



# TECH *b.e.a.t*

Dedicated to Reporting Developments in Technology for Law Enforcement, Corrections, and Forensic Sciences

## How's the Ride?

*S*aturday's street festival drew a large crowd of people who spent the day strolling about and enjoying the multitude of sights, sounds, and foods. But drawing almost as much attention as the festival's attractions was a police officer who glided effortlessly, head and shoulders above the throng. Practically without a sound, the officer moved up and down the avenue not on foot, nor on a bicycle, nor on a horse, but rather on a two-wheeled, self-balancing, electric-powered human transporter.

Human Transporters, called HTs for short, have been on the commercial market for the past several years. During that time they have found their way into mail and package delivery, warehouse management, and city tour companies. They also have found their way into the public safety arena.

In March 2003, the National Institute of Justice (NIJ) tasked several of the centers that comprise its National Law Enforcement and Corrections Technology Center (NLECTC) system to initiate a program that loans HTs to law enforcement and corrections agencies and to collect information about their experiences.

The HTs used in the evaluation program were provided by Segway™, which was responsible for the development of the original HT. In brief, Segway HTs use two wheels running side-by-side and self-balancing electronic gyroscopes to keep a standing rider upright. They have no throttle or brake; forward and backward movements are controlled by the lean of the rider. The farther a rider leans forward, the faster the Segway HT travels forward, although three keys limit the rider to maximum speeds of 6, 8, or 12.5 mph. Turns are controlled by a rotating left handle grip. A power assist mode allows the rider to move the HT up and down stairs.

Three Segway models were used in the evaluation: the basic HT model (i Series), the e Series model, and the p Series model. The basic HT model has a platform that is 25 inches wide, 19 inches long, and 8 inches high. It weighs 83 pounds, can carry a rider weighing up to 250 pounds, and has a range of 5 to 15 miles per battery

charge. The e Series comes with a set of saddlebags, can carry a total of 70 pounds of cargo, and has a self-balancing capability, negating the need for a kickstand. (Both the i Series and p Series have kickstands.) The p Series is smaller and lighter and designed to easily navigate in congested pedestrian environments.

Fifteen HTs were loaned to 18 State, local, and university law enforcement departments; correctional facilities; and public safety agencies to use outdoors, indoors, in crowded conditions, and on perimeter patrol. Officers operated them on surfaces that included asphalt, stairs, concrete, grass, gravel, dirt, rocks, and mud.

NIJ requested its Border Research and Technology Center (BRTC) in San Diego, California, to compile the results. What emerged from the evaluations was one common theme that ran through almost every agency's comments, according to Chris Aldridge, BRTC director. HTs are a great public relations tool, with citizens often stopping officers to ask questions and praise their law enforcement efforts. Specific comments included:

- "When a police cruiser drives down a block in some neighborhoods, the crowds scatter. When the [HT] travels down the same street, people approach . . . and want to talk to the officer."
- "[It is] an outstanding community policing tool. Everyone wanted to see it. I mean everyone! Citizens even offered to donate funds to make sure the department could purchase units of its own."
- "There was widespread community interest and acceptance, as well as media interest that translated into positive news coverage."
- "The biggest benefit was our ability to start conversations with the general public. People from 4 to 94 were amazed by the technology . . . I have been in or around law enforcement since 1975. Bar none, [they] are the greatest community policing tool I've ever seen."

“In addition to its public relations value,” Aldridge says, “Officers generally rated the HT as faster and less tiring than foot patrol, although slower than automobile response. Advantages compared with bicycles included safer mount/dismount, easier to negotiate through and to see over crowds, and less tiring for officers.

“Several agencies used it for perimeter patrol, in settings as diverse as correctional facilities and schools. These agencies found it to be fast, easy to use and maneuver, and adaptable to different operator skill levels. It allowed officers to move quickly inside buildings and the quiet motor gave a certain degree of stealth to patrols, even enabling them to make extra rounds during an 8-hour shift.”

While feedback for the most part was positive, Aldridge says, some agencies did have concerns. Those commonly voiced included the need for a stronger kickstand and a longer battery charge. The kickstand, he says, is designed with a breakaway feature intended to enhance safety, but this also makes it vulnerable to breaking by untrained officers or someone who just jumps on a parked Segway. Also, because of concerns about securing units quickly after dismounting, some officers remained on the device while speaking to motorists or pedestrians. As for how long the battery retains a charge, that depends on rider weight, operating speed, tire pressure, terrain, and temperature. Maintaining proper tire pressure and recharging the battery during breaks or lunch are two ways to add to the life of the battery charge.

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The addition of off-road tires would solve another concern—traction problems occasionally encountered on wet or gravel surfaces, although it was noted that severe weather conditions during the winter months in Alaska make HTs impractical for some outdoor uses. In addition, the cost, which can be as high as \$4,000 to \$6,000 depending on the model, seemed prohibitive to some agencies.

***For more information about the Segway HT evaluation program, contact the Border Research and Technology Center, 888-656-2782 or [info@brtc.nlectc.org](mailto:info@brtc.nlectc.org). Also involved in the evaluation were NLECTC-National, Rockville, Maryland; NLECTC-Northwest, Anchorage, Alaska; NLECTC-Southeast, Charleston, South Carolina; and the Rural Law Enforcement Technology Center, Hazard, Kentucky. An article regarding NLECTC-Northwest's efforts in the evaluation program appeared in the Winter 2004 edition of TechBeat. The article, "Making Way for Segway," can be accessed at [www.justnet.org/techbeat/winter2004](http://www.justnet.org/techbeat/winter2004).***



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