

Analysis - Technology Neutrality or a Monoculture in Networks?

By Keith Mallinson Monday, April 14, 2008

CTIA SPECIAL EDITION - APRIL 2, 2008

Wireless can't afford to have just one standard. Open standards will energize the industry.

This is the first article in a 2-part discussion of openness. I will start by examining openness in network technologies with the trend toward an increasingly dominant GSM family of mobile standards, including WCDMA, HSPA and LTE.

Mobile technologies are subject to massive economies of scale in development, manufacturing and network deployment, including roaming at home and abroad. These commercial facts of life, coupled with mandatory standards for licensing in key geographies have given the GSM technology family an unassailable lead. It is, however, also vital that the market remains open for alternatives such as WiMAX, TD-CDMA, EV-DO and UMB.

Since the early days of telecommunications, standards have been essential so that the original concept of universal service – that all phones could talk to each other – could be achieved. But what exactly are open standards, and what are the implications for open and non-open standards on competition, innovation and customer choice?



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According to the ITU:

“Open Standards” are standards made available to the general public and are developed (or approved) and maintained via a collaborative and consensus driven process. “Open Standards” facilitate interoperability and data exchange among different products or services and are intended for widespread adoption.

The concept of collaboration and consensus is relatively new. Many different national standards proliferated with incompatible network and terminal equipment worldwide for most of the 20th century.

AT&T broke up in 1984 and similar carrier deregulation followed in Europe and Japan. By the turn of the century, carrier competition was virtually everywhere.

Competition in services brought change in technology supply. Globalizing standards became a key basis of competition. Digitization of cellular in the United States introduced TDMA, CDMA, iDEN and GSM. Standards bestowed significant commercial power on their contributors. Ericsson and Nokia have benefitted most as the dominant GSM standard evolves with WCDMA to HSDPA and LTE.

Market forces have eliminated TDMA, and iDEN's sunset is in sight. New technologies, including WiMAX and TD-CDMA, have emerged to take their place as differentiated alternatives to mainstream cellular. Their coverage is inferior, but they have advantages due to lower costs, higher throughput or lower latency than some cellular technologies in service.

No single body can determine what the market needs next: Only open competition among technologies and standards can determine that. The potential for innovation never runs out. In the future, successful new network technology innovations may be less about new modulation techniques and more about beam forming, smart antenna arrays and intelligently co-mingling macro, micro and femto cellular usage.

Market forces always will seek to expand the basis of competition to include new technologies and new business models. For example, one day Microsoft's PC operating system monopoly will surely fall. This might be to Apple's desktop OS, to network-based applications and services delivered by upstarts such as Google or from something entirely new.

No two technologies are quite alike: This allows for differentiation and specialization. GSM is unmatched in roaming. WCDMA and CDMA2000 share many commonalities, however, the 1.25MHz channelization for CDMA has enabled CDMA 450 to capture a unique position with excellent propagation where spectrum is too limited for the 5 MHz channels required by GSM or WCDMA. Some frequency band and unpaired spectrum allocations are helping WiMAX.

Competition among standards should be encouraged. There's a marketplace for the intellectual property to make the standards and for the sweat and toil to develop, test and deploy compliant equipment. Reducing or eliminating choice among different standards increases the potential for anticompetitive behavior and abuse.

Technology licensors might seek to overprice their contribution, or licensees might collude to minimize royalties. If standards have to vie with each other for success, there is less scope for skullduggery because the abused can defect to other standards.

Qualcomm CEO Paul Jacobs warned of dangers with monoculture in his keynote speech at the Mobile World Congress in Barcelona, Spain. It would indeed be stifling for there to be just one mobile standard. Open standardization should allow and encourage more.

In my next column, I will examine the effect of open software initiatives on applications development and handset competition as well as how open access to wireless carrier networks might enable new services, alternative operators and business models.

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