



Wheelchair-Mounted Mobile Robotic-Assisted Transfer System

The Patient Assist Robotic Arm (PARA, pictured) is University of Pittsburgh-developed and -patented technology which is licensed to [RE2, Inc.](#), which stands for Robotics Engineering Excellence, a local Pittsburgh-based small business. Since RE2's inception more than 10 years ago, the company has been developing and improving mobile robots used for dismantling explosive devices in far-off wars or safely clearing a meth lab's cache of weapons here at home.



Now, along with McGowan Institute for Regenerative Medicine affiliated faculty member [Rory Cooper, PhD](#), the FISA/PVA Endowed Chair and a Distinguished Professor of the Department of Rehabilitation Science and Technology, School of Health and Rehabilitation Sciences, University of Pittsburgh, RE2 is moving its robotic ingenuity into helping people with disabilities better navigate the logistics of a world not designed to accommodate them.

RE2 recently announced that the company has been awarded a Phase I Small Business Innovation Research (SBIR) grant from the National Institutes of Health to perform research and development of a PARA. The goal of this SBIR program is to engineer a practical solution to allow people with severe disabilities who require assistance (human or mechanical) to transfer to and from a wheelchair in their homes, homes of friends/family, and in the community (e.g., hotels, restaurants, shopping malls) in a safe, comfortable, efficient, and convenient manner.

The intent of this project is to conduct further research and development of the University of Pittsburgh's wheelchair-mounted mobile robotic-assisted transfer system to determine its feasibility and potential for marketability. The research will be conducted at the University of Pittsburgh/Veteran's Administration Human Engineering Research Laboratories where Dr. Cooper serves as Director.

The intended outcome, Dr. Cooper said, is to help people who use a wheelchair to transfer to other seating "without large and bulky equipment, pretty much anywhere anybody wants to go."

Accomplishing that simple goal, however, takes some doing.



Robotic arms historically have been capable of lifting little more than 5 pounds. RE2 needs to build one that can lift up to 250 pounds and can attach to a standard power wheelchair. (The heft of a power chair is needed as a counterweight, Dr. Cooper noted.)

“This is a fairly complicated robotic device to come to market,” Dr. Cooper said.

“The PARA technology is novel because it is the first patient moving system to be mounted directly to a wheelchair. PARA would provide people with severe disabilities and their caregivers greater autonomy and freedom to participate in the community and vastly improve quality of life,” stated Dr. Andrew B. Mor, principal scientist for RE2.

“We are enthusiastic about being granted this opportunity to apply our extensive robotic manipulation expertise to the healthcare market,” stated Jorgen Pedersen, president and CEO of RE2.

Illustration: PARA will help those who use a power wheelchair transfer from their chair to a car, shower, or public toilet. –RE2, Inc.

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