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Modular Wireless Sensor for Intelligent Transportation Systems

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Abstract- The monitoring of emissions caused by congested road traffic requires the deployment of a complex measurement system. The use of Wireless Sensor Networks (WSN) can be very useful. In this work we propose the architecture of sensors (devices) which are envisaged to be used for the collection of information in an intelligent transportation system and within the concept of the Internet of Things (IoT). The information obtained will be exploited by a decision-making system allowing both to make a diagnosis on the state of the traffic by observing the formation of the phenomenon of congestion and its relation to the emission rate of dioxide carbon (CO2) and climatic conditions then propose measures to mitigate it. Instead of using several types of disjoint sensors they can be assembled on a single device composed of several units (modular architecture). Some modules are responsible for collecting information (traffic status, weather, CO2, etc.), others deal with radio transmissions (between devices) or record data. Cellular communication ensures the sending of data to a control center (remote server) and the receipt of decisions from it.

Keywords- Congestion, WSN, CO_2, Road traffic, ITS, IoT.