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Proposal of Commutation Protocol in Hybrid Sensors and Vehicular Networks for Intelligent Transport Systems

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Abstract : Hybrid Sensors and Vehicular Networks (HSVN), represent a hybrid network, which uses several generations of Ad-Hoc networks. It is used especially in Intelligent Transport Systems (ITS). The HSVN allows making collaboration between the Wireless Sensors Network (WSN) deployed on the border of the road and the Vehicular Network (VANET). This collaboration is defined by messages exchanged between the two networks for the purpose to inform the drivers about the state of the road, provide road safety information and more information about traffic on the road. Moreover, this collaboration created by HSVN, also allows the use of a network and the advantage of improving another network. For example, the dissemination of information between the sensors quickly decreases its energy, and therefore, we can use vehicles that do not have energy constraint to disseminate the information between sensors. On the other hand, to solve the disconnection problem in VANET, the sensors can be used as gateways that allow sending the messages received by one vehicle to another. However, because of the short communication range of the sensor and its low capacity of storage and processing of data, it is difficult to ensure the exchange of road messages between it and the vehicle, which can be moving at high speed at the time of exchange. This represents the time where the vehicle is in communication range with the sensor. This work is the proposition of a communication protocol between the sensors and the vehicle used in HSVN. The latter has as the purpose to ensure the exchange of road messages in the available time of exchange.

Keywords : HSVN, ITS, VANET, WSN
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