

News Release

FOR IMMEDIATE RELEASE

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Hitachi Completed Development of the OTA Software Update Solution for Autonomous Driving Systems

-- With availability scheduled for 2018, will provide high-reliability wireless updates at one-tenth the time previously required --

Tokyo, Japan, April 28, 2016 --- Hitachi, Ltd. (TSE: 6501, "Hitachi"), Hitachi Automotive Systems, Ltd. ("Hitachi Automotive Systems") and Clarion Co., Ltd. ("Clarion") today announced that they have developed the OTA (Over The Air) Software Update Solution for wirelessly updating ECU (Electronic Control Unit) software, forming a core technology for supporting next-generation vehicles such as autonomous driving vehicles and connected cars. It is a one-stop solution that uses the technology of the Hitachi Group to provide high-reliability transmission of software updates from data centers ("OTA Center") to vehicles, and takes one-tenth* the time previously required for such updates. The new solution is scheduled to be available in 2018.

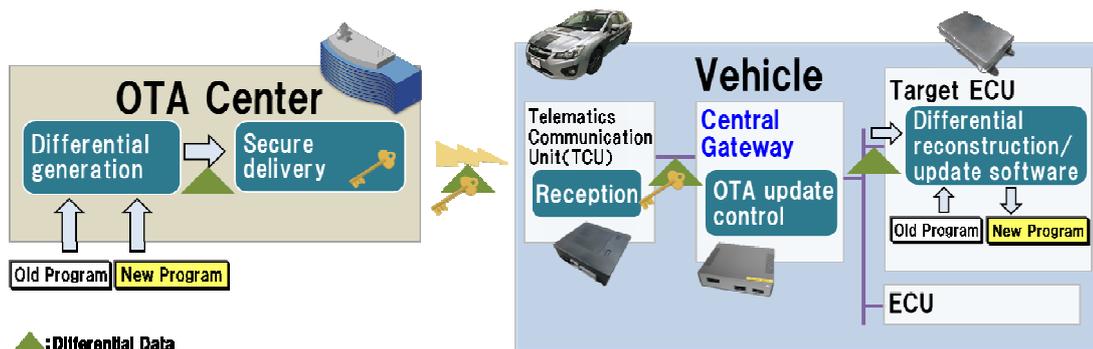
In order to improve the reliability and added value required for next-generation vehicles such as autonomous driving vehicles and connected cars, after a vehicle has been manufactured, it is necessary to provide timely ECU software updates for vehicle security as well as for new functional additions linked to infrastructure extensions through the increased sophistication of ITS (Intelligent Transport Systems).

Hitachi, Hitachi Automotive Systems, and Clarion have developed the OTA Software Update Solution which provides high-speed and secure delivery of ECU software updates through wireless communication. This makes it possible to improve the quality and added value of a vehicle even after it has been introduced to the market. It also enables security problems to be quickly handled through remote updates without taking the vehicle to a dealer.

The newly developed OTA Software Update Solution consists of an OTA center system that generates and distributes software updates together with the system in the vehicle. Hitachi developed an OTA center system that provides Hitachi's proprietary differential generation service as well as a high-speed and secure distribution service. Specifically, the OTA center extracts and encrypts the differential between the old and new program and delivers only the differential data to the vehicle. Hitachi Automotive Systems developed a vehicle system which has a central gateway equipped with OTA software update control and security functions with Clarion's TCU (Telematics Communication Unit). Differential data received from the OTA center through the TCU is sent via the central gateway to the units to be updated, such as the autonomous driving ECU and the engine ECU. The software of the targeted ECU is then updated by reconstructing the new program from the differential data and old program using the high-reliability differential reconstruction/update software, and then writing the new program into the memory.

To ensure the security of software updates, the data transmitted between the OTA center and the central gateway of the vehicle is encrypted and mutually authenticated in order to prevent leakage, tampering, or forgery of the information. Ensuring high reliability, these technologies reduce the software update time to one-tenth the time previously required, making it possible to respond to the need for frequent updates that is expected to arise with the practical application of autonomous driving. As the Hitachi Group possesses every technological element, from data centers to vehicle ECUs, it can construct the system in a one-stop manner. The Hitachi Group has already developed a prototype system using an actual vehicle equipped with devices such as the central gateway, and expects to be able to deliver the products in 2018.

The development of this OTA Software Update Solution is just one of the Hitachi Group's continuing endeavors to develop and provide equipment and solutions that contribute to the practical application of autonomous driving vehicles and connected cars.



*: Comparison between the time it takes to implement ECU software update using OTA and the time it takes to implement the update by taking the vehicle to a dealer.

[Product Inquiry]

<https://www8.hitachi.co.jp/inquiry/as/general/en/form.jsp>

About Hitachi Automotive Systems, Ltd.

Hitachi Automotive Systems, Ltd. is a wholly owned subsidiary of Hitachi, Ltd., headquartered in Tokyo, Japan. The company is engaged in the development, manufacture, sales and services of automotive components, transportation related components, industrial machines and systems, and offers a wide range of automotive systems including engine management systems, electric power train systems, drive control systems and car information systems. For more information, please visit the company's website at <http://www.hitachi-automotive.co.jp/en/>.

About Clarion Co., Ltd.

Headquartered in Saitama, Japan, Clarion Co., Ltd. has been a consolidated subsidiary of the Hitachi Group since 2006. Clarion has been an international leader in car audio and electronics since 1940. The company is engaged in the research, development, engineering, design, manufacturing, sales and marketing of mobile entertainment, navigation, infotainment, communication, safety and security products for the automotive, marine, recreational vehicle, commercial fleet and heavy industry environments. Clarion has been the recipient of numerous excellence awards for design, innovation, support, manufacturing and product reliability from independent organizations. The company has marketing and sales affiliates in Europe, North and South America, Asia and Australia. Clarion is located on the web at <http://www.clarion.com>.

About Hitachi, Ltd.

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, delivers innovations that answer society's challenges with our talented team and proven experience in global markets. The company's consolidated revenues for fiscal 2014 (ended March 31, 2015) totalled 9,761 billion yen (\$81.3 billion). Hitachi is focusing more than ever on the Social Innovation Business, which includes power & infrastructure systems, information & telecommunication systems, construction machinery, high functional materials & components, automotive systems, healthcare and others. For more information on Hitachi, please visit the company's website at <http://www.hitachi.com>.

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