

Two Steps Forward, One Step Back

CDMA has experienced its share of ups and downs during the last decade. But 'brilliant' public relations have given way to results.

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Ten years. In the scheme of things, it's a very thin slice of time, yet the landscape of wireless has changed extraordinarily over the past decade.

Back in the early 1990s when George Bush Sr. was president and TDMA and GSM networks were predominant, there was seemingly little room for a new digital air interface.

But AirTouch Communications executive Craig Farrill thought differently. Farrill turned to Perry LaForge, a high-tech consultant at Pittiglio Rabin Todd & McGrath, for help. Putting their heads together, they determined code division-based technology, which encodes multiple conversations per assigned 1.25 megahertz frequency, would be a good alternative to GSM and TDMA's traditional time division-based technology that allows only one conversation per channel. Researched in various countries for years, CDMA had many flavors; they settled on the little-known IS-95 from Qualcomm.

Soon, they realized that to adequately promote the technology, something more formal was needed. In August 1994, the CDMA Development Group was launched in San Diego with 17 founding members, composed of both carriers and manufacturers. Not surprisingly, Qualcomm was the prime mover on the vendor side. PRTM was hired for CDG administration. LaForge became executive director, a post he still holds.

Since then, CDG has grown to 119 members. Its activities include education, internationally promoting CDMA and evolving the technology and standards. CDMA's 71 million subscribers are second in number only to GSM. Not bad for a Johnny-come-lately.

But how has CDG contributed to CDMA's expansion? And how, in the process, has it become the group some folks love to hate?

Carriers And Vendors Team-up

From the beginning, CDG was designed to include manufacturers along with carriers. An executive board of operators sets the tone and direction, says Ted Hoffman, Verizon Wireless vice president of technology development and former CDG board member. Under the executive board, a carriers-only board lays out specific challenges, requirements and needs, such as features, phone development and third-generation activities. A global board of carriers and vendors addresses those development issues. "It's a very open and frank discussion," Hoffman says.

With everyone at the same table, it's easier to maintain a cohesive technical vision, says Oliver Valente, Sprint PCS chief technical officer and CDG treasurer. "It's [also] really helped us drive the CDMA evolution a lot quicker than some of the other technologies have evolved."

By September 1995, Hutchison Whampoa Ltd. in Hong Kong had deployed the world's first CDMA network. South Korea's Shinsegi Telecomm Inc. soon followed.

Early on, CDG was an information distribution point for operators considering CDMA. It also served as a kind of support group. CDMA met hostility from many European vendors and ETSI, the European standards body. And like any new technology, CDMA had bugs to work out. Both the Hong Kong and Korean networks performed poorly. Handset shortages were another obstacle.

Unfortunately, CDG and its members exacerbated the problem. "Underpromise and overperform" weren't in their vocabulary. Credibility was strained. Some viewed CDG as an extension of Qualcomm's marketing department.

In 1996 LaForge told Wireless Week that CDG would never be "lobbying, per se. Our main goal is to get the facts on the table." But the following year, Stanford University professor of electrical engineering Don Cox told Global Telephony, "CDMA is a religion. You don't get facts, you get 'I believe.'"

By 1998, with more systems deployed successfully, CDMA was gaining credibility. The development group "served [its] function in bringing the whole CDMA story out in the forefront," says Jane Zweig, executive vice

president at Herschel Shosteck Associates. "They're brilliant at public relations."

The GSM and TDMA groups "have had to sprint to catch up with the marketing savvy that CDG has in getting the word out on CDMA," adds Bryan Prohm, a senior analyst with Dataquest.

Regulations And Standards

Working with regulators and standards organizations is a primary CDG function. The group has been active in consolidating global carrier requirements into the standards process, including IMT-2000, says Jim Takach, CDG's director of advanced systems. Today, CDG focuses on third-generation technology, educating operators on what 3G will offer and what the path is to getting there from where they are today, he says. It also is encouraging development of data-only systems, such as 1xEV.

