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VEDECOM presents VEDETECT, a tool for analysing mobility flows in real time, helping to make the era of flexible transport a reality.

Gridlocked junctions, packed train stations, overcrowded buses… What if the secret to freeing up our cities lay in the real-time management of mobility flows and transport supply? This is what VEDETECT is banking on with the new solution from the VEDECOM Institute, which was a finalist of the Grand Prix de l'Innovation at the Salon des Maires et des Collectivités Locales. Tested with support from the Département des Yvelines, a network of smart sensors enables local communities to monitor traffic in real time, both to regulate it better and to help them to develop their transport policies.

A network of smart sensors analyses mobility flows in real time thanks to artificial intelligence (AI) and the Internet of Things

As more mobility data flows are being captured and transmitted by increasing numbers of sensors, local communities can explore new ways to optimise travels. The VEDETECT solution was presented at the Salon des Maires between 19 and 21 November 2019 by the Institut VEDECOM. The solution relies on a network of sensors installed on street lights. The sensors capture **radio frequency signal traces emanating from vehicles** (i.e. Bluetooth). The resulting data is then **processed using AI methods**, making it possible to assess the state of the traffic i.e. flows, speed and direction of vehicles, etc. It is the only solution to use AI to accurately quantify flows, and is probably the only solution aiming to create **'digital doubles'** of cities by adding (in the future) estimates of the density of pedestrians and public transport users.

The developed algorithms provide a reliable overall estimation of the traffic via a partial vision of Bluetooth data emitted by vehicles. The data is anonymised before being sent to a platform that centralises and displays the data in real time.

A competitive solution and one that will be accessible to the vast majority of local authorities

Launched in 2018, the VEDETECT project is especially promising for local authorities. The solution offers a low-cost and low-impact alternative to traditional mobility flow analysis methods. Based on networks of connected objects - that are constantly increasing - owned by users, such as the smartphone-vehicle combo, the solution only requires the installation of electronic sensors. These are

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far less expensive than the radars or high-definition cameras normally used for this type of measurement. These sensors are simply suspended from street lights and, unlike other market solutions (magnetic loops, pneumatic tubes, etc.), they require no special installation or modifications to the road layout. The effectiveness of the AI algorithms is comparable to the mobility measurement results obtained through traditional means.

The VEDETECT solution was a finalist in the NICT/Information Systems category of the Grand Prix of the Salon des Maires held on 22 October. This competition awards innovative products, materials, systems, services and techniques developed by suppliers of goods and services to local authorities.

A comprehensive system for measuring, analysing and optimising mobility

Currently, the VEDETECT network of sensors is under development and its market release is planned for 2021. In the future, the solution, which will also include estimating the density of pedestrians and passengers, will offer new real-time data usage techniques capable of optimising urban mobility. Adaptive control applications for traffic lights are already in the pipeline ahead of the launch of project (2020) for the deployment of real-time responsive transport solutions. For example, estimating the number of passengers waiting at a bus stop could allow resources to be diverted in real time e.g. from one bus route to another. The ultimate goal is to have a truly flexible transport solution i.e. one that can meet demand based on the estimates provided by the VEDETECT system.

Philippe Watteau, the CEO of VEDECOM, is delighted: *"We're proud that VEDETECT, which is paving the way towards the 'Digital Twin' in terms of urban mobility, won the Innovation Award in its category at the Salon des Maires."*

"VEDETECT is a solution for analysing traffic that relies on recent advances in AI. Using Machine Learning techniques, we can characterise urban traffic based on the analysis of wireless communication signals. Our solution can carry out this analysis in real time while safeguarding the anonymity of the source data," explains Julian Garbiso, Project Manager at VEDECOM.

About VEDECOM

VEDECOM is an institute for energy transition (ITE) founded on unique cooperation between firms in the automotive and aviation sectors, mobility ecosystem infrastructure and service operators, academic research bodies and Ile-de-France local authorities. The role of VEDECOM is to forge closer ties between academia and industry. The institute helps them to achieve a high standard of innovation in the area of mobility and, in particular, in electric vehicles, autonomous and connected vehicles and shared energy and mobility infrastructure and services. VEDECOM is a part of the French government's PIA future investment plan. Its founding members are Cetim, ESIGELEC, ESTACA, IFPEN, IFSTTAR, PSA Group, Renault Group, Safran, UVSQ and Valeo.

Key figures in 2019 : over 50 members, 3 research areas and 1 training program, 200 employees, 14 R&D projects, 12 European projects, over 300 publications, 37 patents, 24 copyrighted projects, 70 thesis, 1 business subsidiary, VEDECOM Tech, created in February 2017.

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