

# Evaluation tool using probe vehicle data

## Overview

Probe Vehicle Data (PVD) is included on the list of “Day 1 Services” in the European strategy on Cooperative Intelligent Transport Systems (C-ITS) COM(2016)766 final. Traffic Directorate in Basque Government, following this European strategy for implementing C-ITS, decided to evaluate the use of PVD for traffic management at the same time that searching a tool for calculation of lost vehicles hours and congestion costs. This highlight explains the work done and the status of this tool. The evaluation tool has is also integrating and using all the received traffic data for both realtime and historic data. Furthermore a graphic dashboard “heat maps” is able to show, in an easy way, the traffic situation (snapshot) allowing for instance the evaluation of lost vehicle hours, congestion costs and impact of different traffic magement approaches like traffic re-routing, traffic information and control. Project already started in the first phase of Arc Atlantique and it is at this moment providing a complete funtionarity that will still require use and extra configurations for a full capabilities exploitation.

## Objectives

### General background

Basque Government started this project in the first phase of Arc Atlantique Corridor project which has just finished, and that is dealing with the evaluation and calculation of vehicle lost hours for both:

- real time in main road network and corridor and
- historic vehicle lost hours in most of the road network.

This project allowed the adquisition of PVD with the purpose:

- To have a better knowledge of the traffic situation.
- To measure how traffic management measures have impact in traffic congestions.

Being able to measure lost vehicles hours and costs.

## Project description

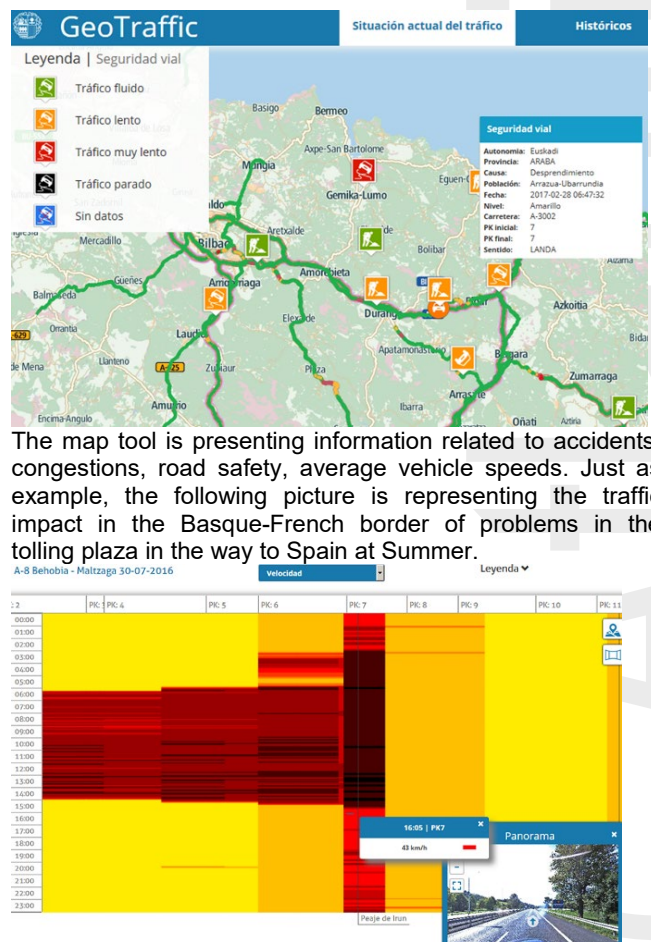
Vehicle lost hours are obtained from aggregation of:

- Vehicle speeds
- Traffic intensity

In order to have information on the first parameter (vehicles speeds), it has been adquired PVD for the road network operated by Basque Government. This means that they are collected:

- real time vehicle speeds for around 512 kms of the main corridors, and
- historic vehicle speeds for more than 1745 kms of whole road network.

The following picture is one example of information that is obtained, feeding in this case a « GeoTraffic » service where is possible to show real time traffic information in Basque Government roads.



The map tool is presenting information related to accidents, congestions, road safety, average vehicle speeds. Just as example, the following picture is representing the traffic impact in the Basque-French border in the way to Spain at Summer.

