

SMART URBAN MOBILITY APPLICATION IN SAN SEBASTIAN CITY

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Abstract

Nowadays, mobility is one of the main individual and social needs; mobility demand is growing especially in urban areas, where it is strongly related to the number of people needing public transportation. Mobility problem in cities is currently dealt from an intermodal approach, using different modes of transport, and enhancing efficiency of public transport and urban environmental quality. The goal of this paper is to present a mobile application for smart management and analysis of multimodal mobility in urban environments, concretely in San Sebastian city. This application aims to offer a multimodal and flexible real time solution that allows the user to select the best way to move within the city in each time.

KEYWORDS:

E-hitchhiking, park&go, real time multimodal mobility solution.

Introduction

Companies involved in providing mobility for the masses play an essential role in the energy and environmental sectors: 30% of the energy consumptions of a highly developed country is associated with transport systems. Comparatively, in Europe transport systems are responsible for 25% of all CO₂ emissions. On the other hand, today 64 per cent of all travel kilometers made are urban and this data is expected to triple by 2050. Being able to get around urban areas quickly, conveniently and with little environmental impact is critical to their success.

The goal of this paper is to present a mobile application for smart management and analysis of multimodal mobility in urban environments, concretely in San Sebastian city. This application is based on a platform that aims to provide citizens with various flexible forms of multimodal transport, integrating several services of added value and real time adaptability to their needs and circumstances.

On the other hand, real data extraction for mobility studies development is implemented, so that it can be a feedback for the generation of a mobility and sustainability research.

General overview of mobility management in Gipuzkoa/San Sebastian

There are currently several isolated initiatives that promote sustainable mobility in the city of San Sebastian. Each of them is oriented to a concrete line of action:

- Bikes: a public bicycle network is available to citizens in different parts of the city. It initially consists of 9 stations, having 195 parking spots for a total of 150 bicycles.
- Pedestrian environment: the number of pedestrian streets and pedestrian areas is increasing, in favour of mobility in the city. Moreover, the construction of mechanical vertical mobility mechanisms to respond to problems of accessibility is a solution that is gaining increasing importance.
- Public transport: Currently there are 27 lines serving the city and communicating daily the different neighborhoods of San Sebastian.
- Other initiatives promote the use of biofuels, bus services to work places, information to the traveller, personalized transport plans, car sharing systems, etc.

Taking all this into account, the main problem is that all these initiatives are unconnected and the user notices the lack of information as a prior necessity. So, there is a need of a mobile application that integrates all the modes of transport as well as additional information that allows managing the urban mobility.

SUMA, an application for urban mobility management in San Sebastian

SUMA (Smart Urban Mobility Application) is a new mobile application for smart urban mobility management and mobility analysis developed for the city of San Sebastian (Spain). This application is oriented to Smartphones, and allows integrating all mobility alternatives to the users in real time, so that they can select those more convenient for the current necessities and create their personal multimodal mobility solution. SUMA is based on 4 main pillars:

Electronic hitchhiking

One of the main applications of SUMA is that based on the dynamic private car pooling, where a car driver aims to share his free seats with other users with compatible mobility requirements. A punctuation system is used for the qualification of both driver and traveller, so that it can be taken into account when choosing colleagues for travelling. Routing algorithms are implemented and included in the application, so that original routes can be slightly modified to provide service to other users.

Bikes management tool

This tool aims to offer real time information to the users about the availability of the bikes along the several anchor points. This system also allows to the system manager considering variable rates for the rental, so that the redistributive task is relieved.

Park&Ride tool

In some cases, the use of the car is unavoidable to access the city, especially when coming from small towns where no mobility offering is available. In these cases, the best way to contribute to the urban sustainable mobility is offering to the users the option of parking their

cars and taking the bus or another mode of transport. SUMA offers real time information of the location, occupancy and general information of the parking areas in the city.

Urban public transport real time information

All these mobility modes require the combination with public transport modes information, since this is the most sustainable mode of motorized transport in urban environments nowadays.

Multimodal mobility solution approach

In some cases, the best solution for the final users goes through the right combination of different modes of transport, so that it can fit their actual needs and mobility requirements. In this sense, one of the options provided by SUMA tool is the generation of a multimodal solution that considers user restrictions prioritizing sustainable modes of transport.

Mobility and sustainability analysis tool

As important as getting an increased sustainable mobility rate in urban environments is to extract actual data in order to analyze it. This can be used for generating mobility studies and extracting statistics of the mobility trends in urban environments.

Conclusions

Although the project status is prototype, some conclusions can be drawn from the first stages of it. Mobility of users by public transport has increased in a 5% during the first 3 months of use. 608 downloads, 230 experiences of dynamic car pooling and feedback from users corroborate the good acceptance of the application.

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