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Baker Institute conference highlights digitally connected communities

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A project to connect Houston's Pecan Park neighborhoods to the Internet is intended "to empower underresourced communities through technology," said Rice Professor Ed Knightly.

Speaking March 26 at a James A. Baker III Institute for Public Policy conference on convergence and connectivity, Knightly explained the technical elements of the project in the Pecan Park community on Houston's east side.

The technical objectives are to set up low-cost, high-performance, pervasive wireless connections; provide applications that offer new quality-of-life opportunities; and develop a research platform that is programmable and observable, said Knightly, professor in electrical and computer engineering and director of the Rice Networks Group.

On the societal side, Jerome Crowder, assistant research professor of anthropology at the University of Houston, told the audience at the Baker Institute that the project emphasizes the needs of Pecan Park's residents. "From the ground up," he said, "we can begin to learn how people think about the Internet, about how people think about using technology on a day-to-day basis, because it's changing rapidly."

Crowder described how he distributed cameras to members of the community to use as a way to communicate what was important to them. He said he first used the technique, called photo elicitation, in Bolivia and Peru to work in collaboration with his subjects. Setting up a wireless network in a low-income section of Houston is an extension of the same principle, he said. "Why don't we let the folks who are using it in the different neighborhoods define what it means to be included digitally?" he proposed.

In the conference's keynote address, James Cicconi, senior vice president for external and legislative affairs at AT&T, gave a "wide-angle look at the broadband revolution." He noted the rapid expansion of broadband use, with an estimated \$72 billion invested annually and expectations that Internet traffic will increase exponentially by 2015. "Keeping that investment flowing



GEORGE WONG

At a conference on convergence and connectivity, Ed Knightly, professor in electrical and computer engineering and the director of the Rice Networks Group, explains his project to connect a Houston community to the Internet.

and growing has to be a priority for public policy concerning the Internet in America," he argued.

Another speaker, Joel Thierstein, associate provost for innovative scholarly communication at Rice and executive director of Connexions, described the Web-based document-creation and management system for education and research materials. He said the Internet has changed pedagogy by expanding who is learning, where they are learning and when they learn -- as well as the material itself. This "blended learning environment" is what Connexions is designed to address.

Trying to design a system that would meet the needs of the residents of Pecan Park presented a number of challenges, Knightly said. The questions posed included "How do we get PCs? How do we get training? How do we get Internet access? What are the applications that the community will use? And ultimately, what new life opportunities does that provide?"

The coverage area serves more than 4,000 users over three square kilometers. Knightly's team developed a system of custom platforms that is free to all users, creating a mesh network. Dozens of interconnected wireless transmitter/receivers, called nodes, were set up, often on antennae on private homes or businesses, to provide service over a wide area. Users connect to one of the nodes, and when their computers send or receive data from the Internet, the information is passed from node to node until it reaches a central hub that has a wired connection to the Internet.

The network was paid for by Technology For All, a nonprofit organization, and by a National Science Foundation grant to Rice University for developing wireless networking technologies for the future.

The results indicate that the people of Pecan Park have taken to the Internet as a way to address their individual preferences, Knightly said, from school homework to sporting events.

The March 26 event, called the "Conference on Convergence and Connectivity 2008: Broadband, Wireless and Mobile (CCC 2008)," was organized by Chris Bronk, Baker Institute fellow in technology, society and public policy. It was supported by AT&T, Microsoft, Rice University's Fondren Library and Rice University's Ken Kennedy Institute for Information Technology.