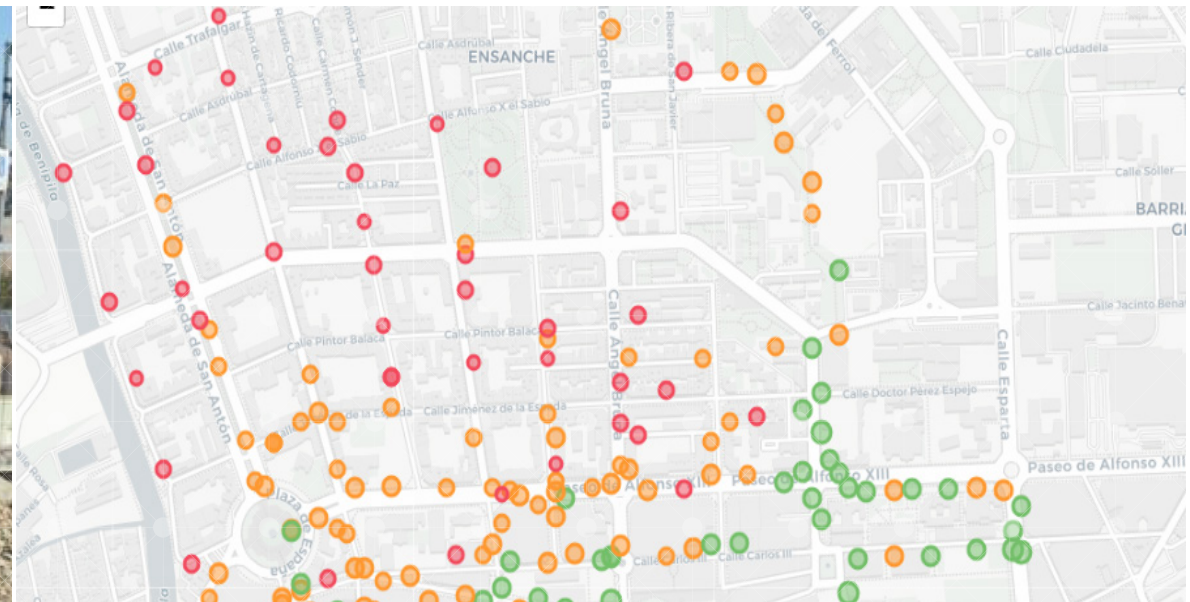# EGNOS contributes to the improvement of air quality and urban mobility

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Credits: UPCT

Air pollution is an important risk factor and a trigger for cardiovascular diseases, which today remain the main cause of death in Europe. At the same time, it is necessary to involve citizens in the awareness of these risks and in the usage of greener technological initiatives that contribute to sustainable development in cities.

Example of this sustainable development are Personal Mobility Vehicles (PMV) such as scooters or bicycles, increasingly growing in cities, and that can help improve mobility and contribute to get data on the quality of the air we breathe.

Benefiting from the increased presence of PMV in cities, researchers from the Polytechnic University of Cartagena (UPCT) in the MECANO project (Eco-Efficient Mobility for Connected Citizens, subsidized by the Ministry for the Ecological Transition and the Demographic Challenge) are developing a system architecture for the compilation of environmental data using low-cost mobile sensor devices equipped in public transport vehicles. The data collected provides real-time information on traffic density, weather, meteorological and air pollutants.

The Cartagena City Council collaborates with the UPCT by offering support to the project and its implementation as a proof of concept. On the other hand, the UPCT has an agreement with the provider of mobility solutions and services, Bird Rides, whose vehicles (scooters) will be used in the deployment phase.

Jose Santa, researcher at the UPCT and the main responsible of MECANO project, says that "the mobile sensors act as small meteorological stations that move throughout the city of Cartagena in Murcia (Spain), contributing to the sustainability of transport, allowing the development of services for the optimization of

mobility, detection of the parameters most harmful to the population, recommendation of healthy routes, and predictive planning of mobility urban models".

It is important to remark that the data collected by mobile sensors in cities are georeferenced. EGNOS is used as an improvement in the positioning technology in the sensor equipment, allowing to geo-reference more precisely the values collected from both the environmental sensors and the telemetry of the vehicle itself. Specifically, the module that is integrated into the on-board unit is the Quectel L86-M33.

Jose Santa, who has been working with EGNOS for more than 15 years, says: "Thanks to EGNOS, the precision of the position is guaranteed with greater certainty and the georeferenced values of the prediction and monitoring models that we are developing in our calculations of pollution factors in the city, specifically air quality data (CO2, CO, NO, NO2, PMx), noise pollution, solar radiation and climatic factors, are much more accurate".

The project is, therefore, a clear example of the integration of different technological solutions (EGNOS positioning, IoT and Artificial Intelligence) in the smart treatment of environmental and mobility collected data, contributing to the reduction of carbon footprint, including its impact on citizens.

It is expected that the conclusions obtained by the UPCT can be extrapolated to other cities, with other mobility and pollution patterns, providing exceptional value in the use of technology in the field of Smart Cities, and also considering the use of other personal mobility vehicles (not only electric scooters), such as bikes, motorcycles, etc.

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