According to Hoffman, CDG was a prime mover in the harmonization process between the CDMA-based cdma2000 and wideband-CDMA 3G standards, proposed by CDMA and GSM proponents, respectively. "We didn't get the single standard, but I think we got to a standard that can be implemented in a single chipset, which reduces everybody's cost moving forward."

Breaking Into Europe

Europe is CDMA's toughest market. Analysts agree that GSM carriers—the bulk of the European market—likely will take a different route to 3G than their CDMA counterparts. Strategis Group Senior Vice President Elliott Hamilton expects most IS-95 operators to migrate to 1XRTT technology and then to Qualcomm's High Data Rate technology or cdma2000.

European operators who don't win 3G licenses can use Motorola's 1X, Takach says. "There are other solutions and that's a message we've been trying to get out."

The CDG also is addressing NMT450 analog players in Scandinavia, Eastern Europe and Russia. "These European operators aren't as big as the GSM ones, but they do have the opportunity to be the first to market with 3G," Takach says, adding that this year the NMT450 Forum approved 1XRTT for standardization.

Asian Testing Grounds

Asia has always been at the forefront of commercial CDMA deployment. Half of CDMA subscribers-33 million-are in the Asia-Pacific region, with Korea home to more than 25 million.

"Asia is a litmus test of where the technology's going," says Terry Yen, CDG's Asia-Pacific director. "You're going to see a lot of technical milestones."

Last October Korea's SK Telecom launched the world's first commercial 1XRTT system. Japan's KDDI will deploy a 1X network next fall. Yen expects Australia, New Zealand and China to have 1X systems before the end of 2001. Many Asians will first use the Internet on a mobile device, Yen says.

The development group has coordinated information about CDMA technology, provided a forum for operators and vendors to work together and helped to bridge North American and Asian markets for best practices. The Asia-Pacific region did not have the technological conflicts and powerful incumbencies of Europe or North America, he says. "Asians just deploy what makes sense."

China Unicom committed to CDMA networks covering 250 cities and 40 million people by 2003.

Despite deploying one Baby Bell's worth of lines annually, China's teledensity remains around 10 percent, Yen says. "The economies of scale is what this is all about." With 10 million subscribers in 18 months, he believes handset costs could decline by \$1 each or more.

"What we've done [in China] is be supportive of members of industry who've provided hardware for us," Yen says. Last month a CDMA-GSM subscriber identity module card and compatible phones were announced for use by China Unicom. The Chinese also are reportedly working on a homegrown version of CDMA.

Latin America's Growth

Latin America is CDMA's fastest-growing region. Subscribers number 10 million vs. 300,000 two years ago, says Guillermo Fornaresio, CDG's director of Latin America. TDMA operators have approximately double that number. But as Fornaresio points out, TDMA was the region's only option until 1995. The first commercial CDMA networks launched in Puerto Rico and Peru in 1997.

BellSouth, Telefonica, Telecom Italic, France Telecom and Bell Canada have huge stakes in Latin America. The CDG works with both local markets and corporate headquarters, and decisions usually are made jointly, Fornaresio says.

With Latin America's history of state-owned phone companies, CDMA carriers often compete with TDMA-based incumbents. The CDG's most effective message today, given the region's economics and densely populated urban areas, is that evolution to 3G via CDMA is less expensive and more spectrum efficient, Fornaresio says. He also says Venezuela, Argentina and Brazil plan 1XRTT trials during the next year and he expects some operators to be commercial by 2002.

What's Next?

Hoffman views CDG's accomplishments with pride: "It's almost meritorious to think we could hate each other so much outside the room and love each other so much inside." Vehement competitors have worked through CDG "for the common good of the overall industry," Valente agrees.

But with convergence ubiquitous, how relevant is CDG or any air-interface association? Hoffman believes that some day-long after he retires-there will be one group, but today's associations still will handle legacy issues and technology development.

Standards development, regulatory activities, industry education and outreach will continue, Takach says. "We're going to continue to work with our operator members to develop the technology so that there's continuous improvement."

"We don't rest," LaForge declares.