PORTUGAL AND SPAIN TO BECOME TEST BEDS FOR SMART HIGHWAYS IN THE EU
SMART HIGHWAYS

TransformingTransport project: The Value of Big Data in the Mobility Sector

The Horizon 2020 Program will foster a radical change on European highway safety standards and on the understanding of mobility patterns to improve services, offer better user experience and increase operational efficiency.

This TransformingTransport project promotes collaboration among public stakeholders, traffic authorities and local administrators to implement their own Vision Zero strategy. Vision Zero is a multi-national road traffic safety project that aims to achieve a highway system with no fatalities or serious injuries in road traffic. A core principle of the vision is that ‘Life and health can never be exchanged for other benefits within the society’.

For example, one of the most critical types of traffic incidents that frequently affect the performance of highways are secondary crashes, which lead to extra traffic delays and affect highway safety. Highway authorities are interested in understanding the mechanism of the secondary crash occurrence and implementing appropriate countermeasures.

As sensors spread across almost every industry, the internet of things is going to trigger a massive influx of Big Data. The critical challenge is to use this data in real time – and extract valuable information from it. The internet of things and Big Data are clearly intimately connected: millions of internet-connected devices and vehicles – cars, trucks, roads, GPS navigators – will, by definition, generate massive amounts of data that, after analysis within Big Data platforms, will transform day-to-day road safety, deliver an early warning system and alert infrastructure users on pressing traffic and safety issues.

TransformingTransport pilots in Spain and Portugal exploit not only the Big Data technology, but also the internet of things as a data source to feed its prediction models. There are three main technologies involved:

- Bluetooth and Wi-Fi detection for real-time travel time, dwell time and flow measurement
- Thermographic video analysis which is capable of detecting obstacles even in complete darkness as well as through fog or intense rain, complementing DAS systems in identifying pedestrian intrusions, vehicles that have stopped on the road or unauthorised parking.

Smart Highway pilot

The European TransformingTransport project was launched in the beginning of 2017, financed within the EU’s Research, Development and Innovation framework programme Horizon 2020, with the participation in the Smart highway pilot domain of three key European transport players: Cintra, CI3 and Indra. This initiative seeks to validate, both technically and economically, the capacity of Big Data technologies to define new business models and services that improve operative efficiency and user experience in the mobility and logistics sector.

In order to achieve this objective, and for the 30 months that the project will run, the TransformingTransport pilot projects

will be rolled out across seven different areas: smart highways, sustainable vehicle fleets, proactive rail infrastructures, ports as intelligent logistics hubs, efficient air transport, multi-modal urban mobility, and dynamic supply chains.

The pilot domain aims to measure the technical and economic impacts of Big Data applied to the highway markets operated by consortium partner Cintra. Under Cintra, the Iberian peninsula will see two pilot projects, the first involving the Ausol Highway (Spain) where a relevant database is available, and a second applied to the Norte-Litoral Highway (Portugal) that will replicate the Big Data solutions deployed in the Ausol pilot.

The aim of this pilot is to mitigate traffic congestion, reduce accidents and in general improve traffic flow as well as to enhance user experience on the network. At the same time, the TransformingTransport project will improve road infrastructure efficiency.

The pilots will help demonstrate the technical and economic viability of the use of Big Data, the common goal of the Project.

During the project a Big Data platform will be developed to simplify the use of all related technologies and to accelerate the use and exploitation of both structured and non-structured data, even in real time.

Expected results

The main advantage over existing solutions is the integration of Big Data from key stakeholders, which will enable rapid reporting and action to benefit highway users. All the relevant players will have access to the required Big Data in order to manage all the information and to respond rapidly to traffic or infrastructure situations.

Thanks to both pilots, Cintra will enhance its position as a road operator by reducing costs and by optimising services. The resulting knowhow and technologies will benefit Intelligent Transport Systems (ITS) for smart highways enabling better traffic projections and resulting in improved traffic control and operations. In summary, the pilots and technologies behind them will:

- improve traffic distribution along the road corridor,
- promote better utilisation of safer roads,
- provide road users with better information and decision tools,
- optimise highway operations.

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