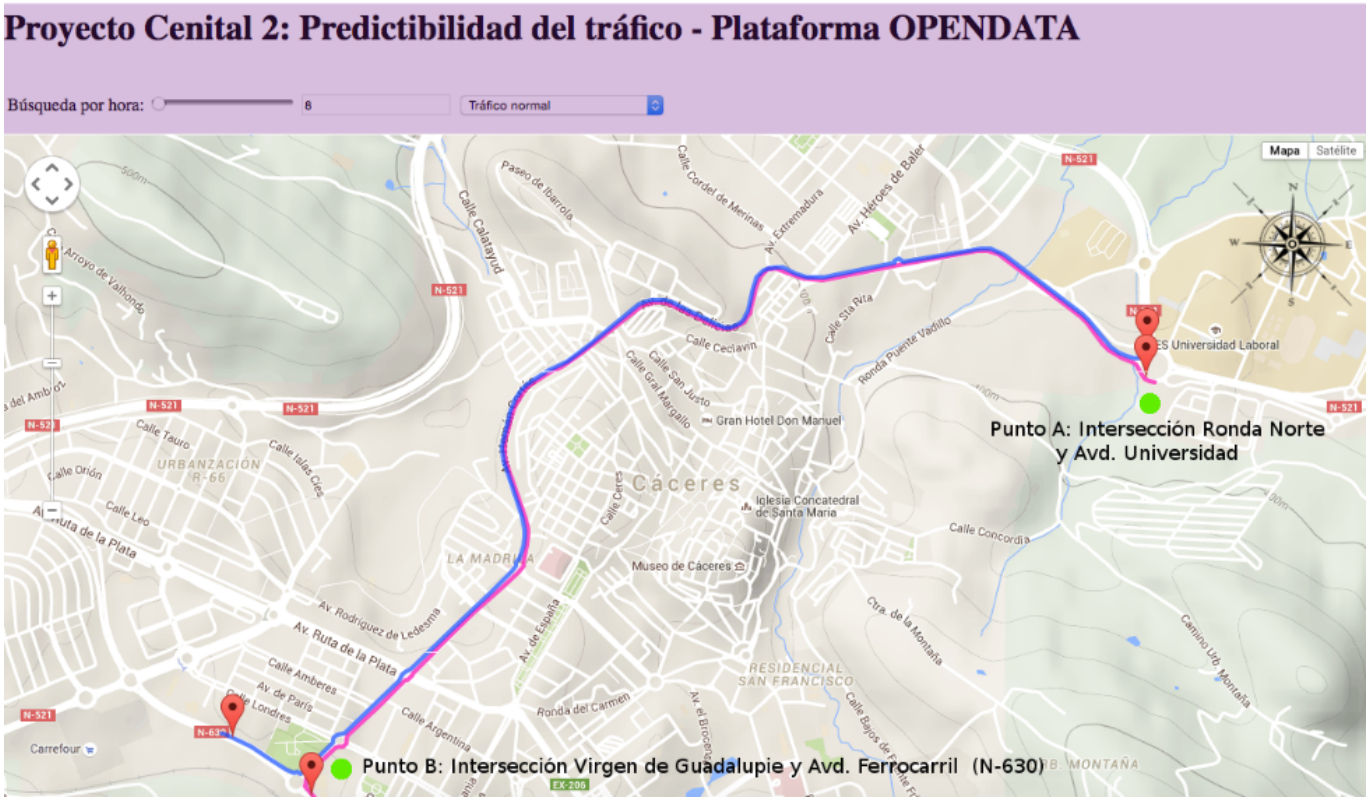
Application of Big Data techniques to the prediction of urban traffic flows in Smart Cities

Researchers:

- Cénits [1]

Language English

Description:



Road traffic is one of the main challenges that cities are facing. New technologies play a crucial role in establishing control and monitoring systems with the objective of facilitating mobility and sustainability. The adequate traffic management results in a better use of infrastructures, in a reduction of polluting emissions to the atmosphere, in a lower consumption of fuel, in a better management of time and in an improvement of public safety.

