PRESS RELEASE

Open fusion platform simplifies the development of autonomous driving functions

- **Open interfaces enable faster dissemination of autonomous driving functions also in the mid-range segment**
- **First fully autonomous driving functions integrated in three demonstration vehicles**
- **ISO standardization processes for sensor data interfaces initiated**

Lippstadt, March 21, 2019. A German research network with reputable research institutions, universities, IT companies and also companies from the automotive industry has developed a near-series fusion platform with open interfaces (Open Fusion Platform, abbreviated to OFP). It enables automobile manufacturers and their suppliers to cost-effectively integrate highly and fully automated driver assistance functions for the purposes of automated driving. The OFP was developed by the network coordinator HELLA together with the German Aerospace Center, Elektrobit Automotive, Infineon Technologies AG, InnoSent, Hella Aglaia Mobile Vision, Reutlingen University, the RWTH Aachen Electromobility Center, Streetscooter Research and TWT GmbH Science and Innovation. In addition, Continental and Nvidia supported the project in the role of associated partners.

The project, funded by the Federal Ministry of Education and Research with € 4.4 million, was successfully completed after just over three years with the integration of the first fully autonomous driving functions in three demonstration vehicles. In the scenario implemented, an electric vehicle drives fully automatically to a free charging station on a parking lot and positions itself over the charging plate. After the charging process has been completed, it automatically searches for a free parking space without a charging plate. "For such highly or fully automated scenarios, so far only prototypes have existed that were not yet close to series production," explains Dr. Michael Schilling, Project Manager for Pre-Development of Automated Driving at HELLA and Network Coordinator for the OFP project. Today there already are driver assistance systems in series production, such as traffic jam assistants that merge data from two sensors. "But

for fully automated driving, it is necessary for the vehicles to be able to perceive their entire surroundings. To achieve this, data from a multitude of sensors and cameras has to be merged in order to create a full model of the surroundings. Such an environmental model then shows the driving environment with the required amount of accuracy, allowing to implement a reliable driving function." One challenge here revolves around the interfaces between the individual sensors and the central electronic control unit, which have not been standardized yet. The interfaces of actual driver assistance systems are very function-specific and depend on the individual supplier or automobile manufacturer. This is exactly where the research project started its work.

Four cameras and eight 77 GHz radar sensors, covering 360° around the vehicle, served as input for the OFP. An additional Vehicle to X-Communication module (V2X module) also enables communication between vehicles and external infrastructure, such as a charging plate. The network partners have disclosed the interface descriptions of the individual components in a freely available "Interface Specification". During the project, an ISO working group for the standardization of the sensor data interfaces was launched by the research group together with other leading automobile manufacturers and suppliers.

Upon completion of the project, an updated interface description is published, which also flows into the ongoing ISO process. This means that for the first time ever all automobile manufacturers and suppliers will have the opportunity of integrating their products quickly and easily into the fusion platform. With the complex environmental model, Hella Aglaia Mobile Vision has developed the central component of the OFP. Using the OFP visualization, developers can see how the vehicle perceives the entire environment and then on this basis can decide how the sensor data is to be merged. Whether it is a complex driver assistance function or fully automated driving function - all functions can be programmed in this way. "This accelerates development work, which ultimately leads to a growing number of functions and thus to automated driving functions moving earlier into the mid-range vehicle segment," says Dr. Schilling.

Work on the OFP will continue after the project. Crucial questions will be as to how the sensor data can be processed with machine learning in order to improve functions and further accelerate the development work. The parking lot scenario is also to be expanded to include urban driving situations and general driving at over 20 km/h. These scenarios require interaction with other sensors, e.g. LiDAR sensors. It is precisely in this area of multisensory data fusion that OFP will be able to exploit its full potential. Moreover, functional safety will play a major role in further development to ensure that all developed functionalities are and remain fail-safe.

Please note:
This text and corresponding photo material can also be found in our press database at:
www.hella.de/presse

HELLA GmbH & Co. KGaA, Lippstadt: HELLA is a global, family-owned company, listed on the stock exchange, with more than 40,000 employees at over 125 locations in some 35 countries. The HELLA Group develops and manufactures products for lighting technology and electronics for the automotive industry and also has one of the largest retail organizations for automotive parts, accessories, diagnostics, and services within Europe. With more than 7,000 people working in research and development, HELLA is one of the most important innovation drivers on the market. Furthermore, with sales of € 7.1 billion in the fiscal year of 2017/2018, the HELLA Group is one of the top 40 automotive parts suppliers in the world and one of the 100 largest German industrial companies.

For additional information please contact:
Dr. Markus Richter
Company spokesman
HELLA GmbH & Co. KGaA
Rixbecker Straße 75
59552 Lippstadt, Germany
Germany
Phone: +49 2941 38-7545
Fax: +49 2941 38-477545
Markus.Richter@hella.com
www.hella.com