Thinking INSIDE the Box

UI project addresses poverty of information worldwide

O n a recent visit to Cameroon, Leo Eko was sitting in an Internet café trying to open The University of Iowa's home page.

And trying is the word for it. Eko, who was born in Cameroon, a small country east of Nigeria, is an associate professor of journalism and mass communication in the College of Liberal Arts and Sciences. He already had spent a long time waiting in line to get inside the café. Now he found himself at an old computer with an Arabic keyboard, an outdated server, and a download rate that crawled at turtle pace compared to even the slowest U.S. dial-up modem.

He'd almost downloaded the page, when power in the café went out—and stayed out for the rest of the day.

Poor Internet access in Africa stems from many problems, according to Eko, whose main research interest is comparative Internet law and policy. Some problems are complicated, such as the continent's unreliable telecommunications infrastructure and unpredictable electricity suppliers. Other obstacles are frustrating, as when web pages aren't translated into African languages, making much web content irrelevant to Africans.

"This is the main means of connection between Africans and the rest of the world," Eko says. "It takes a lot of patience to use the Internet in many African countries, where the trick is to log on, prioritize, and prepare to be interrupted."

But Cliff Missen (above), director of the University's WiderNet Project, doesn't think it should be so tricky. For the past several years, he and his staff have been bridging the digital divide in developing countries.

The WiderNet Project, based in the School of Library and Information Science in the Graduate College, was launched in 2000. Since 2001, with the help of some 60 volunteers from around campus, the project has donated more than 1,000 computers for use at universities in Africa. But the computers aren't worth much if users can't afford access to the wealth of information available on the Internet.

"It's hard for us to imagine but people are literally starving for information," Missen says.

Missen hopes to change that with WiderNet's eGranary Digital Library.

Guided by its philosophy that "access to knowledge makes a world of difference," the WiderNet project has invented a new way to deliver information to the poorest people on the planet, Missen says. Already installed in 150 institutions in India, Bangladesh, and Haiti, the eGranary Digital Library, also known as "Internet-in-a-Box," puts educational resources at the fingertips of those without an Internet connection.

The library is a high-capacity hard drive—about the size of a paperback book—containing hundreds of web sites and compact discs. With specialized built-in software written by UI students, it looks and acts just like the Internet, complete with its own search engine.

It comes stuffed with five million documents, including entire books, encyclopedias, and even video and audio clips.

"We copy educational information from the Internet—with the publisher's permission—and then distribute these resources to schools, clinics, and libraries in the developing world, even in remote areas miles away from the nearest Internet connection," Missen says. "We're trying to serve the information-poor without making them poorer."

Some African universities are spending the equivalent of 24 full-time professors' salaries every year for a miserably slow connection to the Internet, Missen says.

"We hear this called the digital divide or the information divide, but it's really an economic divide," Missen says. "It's 50 times more expensive for an African to get the Internet than it is for you and me."

But for $500, schools can have an eGranary Digital Library that gives their students instantaneous access to millions of high-quality resources. Purchasers sign an agreement to keep the library available free-of-charge to anyone who has a computer and can connect to their local area network.

Missen first noticed the unfulfilled technological need seven years ago while teaching as a Fulbright Scholar in Nigeria's University of Jos, where there was no Internet access. His subject: computers and networking. Desperate for teaching materials from the web, he called home to Iowa and asked a graduate assistant to send him some web pages on CD-ROM.

"When we loaded the CD on the server and opened our first Internet page instantly, the swift response was mind-boggling for my students," Missen says.

Students in many poor parts of Africa might wait 10 minutes or longer for their computers to connect to an Internet site. But when they open web pages stored in their university's copy of the eGranary Digital Library, they have free, lightning-fast access to books, videos, audio, journals, and sites—without using one whit of Internet bandwidth.

"For those without an Internet connection, this library is a phenomenon," says Stephen Akintunde, deputy university librarian at the University of Jos. "Web pages open 5,000 times faster from the eGranary, and we save tens of thousands of dollars in bandwidth costs every year."

It's even possible for eGranary users to update their libraries without an Internet connection. Computers at the WiderNet Project headquarters, housed in the old *Daily Iowan* offices on the second floor of the Commu-nications Center, scan the Internet sites mirrored in the eGranary for changes. WiderNet staff package the changes for their subscribers, who can procure the updates through whatever means they find most convenient: the Internet, CD-ROM, DVD, flash memory, or even digital radio broadcast.

"The whole system is completely asynchronous," Missen says. "A physician can be in the field with her eGranary for months, but when she returns to town, she can update her entire library in a matter of hours."

The eGranary Digital Library is one component of the WiderNet Project. The project also trains computer technicians, provides cutting-edge research on information technology issues, and secures donations of new computer hardware and software—totaling $1 million to date.

There's always more to do to bridge the digital divide and reduce information poverty, says Missen, who developed a service-learning course on the eGranary library this semester for Iowa graduate students.

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Missen and his staff are working on adding an e-mail system to the eGranary server, and are seeking funding to grow the eGranary Digital Library to 10 million documents and to create additional versions in different languages and for low bandwidths.

WiderNet Project staff recently developed a 12-volt eGranary server that can run for days from a car battery and charge itself from a single solar panel. Inspired by situations in rural Africa where electricity is intermittent, as well as requests from those working in tsunami-affected regions of India, the 12-volt eGranary server uses a computer designed for police cars and other transport vehicles.

And the eGranary Digital Library even went to prison recently when it was installed in a test location in the Iowa Medical and Classification Center near the University's Oakdale Campus. Internet connections are prohibited in prison, but the eGranary library provides inmates resources for learning life skills, accessing legal texts, and preparing to reenter the workforce.

The WiderNet Project is now looking for people and organizations to sponsor libraries and computer labs in the developing world. The project is recruiting more volunteers to help catalog and organize the eGranary library, and continues to collect computer donations. Recently, computer hardware manufacturer Seagate Technology donated 20 large hard drives that will host the newest library.

"We see the organization going on as long as there's a need for information," Missen says.

—**GARY KUHLMANN**