

@ The Wireless Rehabilitation Engineering Research Center, co-directed by Georgia Tech and the Shepherd Center, is helping open doors to people with disabilities. The Center's work is leading to new technologies, as well as policy recommendations.

# Widening the Wireless World

*Research center promotes accessibility to wireless technologies for people with disabilities.*

BY JANE M. SANDERS

The wireless world is gradually opening its doors to people with disabilities because of new research, policy and consumer demand.

Significant contributions to the research and policy components of that equation come from work at the Wireless Rehabilitation Engineering Research Center (RERC) co-directed by the Georgia Institute of Technology and Shepherd Center, an Atlanta-based rehabilitation hospital. Now in its second of two five-year federal grants, the RERC is seeing some fruits of its labor.

Later this year, a wireless captioning system developed at the Georgia Tech Research Institute (GTRI) and licensed by SightLine Media will debut in movie theaters across the nation for beta testing. It will offer new, unobtrusive technology to allow people who are deaf or hard of hearing to enjoy Hollywood's latest films.

People who are paralyzed and those who cannot speak have new opportunities to enhance their quality of life with wireless devices, as well. For example, patients with limited mobility can now control their iPods with a specially interfaced wireless remote. And those rendered speechless by injury or disease can now use their voice-augmentation devices, which synthesize speech, to make calls thanks to an interface designed to work with their BlackBerry wireless devices. Both advances are the work of researchers at Shepherd and Georgia Tech.



**ABOVE:** The new generation of "smart" cell phones, such as this one by Motorola, provides new opportunities to enhance quality of life.

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**ABOVE:** Leanne West, senior research scientist in the Georgia Tech Research Institute, demonstrates the wireless captioning system that will debut in movie theatres under the name "SightLine HotSpots."

On the policy front, the Federal Communications Commission included in a recent final rulemaking report a recommendation from the Wireless RERC that any new digital technology platforms must be accessible on various devices to give full access to people with disabilities.

"The Wireless RERC has been successful in promoting equitable access to wireless technologies for people with disabilities," says Helena Mitchell, co-director of the Wireless RERC. "We've been able to do so because we don't just do research and development, but we get information out to policymakers and to industry."

Mitchell is also the executive director of Georgia Tech's Center for Advanced Communications Policy, which oversees the RERC along with Mike Jones, Shepherd Center's vice president of research and technology. Funding for the RERC comes from the U.S. Department of Education's National Institute on Disability and Rehabilitation Research (NIDRR).

"Wireless technologies are growing in importance for users who are disabled and those who are not," Jones

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says. "We're excited to have continued funding so the Wireless RERC can do more to promote access to these technologies for everyone."

The concept that Jones alludes to is universal design — the idea that improving usability for people with disabilities will improve usability for everyone. It is a driving force behind the Wireless RERC's work, the directors say. As the RERC enters its sixth year, it is continuing initiatives begun in its first five years of funding and starting some new efforts, Mitchell notes. Here are some highlights of that work:

■ The Wireless RERC will create a gateway to send wireless emergency announcement messages, such as tornado warnings, to laptops, PDAs and WiFi-enabled cell phones. "People with disabilities would be able to receive emergency alert feeds in their devices that would pick up signals from multiple sources of emergency messages," Mitchell explains. "The major advantage is the messages would arrive in a format appropriate for each user."

■ In a related project, researchers are devising technology that enables people who are deaf to more efficiently use their mobile devices to access Enhanced 911 services — which automatically inform police of a caller's location. College of Computing Associate Professor Thad Starnier and graduate student Nirmal Patel envision a system that would open a regular voice channel to police via 911. When activated, the service — accessed by just the touch of a single button on a cell phone — would transmit a pre-recorded message to police letting them know the caller is deaf and in an

emergency situation. Then police could track the call and listen in on what's happening at the scene as they dispatch help.

■ In an extension of the wireless captioning technology, GTRI senior research engineer Leanne West is creating location-aware systems for airports, hospitals, museums and aquariums. These systems would augment the visits of venue patrons by sending location-relevant text, audio and/or video via the patrons' WiFi-enabled "smart" cell phones. It would benefit people with disabilities, as well as others, she says.

For example, at the Atlanta Veterans Administration Medical Center, West is working with researcher David Ross and his colleagues who are creating "Talking Braille Signs" to provide directions to patrons with vision impairments.

■ People who are blind are hindered from using cell phones because the interaction with them is largely visual. Users select actions from various menus on the cell phone display. But research led by Bruce Walker, an assistant professor of psychology and computing, is addressing how best to use sound to convey cell phone menus.

■ In a project expanded from the Wireless RERC's first five years, people who have disabilities are helping Shepherd Center and Georgia Tech researchers evaluate wireless products such as cell phones, for manufacturers who have requested this feedback. Researchers have partnered with the Web site myrateplan.com to provide some of this feedback and their cell phone usability testing results. They expect to have the information available on the Web site by late 2007.

@ Read more at: [gtresearchnews.gatech.edu/reshor/rh-w07/erc.html](http://gtresearchnews.gatech.edu/reshor/rh-w07/erc.html)



PHOTO BY GARY MEER

**ABOVE:** Georgia Tech graduate student Nirmal Patel and Associate Professor of Computing Thad Starnier, not pictured, are devising technology that enables people who are deaf to more efficiently use their mobile devices to access Enhanced 911 services.



PHOTO COURTESY OF DAVID ROSS

**LEFT:** At the Atlanta Veterans Administration Medical Center, GTRI researchers are working with researcher David Ross and his colleagues who are creating "Talking Braille Signs" to provide directions to patrons with vision impairments.