

5G technology brings 3-D views to inter-vehicle communication

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The safety of road users can be increased through new solutions and services enabled by the 5G technology. VTT Technical Research Centre of Finland, in cooperation with businesses, has developed new solutions related to road weather services, road maintenance, automated driving, and real-time inter-vehicle transmission of 3-D views.

"The speed of the 5G network enables transmitting large 3-D views between vehicles. As a result, the communication distances of car observations can be increased and data can be obtained from areas which the car's own sensors do not cover and are not in its view," says the leader of the 5G-Safe project, aiming for reducing road traffic accidents, Tiia Ojanperä at VTT.

The new vehicular network solutions and the local road weather and road safety services enable supporting drivers, road operators and the control systems of automated vehicles. They will require no action from motorists while driving—data will be gathered and warnings will be sent to users automatically.

The first piloting target was VTT's robot car Martti, which was used to test the ability to detect obstacles and ruts in the road. A demo implemented in Sodankylä was based on the data transmission of the LiDAR sensor on a 12.5 Hz frequency to the MEC server of VTT's 5G test network. There, the data was received by Unieke's algorithm, of which the warnings enabled optimising Martti's route according to its abilities.

"5G technology can also improve the quality of weather services. Vehicle-to-vehicle video streaming is an exciting future scenario of the opportunities for broadband transmission of information," says Senior Research Scientist Timo Sukuvaara at the Finnish Meteorological Institute.

5G technology also opens up new doors for road maintenance services. "Real-time communication and automatic analysis of data allow for faster and more reliable information about the state of the roads. The forecasts produced by the [road](#) weather model can be used in services related to driving conditions and safety," explains Development Manager Oiva Huuskonen at Destia.

The new solutions piloted under the 5G-Safe project are currently being finalised on the basis of the experiences and results gained so far. Scheduled for completion at the end of 2018, the project is also used to seek for new business opportunities for the companies involved.

Provided by VTT Technical Research Centre of Finland

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