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## Wireless Networking May Soon Get Faster. Will Anyone Care?

By [MARTIN FACKLER](#)

CHEJU, South Korea — On this volcanic island at the tip of the Korean Peninsula, where kings once exiled dissidents and tourists now flock to casinos, South Korean engineers recently unveiled a prototype of a wireless network that they hope will revolutionize Internet access.

In August, Samsung, the South Korean electronics company, gave the first public demonstration of its version of the network. One day, the company and others in the industry hope, the network will let users open a laptop anywhere and, without attaching a cable or looking for a [Wi-Fi](#) hot spot, immediately surf the Internet or download music and movies as fast as the fastest broadband.

But while Samsung and other companies like [Intel](#) and [NTT DoCoMo](#) of Japan are spending heavily in a race to control crucial aspects of this evolving new technology and to promote it as the next wave in Internet access, its future is far from certain.

Many in the industry seem split over whether the technology, known as fourth-generation wireless, or 4G, will usher in a new era of instant Internet availability or become a multibillion-dollar flop. Skeptics, many of them on Wall Street, point to a string of previous failures to turn wireless, still predominantly used for speaking on cellphones, into a challenger in the market for Internet access services. The market in the United States for Internet access — cable modems, D.S.L. and other methods — is worth up to \$60 billion, said Bin Shen, a vice president at [Sprint Nextel](#) in charge of commercializing the new service.

Skeptics say the biggest danger is that the new system, while an engineering marvel, is not something that consumers will actually use. They say the sort of nationwide wireless networks being envisioned will be expensive to build and that the cost will probably get passed down to users in high fees. Fixed-line access like fiber optics and cable modems, they say, will continue to be cheaper, faster and more reliable.

“Four-G is just much ado about nothing,” said Edward F. Snyder, an analyst at Charter Equity Research. “There’s no business model here, just a lot of marketing and hot air.”

Even proponents are having a hard time defining exactly what they mean by 4G. About the only thing most agree on is speed: to be considered 4G, a network must be able to transmit a gigabit, or 1 billion bits of data, every second. That is fast enough to download an entire movie in under six seconds.

The name comes from the wireless industry’s fondness for talking about technologies in terms of generations. First generation refers to analog cellphones two decades ago; second, the first digital cellphones in the early 1990’s; and third, the faster networks that emerged in Japan and South Korea around 2000 but have not done as well in the United States and Europe.

Despite the uncertainties, some of the world's biggest electronics companies are already rushing to get a piece of the 4G pie. Analysts say companies are scrambling to develop and patent the basic technologies and standards — and thus earn royalty income as the technology takes off. They also want to stake their claims ahead of next year, analysts said, when a global body of telecommunications regulators meets in Geneva to set the first standards for 4G.

While the effort is still in its early stages, two competing 4G standards have already emerged.

One is championed by NTT DoCoMo, [Qualcomm](#) and European companies like [Ericsson](#), and is a modification of existing cellphone technology to move data more quickly. NTT DoCoMo, Japan's largest wireless carrier, says it reached 4G-level transmission speeds in a field test in 2003. The company has gotten support from the Japanese government, which made leadership in 4G a national goal as early as 2001, and has poured millions of dollars in public money into research.

“Now is the time when companies are hurrying to grab 4G territory,” said Yuji Nakamura, deputy director of the mobile communications division at the communications ministry.

The other camp is led by Intel, the chip maker, which promotes a standard for wireless broadband called WiMax. Intel says it has invested hundreds of millions of dollars — it will not reveal exactly how much — in developing WiMax and 4G-related technologies in hopes of supplying the world with the semiconductors that will allow computers and other devices to access future networks.

Siavash M. Alamouti, chief technology officer of the service provider business group at Intel, dismisses the contention that consumers will not embrace wireless access to the Internet because they already have fixed-line access.

“That's like saying you don't need a cellphone because you have phones at home and in the office,” he said in an interview.

While Intel is moving quickly into 4G, Mr. Alamouti said, it is not gobbling up patents to shut out other companies. Instead, he said, Intel wants to encourage more companies to join the WiMax group by capping the royalties at about 2 to 3 percent of the price of the equipment they sell. That is about half of what its rival, Qualcomm, now charges for use of its technology, which is at the heart of many cellphones. Cheaper royalty fees would lower the price of equipment, making it more affordable to consumers.

Another front-runner in the WiMax camp is Samsung, which moved aggressively into 4G as a chance to shake its image as a low-cost technology imitator. Two years ago, the company started assembling a team of 170 engineers, most with doctorates from top universities in the United States. It says it has since spent more than \$100 million on research and building a prototype.

Samsung expects that spending to “go way up,” Lee Ki Tae, president of Samsung's telecommunications division, said in an interview. “In the past, we were behind in intellectual property. In the next generation, we are trying to be ahead.”

To showcase its leading role, Samsung gathered 50 industry executives and academics on Cheju island for a conference on 4G. A highlight was Samsung's first demonstration of a working 4G prototype, which

included a ride on a bus to show that the system functioned over distance and while the user was in motion.

The technology appeared to get a boost when Sprint Nextel announced in August that it would spend up to \$3 billion to build what it called a 4G network, using technology from Intel and Samsung as well as [Motorola](#). The network is intended to reach 100 million Americans by the end of 2008.

“We believe the Internet will be like air, something you want everywhere you go,” Mr. Shen of Sprint told the Samsung 4G conference.

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