

NASA creates 'Ironman' like exoskeleton, could help disabled walk

By [David Worthington](#) | October 14, 2012, 2:00 PM PDT



NASA's X1 was designed to help astronauts live in space, but could also be used to help disabled people walk.

NASA is credited with the invention of everything from the ear thermometer to water filters. Its latest invention, an exoskeleton - the same concept found in the Ironman comics - promises to augment astronaut's bodies on deep space missions and even could help some disabled people regain the ability to walk.

The agency [announced](#) its X1 robotic exoskeleton this week, a 51-pound robotic device that humans wear over their bodies to supply resistance against leg movement. NASA believes that X1 would be beneficial to astronauts who spend long periods of time in zero gravity and face the possibility of acute muscle atrophy.

X1 can also be reversed to assist movement in leg joints, and it is designed to offer a broad range of motion to allow for natural movements. NASA is keen on its benefits - both in space and on terra firma.

"Robotics is playing a key role aboard the International Space Station and will continue to be critical as we move toward human exploration of deep space," said Michael Gazarik, director of NASA's Space Technology Program. "What's extraordinary about space technology and our work with projects like Robonaut are the unexpected possibilities space tech spinoffs may have right here on Earth.

"It's exciting to see a NASA-developed technology that might one day help people with serious ambulatory needs begin to walk again, or even walk for the first time. That's the sort of return on investment NASA is proud to give back to America and the world," Gazarik added.

This project is a spin off of NASA's "Robonaut 2," a robotic astronaut that went online at the International Space Station in February. It is being qualified for unmanned space travel scenarios, and plugs into the station's (solar) power system. It will eventually need a lithium battery pack after NASA equips it with its own legs.

Other attempts at creating exoskeletons have been made in Europe. The French General Directorate for Armament has [designed](#) an exoskeleton called "Hercules" that will aid humans with heavy workloads; it can handle up to 220 pounds for up to a distance of 12 miles. Another project is underway at a California based start-up called [Ekso Bionics](#). Its objective is assistive robots that help the disabled to walk, the Verge reports.

Autonomous robots for assistive care - the next frontier

Assistive care robots is another potentially big market. Tandy Trower, one of the [original Microsoft employees](#), who was product manager when Windows first shipped, recently left the company to found a robotics start-up called [Hoaloha Robotics](#) after Microsoft passed up on the opportunity. Trower is presently researching how to get beyond some technology challenges, as it is still early stage.



Trower left Microsoft after a 28 year tenure to pursue robotics.

"I'm indeed continuing to work on my objective of developing a commercially viable, autonomous, socially interactive robot companion to support the increasing number of seniors who face, not only the challenges of aging, but a shrinking supply of human resources. Add to that the growth will come from the independently thinking and tech savvy baby boomers and it results in a significant opportunity and more importantly, social need for what I am doing," he wrote in an e-mail.

Trower noted that most current technologies (Vgo, Double Robotics, Suitable Technologies, Anybots, etc.) are remote telepresence robots, which means that human-operators are required at the other end to control the robot, he explained.

"In contrast, I am designing a robot that operates autonomously and conversationally with the user. The closest analogy is Apple's Siri, but even Siri is a limited model in that Siri only interacts when the user wants to ask it a question. If you have an upcoming event (or in my audience medication), even Siri doesn't pop-up and remind you. Further Siri only provides a voice interface to a limited set of functions on the iPhone," he continued.

"Intuitive Automation's Autom (weight loss coach) is another distant comparison. But while Autom embodies similar principles in terms of interaction with what we are building, Autom is stationary (sits on a desktop or counter), offers only touch interaction, and is limited to one application. So my endeavor takes quite a bit more than anything presently on the market, and yet will be targeted to cost less than most of the telepresence robots out there (I am targeting a price point between \$5000-\$10,000)."

(Image credit: *Robert Markowitz, NASA*)

- [How Ironman could exist, but at a cost](#)