – making success in those markets more likely. Given the competitive nature of the market, device businesses are probably a good place to start.

User Actions

- Nokia and Siemens customers need to plan for the NSN JV to get formed during Q1 2007. The ongoing Siemens fraud investigation may delay the inevitable. However, given the time and effort both vendors have committed to the JV, it is nearly that – inevitable. At the same time, customers also need to closely track the Siemens investigation in order to gauge the timing around NSN.
- 3G operators considering WiMAX launches need to consider waiting for the advent of LTE. On many fronts – performance and technical basis – WiMAX and LTE have a lot in common. Clearly, WiMAX has a time to market lead. LTE, however, will be better positioned to support an integration with 3G networks, including voice and mobility capabilities. Unless market demand for data rates beyond 3G is overwhelming, LTE may be

Report:**2007: What Lies Ahead in Wireless Networks**

a better option.

- Regardless of the timing behind LTE, 3G operators should not get too caught up in potential 4G evolutions. Obviously, 4G networks will support new applications that today's 3G applications cannot – or, at least, similar applications at a more reasonable price point. Having built out 3G networks, however, operators still need to make a return on these investments by focusing on data applications that today's networks will support.
- CDMA2000 operators need to start conveying any interest they have in femtocells – loudly. The market's focus on GSM and WCDMA is a function of market size. CDMA operators could benefit from femtocells as well. However, vendors need to jump onboard. More importantly, they need to do it soon if they hope to keep CDMA operators from trailing GSM-track competitors for long. Given its reliance on EV-DO, Airvana is probably the best vendor to pressure in the near term.