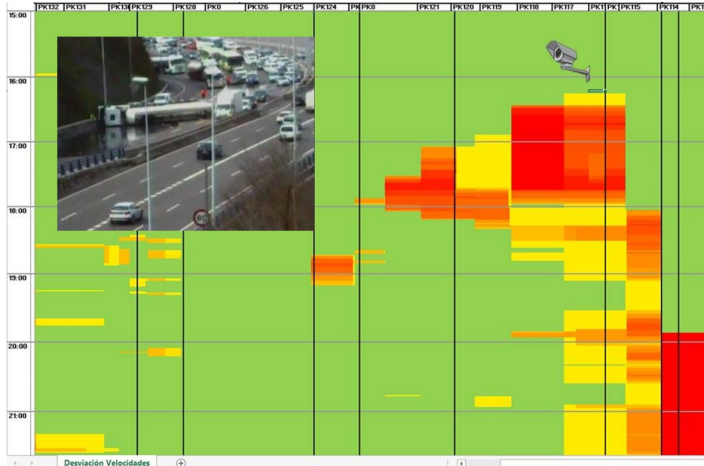
A-8 Behobia - Maltzaga 30-07-2016



Heat maps, from red (traffic stopped) to green (normal speed) are created to analyse historic traffic behaviour and measure and compare lost vehicle hours. Furthermore, the road operator has the possibility to see (right bottom in the previous picture) an overview of the corridor. The red vertical column is the toll plaza where a security traffic control was deployed.

In the following picture, it is presented a truck traffic,

accident in the motorway A8 around Bilbao involving liquid leak. In this case, an overturned truck has several hours congestion impact in the motorway, due to both the accident itself and the removal of the pollutant liquid leak and requiring traffic distraction measures.



## MS involved, budget and implementation schedule

Action promoter: Basque Government Traffic Directorate  
Location: Basque cross border region with France and Spain allowing international traffic pass in the West Pyrenees bottleneck.  
Start date: year 2014  
End date: year 2020 with annual investments.  
Total project cost: About 200K€/year  
EU contribution: 20%

## Results

Project is currently providing in an automatic tool in real time, the vehicle lost hours in the main road corridor, and then to know:

- traffic situations related congestions and
- impact of the traffic management measure which are applied,
- cost of the lost vehicle hours.

Of course with information on vehicle lost hours and costs it is possible to derivate information on Cost/Benefit of the deployed C-ITS traffic management services and then having a catalogue for using each traffic management measure in each traffic circumstance.

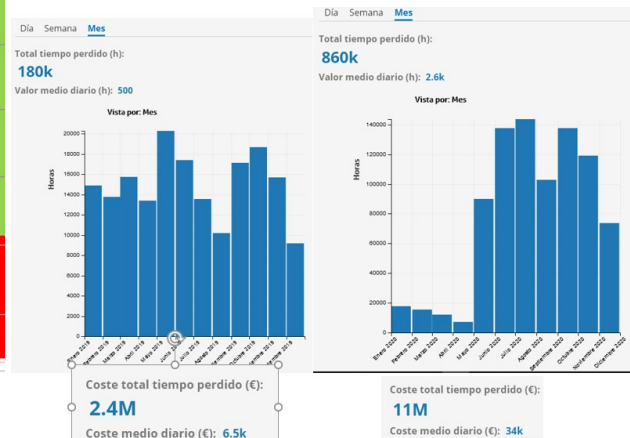
This last approach (with catalogue of traffic management actions) it will be to have some data in consecutive years. This means that it will be necessary to compile these "heat maps":

- several years
- several inter-related corridors
- several applied traffic management strategies

With this information it will be possible **to obtain a comparison between different traffic management**

**measures and immediate traffic impact**, allowing traffic managers to choose between several possibilities (traffic strategies) and knowing in advance what will be the foreseen impact in traffic.

As example of this comparison could be seen in following picture the lost vehicle hours in a specific road in year 2019 (left part) and change when a long term action in the road is implemented (road work from May 2020 in right part) and the difference of lost vehicle hours.



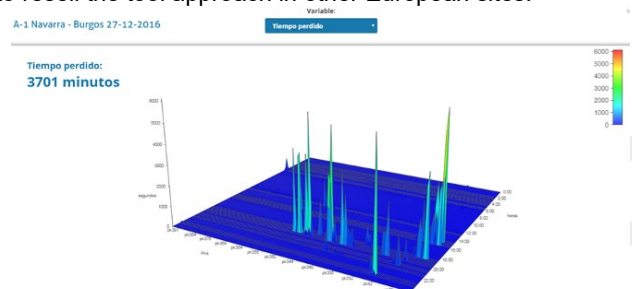
In the previous figure, also the cost of these lost vehicle hours is presented.

The project is currently finished in spite that some tool evaluations, tests and correct calibration will be necessary but this will be only possible after some period of use. In this way, there is still some gap for improvements.

The last picture represents other of the parallel results of the project: to be a tool able to represent for a specific corridor, a 3D picture showing:

- amount of lost vehicle hours per
  - kilometric point and
  - day hour
- total amount of lost vehicles hours

The "just initiated" tool in this project is showing very promising possibilities and the company awarded with the public contract has already started to study the possibilities to resell the tool approach in other European sites.



## Contact People

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