

Broadband and Mobile  
Communications:

## The Always-On World



Michael Rogers

It is amazing to think that just 25 years ago, the mobile phone was exclusively the possession of elite business people. It was a rare and costly device whose ownership caused otherwise reasonable individuals to call their friends simply to say: “You’ll never guess where I’m calling from! I’m in a car!” – or riding a train, or on a sidewalk, or anywhere else it had previously been impossible to place a telephone call. It seemed almost magical.

Now the magical device is commonplace. The first mobile phone that was the size of a brick and cost two thousand dollars is now nearly as thin as a credit card and sometimes inexpensive enough to be disposable. It is so fundamental to daily life in the developed world that surveys show young people would rather be deprived of television and radio than their mobile.

More of us expect not just voice from our mobile devices, but all the services of the Internet as well. Wireless broadband is becoming mainstream – giving us iPhones and netbooks, mobile e-commerce and handheld video conferencing, with new applications appearing daily. Mobile devices plus wireless broadband have enabled anywhere-anytime personal entertainment, productive work outside the traditional office setting, and even new kinds of social interaction based on texting, IMing and location detection.

But there is an old saying about the future – that while we may overestimate the impact of technology in the short term, we actually underestimate its impact in the long term. But considering how much has already happened in just 25 years, what kind of impact might we still be underestimating?

The answer may be the transforming nature of true Internet ubiquity – that is, a world based on the certainty that wherever you are, you are constantly connected to the Web and its services, often even without knowing it. Once Internet access becomes truly ubiquitous – as taken for granted as electric lights or running water – it becomes as much a fundamental part of infrastructure as bridges, roads and tunnels.

Truly ubiquitous wireless broadband will be much more than a media and communications platform. It will become the nervous system of civilization, enabling a thin mesh of always-on intelligence that coordinates and facilitates every aspect of human life. It will enable the machine-to-machine connectivity sometimes called M2M. M2M means that inanimate objects – everything from automobiles and bridges to soft-drink vending machines and billboards – will be packed with smart wireless sensors and constantly in contact with each other, exchanging information and coordinating actions.

These behind-the-scenes intelligent applications already exist. In Italy, for example, one town has “intelligent” garbage dumpsters that are able to signal to the garbage collection truck whether they are full or empty. If empty, the truck doesn’t need to stop and block traffic for an unnecessary pickup. Or consider a new bridge under construction in the American Midwest, which contains thousands of tiny wireless sensors which constantly signal not only dangerous icing conditions but also report the condition and safety of the bridge’s steel girders and concrete pilings.

Those examples are just the beginning of the distributed intelligence that ubiquitous wireless broadband will make pos-

sible. Everything from our automobiles to the way we walk through an unfamiliar city will depend on wireless broadband – and the day will come when losing one’s Internet connection is as serious as losing electricity or running water.

What does this vision of ubiquitous Internet mean for the developing world? It only increases the importance of establishing robust wireless broadband systems. Until recently, the value of a wireless network has been the introduction of voice and texting services. And these are indeed invaluable capabilities – for example, a farmer can use a mobile phone to check crop prices at various markets, thereby learning where his harvest can earn the most money.

But services beyond voice and text can follow on very quickly. Mobile banking is already spreading in the developing world, and better connectivity will rapidly increase the opportunities for otherwise isolated communities to save, spend and borrow capital. Wireless broadband will also open the door to mobile health applications – local nurse-practitioners will be able to see patients and then consult with doctors from a distance. Ultimately, the same digital networks will transmit diagnostic information, so that a patient’s vital signs can be sent instantly to a hospital hundreds of miles away for consultation.

It’s important to keep this broader impact in mind, because when resources are scarce, development agencies may argue that there are more pressing priorities than wireless broadband. And, of course, humanitarian efforts are profoundly important. But wireless broadband should be regarded as an infrastructure improvement as fundamental to a nation’s success as roads and electrical grids.

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Moreover, wireless networks can also attract private funding, particularly when there is also government or NGO support. In recent years investors have started to focus on marketing to the citizens of developing countries – the category sometimes called “the next billion.” With gradually rising incomes worldwide, coupled with innovations like micro-finance, these markets are now seen as both promising and profitable.

Wireless networks are also becoming more economical to deploy. After some years of manufacture, costs are dropping for both 3G base stations and handsets – with the latter at prices under USD 10. Those years of development have also created mobile devices with extremely low power requirements. In the developed world that gives “road warriors” maximum battery life. But in areas without electricity, it means these devices can be powered and recharged with alternative energy sources such as solar panels or human-powered generators.

Finally, wireless projects will also offer opportunities for local small business, to sell handsets or wireless time. And soon after that, indigenous startups will arise to provide online services tailored to local needs. Then perhaps someday, the next great Internet business idea will spring up somewhere in east Africa or in the hilly countryside of Thailand.

Sounds impossible? Perhaps as impossible as it would have seemed, twenty-five years ago, that the bulky mobile phones in the briefcases of the Western elite might become a featherweight device tucked into the sash of a Kalahari goat herder.

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#### About the Author

Michael Rogers is an interactive media pioneer, author and journalist. He recently completed two years as Futurist-in-Residence for The New York Times Company. He consults regularly with both Fortune 500 and startup companies, and also writes the *Practical Futurist* column for MSNBC. Previously he was vice president of The Washington Post Company’s new media division, helping guide both the newspaper and its sister publication *Newsweek* in the new century, as well as editor and general manager of Newsweek.com.