

## **Mitsubishi Electric Develops Predictive HMI for In-car Device Operation**

*Intuitively minimizes device operation to maximum of two commands in less than 15 seconds*

**Northville, Mich.** March 5, 2014 – Mitsubishi Electric Corporation (TOKYO: 6503) has announced the introduction of its “Predictive HMI” system that predicts a car driver’s needs to better facilitate the safe and easy operation of vehicle equipment. It does so in one or two quick steps.

Mitsubishi Electric’s highly intelligent human-machine interface (HMI) technology bases its predictions on operational history and current conditions. This way it can minimize the steps and time required to operate the vehicle’s four primary on-board devices: the navigation system, phone, air conditioner and audio-visual equipment.



**Prototype with “Predictive HMI”**



**Options displayed on HUD**

**Most likely options (3)**

**Button for each device (4)**

Operational history covers past destinations and routes, navigational searches and in-car device usage. Current conditions include vehicle location, speed, and fuel level, as well as real-time traffic, school zones, and other road and driving conditions.

A prediction algorithm precisely estimates the driver's three most likely operations for the four primary devices and displays them on a head-up display (HUD) positioned above the dashboard, directly in front of the driver. For example, if the driver hasn't entered a destination, but the system predicts that the driver is heading home, the algorithm can detect that there is traffic on the route, and then prompt the user to take alternative routes. The driver can quickly call up this information through the navigation system and display it on the HUD. If the driver wants a different function, separate feature buttons provide direct access to each of the four devices.

Mitsubishi Electric's newly developed HUD appears farther away from the driver than most displays, which helps to minimize eye movements and refocusing as the driver looks alternately at the road and the display. The HUD incorporates a large 17.2-inch display with brightness of up to 13,000 cd/m<sup>2</sup> for safe, easy operation of in-car devices.

Voice operation also is possible with a "Touch & Voice HMI," supported by voice-recognition technology. Touch & Voice HMI enables operations to be completed within two operations and 15 seconds, compared to 10 operations that can take as long as 90 seconds in conventional systems. The voice-recognition technology uses locally stored navigation data and cloud-stored destination data covering 10 million up-to-date locations for accurate recognition of voice commands.

## **Patents**

Mitsubishi Electric has 25 pending patents in Japan and 42 pending international patents for its new HMI technology. It also has five pending design patents in Japan.

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## **About Mitsubishi Electric Automotive America**

Mitsubishi Electric Automotive America, Inc., a U.S. affiliate company of Mitsubishi Electric Corporation, was established in 1979 to serve the North American automotive, heavy duty truck and coach business. Mitsubishi Electric Automotive America offers a wide range of products and services, including engineering, manufacturing, sales, marketing, distribution and service of electrical and electronic systems and components for automobiles, heavy trucks, buses and commercial engine manufacturers, serving both OEMs and the aftermarket. Additional information is available at the following websites: Mitsubishi Electric Automotive America [www.meaa-mea.com](http://www.meaa-mea.com); Mitsubishi Electric heavy duty products

[www.specmystarter.com](http://www.specmystarter.com); Mitsubishi Electric's Diamond Gard™ warranty program  
[www.diamond-gard.com](http://www.diamond-gard.com).

In addition to automotive electrical components, [Mitsubishi Electric US group companies](#)' principal businesses include projectors, semiconductor devices, factory automation products, heating and cooling products, elevators and escalators, solar modules, electric utility products, and large-scale video displays for stadiums and arenas. There are 50 locations throughout North America with approximately 3,600 employees.

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