CES 2020: Hexagon, Hyundai and Valeo unveil a high-precision vehicle positioning system to make roads safer

Las Vegas, January 5, 2020 – At CES 2020 in Las Vegas, Hyundai, Hexagon’s Positioning Intelligence Division—the leader in high-precision GPS technology, Valeo, the world number one in driving assistance systems, and a major mobile network operator will present a new technology capable of pinpointing a vehicle’s exact location while on the road. Using proprietary centimeter-level precision called High-Precision Positioning (HPP), the system can further enhance a vehicle’s advanced active safety technologies.

The use of GPS positioning is widespread in the automotive industry, but the technology currently deployed in the automotive industry only approximates positioning to within several meters (between 1.5 and 3 meters in optimum conditions).

Developed by Hexagon, Valeo and their mobile network operator partner, HPP works by applying TerraStar X technology, a correction to the GPS signal received by the vehicle through a channel of the cellular network. The correction to be applied is determined by a network of stationary receivers, which knows their absolute position and serves as a permanent reference point. For example, after an emergency braking event, the vehicle will be able to send information about the maneuver and its exact location — including which part of the road it’s on — to other vehicles, making it much easier to anticipate the response required for other vehicles.

High-precision positioning of vehicles also creates opportunities for new uses and services. For example, cities will be able to regulate traffic flows more effectively thanks to real-time information about vehicle locations. It will also facilitate the development of autonomous vehicles, by improving all levels of driving automation from level 2 to level 5. And it will enable onboard navigation systems, in vehicles and on smartphones, to display more accurate and user-friendly maps.

HPP will be introduced and showcased on the all-new 2020 Hyundai Sonata at CES.

HPP can be deployed rapidly, because it is based on a combination of standardized technologies used both in cellular networks and in vehicles:
- The data transmission channels already exist in the mobile operator’s network.
- The stationary receivers, which are part of localization infrastructure, and the TerraStar X correction technology are already in place, thanks to Hexagon.
- The telematics control unit has already been developed by Valeo. It enables the vehicle to be tracked and guarantees the security of data passing through the vehicle.
- The capacity to integrate these communication systems into the vehicle architecture has already been acquired by Hyundai.

“Hyundai Motor Group is excited to be researching this unique, low cost technology solution with Valeo. This design approach can achieve centimeter level GPS positioning accuracy which may be used to enhance our autonomous driving and connectivity solutions in the future. This research will achieve centimeter level positioning accuracy in order to enable future technologies such as autonomous driving, safety applications for road users, lane level navigation, and Vehicle to Everything (V2X) applications. The proposed technique is unique, because position correction is delivered to vehicles using broadcast channel utilizing the already existing cellular network”, said John Robb from Hyundai.
The system has been developed this way so that it can be offered at an affordable price. In fact, it is perfectly aligned with Valeo’s philosophy of launching series production of its cutting-edge technologies as soon as it has confirmed compatibility with the automotive industry’s high standards”, said Marc Vrecko, Valeo’s Comfort and Driving Assistance Business Group President.