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Extreme Telecom: Mobile Networks in Africa

Equipment vendors like Nokia and Ericsson are big in Africa, but face challenges such as lack of electricity and the multiplicity of languages

by Jack Ewing

Piotr Labuszewski, East Africa area manager for handset maker Nokia ([NOK](#)), would seem to have the sales territory from hell. In some of the countries for which he's responsible, such as Somalia, AK-47s are as ubiquitous as cell phones. Even the more stable countries such as Kenya or Tanzania offer little in the way of modern infrastructure outside the big cities.

Yet Labuszewski is not alone in his enthusiasm for the potential of the local market. "The cell phone market is exploding," says the Polish-born Labuszewski. That's no exaggeration. The number of subscribers in Africa has grown an average of 50% a year since 2001, to some 200 million. And with the penetration rate still only about 20%, industry players see [plenty of growth ahead](#) (BusinessWeek, 9/13/07). "We're halfway, as I see it," says Thomas Sonesson, managing director of East Africa for Swedish equipment maker Ericsson ([ERIC](#)). "What we have done in the last 30 years we will do in the next four."

The untapped market for mobile service in Africa is huge, but—as in developing regions of Asia and Latin America—it also presents a fresh set of challenges to service providers. The problems only grow as operators and equipment makers move farther away from big cities and into Africa's vast rural areas, where most of the people are. "We have malaria, HIV, earthquakes, war," says Sonesson, an Africa veteran, giving a partial list of problems. "The least challenge is the [technological] solutions—that, we have."

CREATIVE THEFT DETERRENCE

The first step for operators is simply establishing service by building cellular base stations. In some cases, poor roads mean that equipment must be transported to the site by helicopter. Because there is typically no power grid nearby, base stations in remote areas often require their own source of juice, typically a diesel generator—or two in case one breaks down. (Wind and solar-powered base stations are still in the experimental phase.)

Security also is a problem. In many regions the base stations require a fortress-like perimeter of electric fence topped with razor wire to foil theft of the generator and fuel, which are easily sold on the black market. Service providers have to think creatively to deter thieves. One technique used by Kenyan cellular provider [Safaricom](#), which is 40% owned by London-based Vodafone ([VOD](#)), is to equip remote base stations with power outlets where local people can recharge their phones. "In return, the local chief ensures security of the base station," says Safaricom Chief Executive Officer Michael Joseph.

Surprisingly, high-tech equipment accounts for only about 20% of the cost of a base station. More expensive are construction, transport, and ongoing power generation. All together, a rural base station costs about \$250,000, vs. \$200,000 in an urban area, primarily because of the lack of power and decent roads. So Ericsson is concentrating much of its research and development these days on ways to reduce those brick-and-mortar expenses. "A lot of our focus is on how to drive down the cost of site deployment, with smaller sites, fewer sites, lower power consumption.

These are the big cost drivers today," says Ericsson CEO [Carl-Henric Svanberg](#).

SOFTWARE IN LOCAL LANGUAGES

Once the cell-phone signal is out there, service providers and handset makers still have to establish distribution networks and attract customers. With 54 countries in Africa, most with multiple ethnic groups and languages, the complexity is enormous. "It's more fragmented. Even India is not as diverse," says [Kai Oistämö](#), Nokia's general manager for mobile phones.

Finland-based Nokia relies on local distribution partners to get its handsets to customers. "We are trying to localize as much as possible in every market," says East Africa chief Labuszewski. At the same time, the company does its own [extensive market research](#)

(BusinessWeek, 5/4/07), even employing anthropologists to study customer behavior. As new markets open up, Nokia rolls out handsets with software in local languages. The latest addition is Amharic, the dominant language in Ethiopia, which also has its own characters.

Ultimately, even the big multinationals rely heavily on the ingenuity and enterprise of local people to keep the cell phone system running. For example, across rural Africa, small-time entrepreneurs offer handset recharging services, often using a car battery or solar collector. In Kenya, the going rate is 20 shillings per charge, or 30 U.S. cents. Since many rural areas lack power, the recharging services constitute an essential element of infrastructure. In areas where the cellular signal is weak, some enterprising souls have built platforms high in the trees and accessed by rickety ladders. They charge customers to climb up where the signal is clearer.

"DESPERATE NEED FOR COMMUNICATION"

Service providers enlist local entrepreneurs to sell scratch-cards redeemable for pre-paid talk minutes, to operate communal village phones or even provide financial services. [Fast-growing Safaricom](#) (BusinessWeek, 8/27/07) has recruited hundreds of small-time retailers to act as agents for its M-Pesa service, which uses cell phones as conduits for money transfers. "We try to get grocers, chemists, gas stations—anybody who has cashflow and can make payouts," says Gerald Rasagu, M-Pesa agent manager for Safaricom.

Given that customers in retail areas are often people with incomes of a few dollars a day, all the effort might not seem worth it. But in fact cellular companies are even rushing into countries like the Democratic Republic of Congo, where decades of armed conflict have left the country—sub-Saharan Africa's second largest in terms of territory—with no road, rail, or landline networks to speak of. "It's probably the toughest place in the world to create a mobile network," says Keith Mallinson, a Massachusetts analyst who advises investors in service provider [Vodacom Congo](#).

Yet operators have discovered that there is a profit in Africa's countless villages. "There is a lot of potential in areas that seem to be poor," says Safaricom CEO Joseph. "People have a desperate need for communication."

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