News Release

HITACHI
Inspire the Next

HumanDrive project achieves UK's longest and most complex autonomous journey

LONDON, April 7th, 2020 – Hitachi Europe Ltd., a wholly owned subsidiary of Hitachi, Ltd. (TSE: 6501, "Hitachi") is pleased to announce that HumanDrive, the collaborative 30-month autonomous vehicle project of which Hitachi was a member, has been successfully completed.

Focused on advancing the development of natural, human-like autonomous vehicle control, the project culminated in the Grand Drive - a 230-mile self-navigated journey across the UK by an autonomous Nissan LEAF vehicle. This broke the record for the longest and most complex autonomous journey undertaken on UK roads.

The aim of the Innovate UK sponsored project has been to advance autonomous driving systems in order to create a comfortable and human-like experience for future users. Joined by ten consortium partners, including Nissan UK, Hitachi was tasked with leading the research and development for the artificial intelligence (AI) and communication work package.

Hitachi's European R&D team developed autonomous control software, using state-of-the-art Artificial Intelligence and Machine Learning models. One of the key innovations of this technology was the creation of an intelligent data management tool that was used to categorise and prepare terabytes of human driving data. This enabled us to remove any bias from the Neural Networks used to interpret the road environment and generate a safe path for the vehicle.

Our approach, successfully tested on private tracks, with zero human interventions from the safety driver, delivered a driving experience that was acknowledged by passengers to be substantially smoother and more natural than that delivered using traditional, purely robotic control approaches. The software was also designed to enable driving styles and experiences to be customised for individual passenger needs and preferences.

Discussing Hitachi's role in the project, Nick Blake, Chief Innovation Strategist, Hitachi Europe said*: "*Hitachi European R&D developed pioneering AI technology to exploit the plethora of driving data generated from modern cars to improve the comfortability and safety of future autonomous vehicles."

Massimiliano Lenardi, Head of the Automotive and Industry Laboratory of Hitachi Europe, added: "Hitachi's European R&D Team greatly contributed to the success of HumanDrive by exploiting its substantial experience in other European collaborative projects for Connected and Autonomous Vehicles."

Moving forward, Hitachi will be focusing on meeting the complex technical challenges relating to autonomous driving in congested urban environments, including; predicting and safely responding to other moving objects such as pedestrians, cyclists and cars; as well as delivering accurate and robust localisation solutions. These technologies should contribute to

accelerating the realisation of autonomous driving services to meet the challenges of modern cities.

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About The HumanDrive Project
The HumanDrive consortium was made up of the following organisations: Nissan UK, Hitachi, University of Leeds, Cranfield University, Highways England, Aimsun, Horiba Mira, Atkins, SBD Automotive and Connected Places Catapult. For further information on the project visit: https://humandrive.co.uk/

About Hitachi Europe Ltd.
Hitachi Europe Ltd., a wholly owned subsidiary of Hitachi, Ltd. (TSE: 6501, "Hitachi") is headquartered in Maidenhead, UK. The company is focused on its Social Innovation Business - delivering innovations that answer society's challenges. Hitachi Europe and its subsidiary companies offers a broad range of information & telecommunication systems; rail systems, power and industrial systems; industrial components & equipment; automotive systems, digital media & consumer products and others with operations and research & development Laboratories across EMEA. For more information, visit **http://www.hitachi.eu**.

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