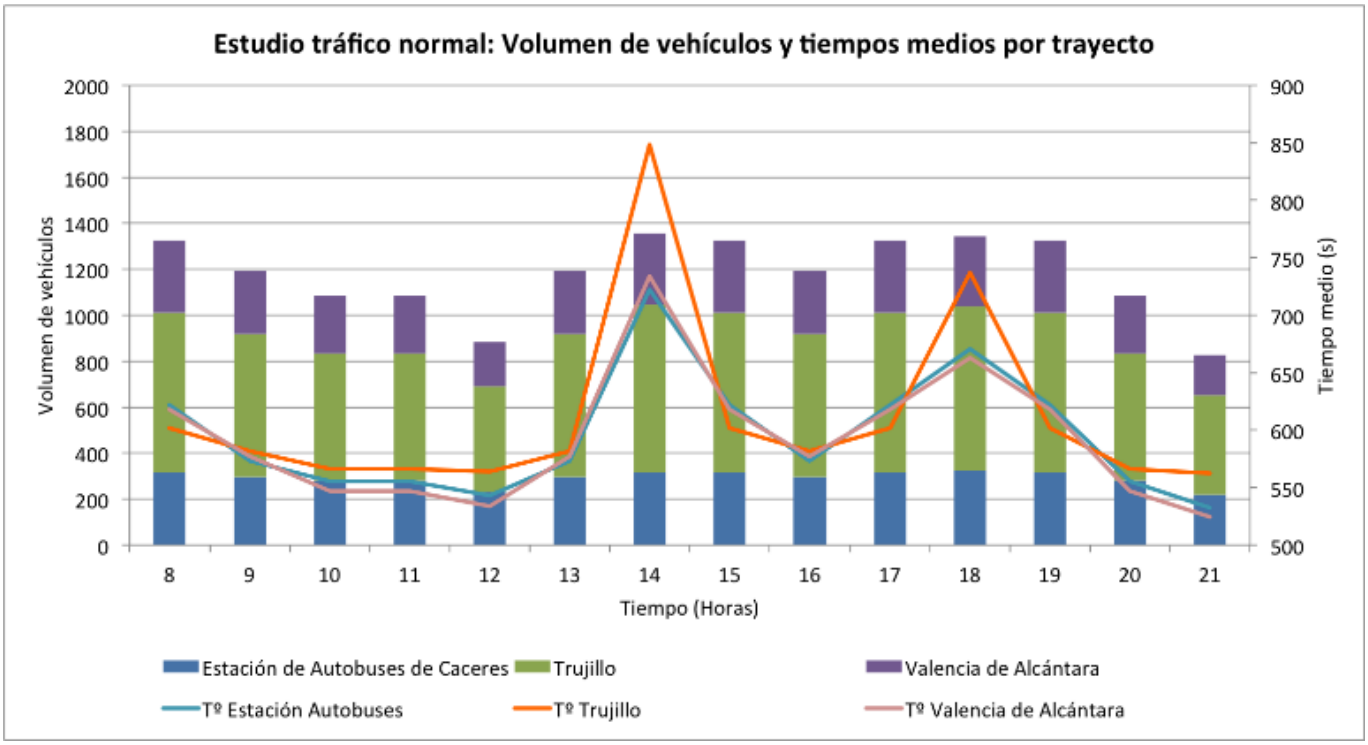
The main objective of this project was to put Cloud Computing and Big Data environments at the service of the cities of Extremadura for an effective, efficient and sustainable management of road traffic.

Previous studies, developed within the CENITAL project, allow us to demonstrate that it is possible to save time, money and CO2 emissions if traffic flows, intersections, traffic lights, roundabouts, car parks and night lighting are adequately controlled, to cite only the most obvious examples. In this project, high availability, information security, computing capacity, Big Data and Open Data possibilities were particularly relevant. All this forms a software ecosystem capable of simulating emergency situations, unexpected roadworks and any other anomaly that may occur on the Extremadura roads.

Objectives:

- A software application as a result of both a careful comparative of existing tools and a traffic modeling analysis.
- A technical report that collects the most conflicting points of the urban traffic of Cáceres.
- An operational software product that stores and displays historical traffic data of the city of Cáceres, as well as a viability study about their use in other cities in Extremadura.
- A document that collects and disseminates the results of the project.

Methodology:



The first phase of the project consisted of analyzing the different traffic modeling tools to obtain simulated traffic data in any city studied.

Subsequently it was necessary to develop tools to allow the automatic dump of the study scenarios, so that, through cartographies obtained from open map systems, the conflicting points of any city could be searched.

After choosing the area to be studied, and once the simulation was done, it was necessary to store the data obtained in an application that would make available the information of the different simulations, as well as historical data and possible traffic optimizations, to evaluate the improvements in the city's traffic.

Achieved objectives:

- Development of a set of tools that support the traffic simulator and allow an easy adaptation of any city to be simulated.
- Implementation of tools that help the publication of the routes, allowing the data obtained in the simulations to be accessible to any citizen, as well as to be able to consult the information on each of the routes.
- Realization of different pilot tests, using the city of Cáceres to study the impact of the duration of traffic lights on the road traffic through different optimization algorithms.

Journals and conferences:

- Summary of the project “Application of Big Data techniques to the prediction of urban traffic flows in Smart Cities” [2].

Funding sources:
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Source URL:https://www.cenits.es/en/proyectos/application-big-data-techniques-prediction-urban-traffic-flows-smart-cities

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