

## Honda Develops New Personal Mobility Device

– World's first drive system that enables movement in all directions –

TOKYO, Japan, Sept. 24, 2009 – Pursuing the concept of “harmony with people” [Honda](#) has developed a new personal mobility technology and unveiled U3-X, a compact experimental device that fits comfortably between the rider's legs, to provide free movement in all directions just as in human walking – forward, backward, side-to-side, and diagonally. Honda will continue research and development of the device including experiments in a real-world environment to verify the practicality of the device.

This new personal mobility device makes it possible to adjust speed and move, turn and stop in all directions when the rider leans the upper body to shift body weight. This was achieved through application of advanced technologies including Honda's balance control technology, which was developed through the robotics research of [ASIMO](#), Honda's bipedal humanoid robot, and the world's first omni-directional driving wheel system (Honda Omni Traction Drive System, or HOT Drive System), which enables movement in all directions, including not only forward and backward, but also directly to the right and left and diagonally. In addition, this compact size and one-wheel-drive personal mobility device was designed to be friendly to the user and people around it by making it easier for the rider to reach the ground from the footrest and placing the rider on roughly the same eye level as other people or pedestrians.

Honda is planning to showcase the U3-X at the 41<sup>st</sup> Tokyo Motor Show 2009 (sponsored by JAMA) which will begin on October 24, 2009 at Makuhari Messe in Chiba, Japan.

Striving to propose the next-generation mobility which expands the joy and fun of mobility, Honda has been conducting robotics research since 1986, including ASIMO, walking assist devices and U3-X, at the Honda R&D Co., Ltd. Fundamental Technology Research Center in Wako, Saitama, Japan.

### Key features of U3-X:

#### Free movement just as in human walking

##### 1. Device control featuring application of balance control technology cultivated through ASIMO research:

The incline sensor detects the incline of the device based on the weight shift of the rider and determines the rider's intention in terms of the direction and speed. Based on the data, precise control is applied to return the device to an upright position, which achieves smooth and agile movements and simple operation by weight shift only.

##### 2. HOT Drive System (Omni-directional driving wheel system):

Honda developed the world's first wheel structure which enables movement in all directions including forward, backward, side-to-side and diagonally. Multiple small-diameter motor-controlled wheels were connected in-line to form one large-diameter wheel. By moving the large-diameter wheel, the device moves forward and backward, and by moving small-diameter wheels, the device moves side-to-side. By combining these movements the device moves diagonally.

\* Based on Honda's internal research

### **Compact size which fit between the user's legs**

#### **3. Compact and innovative package:**

The combination of the balance control technology and the HOT Drive System enabled the one-wheel style compact and innovative package of the device. In addition, the device adopts a light-weight monocoque body in which the foldable seat, footrests and body cover that also function as the frame are stored in the body of the device, achieving highly portable convenience.

#### **Key specifications of the experimental model**

Length×Width×Height(mm)	315×160×650
Weight	less than 10kg
Battery Type	Lithium ion battery
Operation time (with fully charged battery)	1 hour

Photos and video available at:

Honda's multimedia newsroom for journalists – <http://www.hondanews.com>

Honda's YouTube Channel – <http://www.youtube.com/honda>

Honda's Flickr photostream – <http://www.flickr.com/hondanews>