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Woven Alpha Automated Mapping Platform and Mitsubishi Fuso Collaborate on Latest HD Mapping Technology for Advanced Driver Assistance Systems Functionality

New Collaboration to Explore Driving Safety of Commercial Vehicles with Automated Mapping Platform

News Release, Management, Innovation, CASE, Connected, Autonomous/Automated

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Tokyo, Japan, (June 23, 2021)—Woven Alpha, Inc. ("Woven Alpha"), a group company of Woven Planet Holdings, Inc. ("Woven Planet"), a subsidiary of Toyota Motor Corporation ("Toyota"), has agreed to collaborate with Mitsubishi Fuso Truck and Bus Corporation ("MFTBC") to explore and advance safety for Advanced Driver Assistance Systems ("ADAS") with its Automated Mapping Platform ("AMP"). The initiation of this relationship between Woven Alpha and MFTBC marks another cross-industry collaboration

with a commercial vehicle manufacturer outside the Toyota Group. Together the companies are conducting both lab-based and field test research for the development and deployment of improved safety functionality.

This collaboration will explore the technical requirements of using AMP with MFTBC ADAS as well as the advantages of using AMP high definition ("HD") maps over conventional maps. Between the two companies, over 10 distinct use cases have been identified. The first Proof of Concept ("PoC") will focus on the application of AMP to provide an accurate Entering Curve Speed Warning ("ECSW") developed by MFTBC using their heavy-duty Super Great trucks. The results of this research will set the baseline for one of the ADAS performance upgrades available for commercial vehicles. This technology will help open up more exciting opportunities for collaboration with users and vehicle manufacturers outside the Toyota Group who are interested in taking advantage of enhanced mapping information to fully realize ADAS and automated driving functionality in their vehicles.

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Overview

The traditional solution for safety systems that use mapping technology has been to leverage navigation maps due to their relatively low cost. However, the lack of real-time updates means these maps are usually months out of date which can be dangerous for vehicles with higher levels of autonomy. In addition, their low accuracy in the order of meters makes it difficult to develop precise applications that operate safely at the lane level. Navigation maps also do not contain semantics, in other words, the relationship between road objects, such as between lanes on a road. Additionally, while it is relatively straightforward to deploy survey vehicles to generate the initial mapping data, the instruments are highly specialized and often expensive to operate. This leads to map maintenance being costly and time-consuming, further reducing the updates that can be deployed economically to end-users.

However, the real world does not stand still. Regular changes to road markings, road geometry, or structural changes resulting from construction need to be reflected quickly into the HD maps in order for ADAS and automated driving functions to operate safely. AMP has been developed to solve these issues by automating the fusion of near real-time data from vehicle fleets and wide area coverage satellite and aerial imagery and dramatically improving map update frequency, coverage, and cost.

Supporting MFTBC's ECSW feature is a great example of AMP providing immediate benefit to driver and vehicle safety. As part of the first PoC, both companies will test this feature that predicts the safest speed and gives advanced warning on how to approach an upcoming sharp curve, based on the vehicle's condition. The ability of the system to anticipate road and lane conditions ahead is particularly important for commercial vehicle drivers in order to avoid accidents. Through high-accuracy, low-cost, and up-to-date semantic HD maps, AMP aims to provide significantly improved driver awareness, system redundancy, and overall road safety.

Comment from Mandali Khalesi, Vice President of Automated Driving Strategy and Mapping, Woven Planet

"I am delighted to collaborate with Mitsubishi Fuso Truck and Bus Corporation, one of the leading truck and bus makers in Japan, perfectly suited to push the envelope on the safety of commercial vehicles. Our work is not only about getting people and goods from A to B, it is about saving people's lives and reducing the burden on the driver. Over the last few years, we have been working on developing highly accurate semantic HD maps updated automatically, frequently, and inexpensively. We are building the platform to be highly scalable and open to future collaboration with global manufacturers of all sizes. This is the first step in our commitment to helping maximize safety for commercial vehicles."

Comment from Hironobu Ando, Senior Vice President, Head of Product Engineering, MFTBC

"We at MFTBC approach automated driving assistance technology, and the autonomous driving technology beyond that, as a strategic point of focus in producing safer commercial vehicles. We are doing the utmost to develop these technologies, because we believe that they will soon be indispensable in our world. Woven Alpha's AMP has the potential to be an important part of this future, and we are therefore convinced that the joint research will prove to be mutually beneficial. We hope to participate in active knowledge-sharing with our partners to the maximum extent possible, for the ultimate goal of safer roads everywhere."

About Woven Planet Group

Woven Planet Group (Woven Planet) represents a carefully curated blend of expertise and resources dedicated to bringing the vision of "Mobility to Love, Safety to Live" to life. Through innovations and investments in automated driving, robotics, smart cities, and more, we are transforming how humankind lives, works, and moves. We exist to design, build, and deliver secure, connected, and sustainable mobility solutions that benefit all people worldwide. Founded in 2018 as Toyota Research Institute - Advanced Development (TRI-AD), Woven Planet is comprised of four complementary companies: Woven Planet Holdings, Woven Core, Woven Alpha, and Woven Capital.
For more information, please visit: https://www.woven-planet.global/

MFTBC at a Glance

Based in Kawasaki, Japan, Mitsubishi Fuso Truck and Bus Corporation (MFTBC) is one of Asia's leading commercial vehicle manufacturers, with 89.29% of its shares owned by Daimler Truck AG and 10.71% by various Mitsubishi group companies. An icon in the Japanese commercial vehicle industry with a longstanding history of more than 85 years with its Fuso brand, MFTBC manufactures a range of commercial vehicles including light, medium, and heavy-duty trucks and buses, and industrial engines for over 170 markets worldwide. In 2017, MFTBC introduced the eCanter, the first all-electric light-duty truck in series-production and in 2019, the Super Great—Japan's first heavy-duty truck fitted with Level 2 Automated Driving Support Technology, a benchmark in the Japanese commercial vehicle market. MFTBC operates under the umbrella of Daimler Trucks Asia, together with its partner organization Daimler India Commercial Vehicles (DICV) in India. This strategic unit allows the entities to collaborate on areas such as product development, parts sourcing and production to provide the best value to customers.

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Toyota Motor Corporation works to develop and manufacture innovative, safe and high-quality products and services that create happiness by providing mobility for all. We believe that true achievement comes from supporting our customers, partners, employees, and the communities in which we operate. Since our founding over 80 years ago in 1937, we have applied our Guiding Principles in pursuit of a safer, greener and more inclusive society. Today, as we transform into a mobility company developing connected, automated, shared and electrified technologies, we also remain true to our Guiding Principles and many of the United Nations' Sustainable Development Goals to help realize an ever-better world, where everyone is free to move.

SDGs Initiatives: https://global.toyota/en/sustainability/sdgs/

SDGs goals that this project makes particular contribution to