# D3.3 Effective mobility management solution for city showcase

## VIAJEO PLUS

### D3.3 Effective mobility management solution for city mobility week

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Samson Tsegay - SWARCO</th>
</tr>
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<tr>
<td>Project</td>
<td>VIAJEO PLUS - International Coordination for Implementation of Innovative and Efficient Urban Mobility Solutions</td>
</tr>
<tr>
<td>Date</td>
<td>Contractual: M16</td>
</tr>
<tr>
<td>Project Coordinator</td>
<td>Yanying Li</td>
</tr>
<tr>
<td></td>
<td>ERTICO - ITS Europe</td>
</tr>
<tr>
<td></td>
<td>Tel: +32 2 400 07 37</td>
</tr>
<tr>
<td></td>
<td>E-mail: <a href="mailto:y.li@mail.ertico.com">y.li@mail.ertico.com</a></td>
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### Abstract

This report aims at giving a sound overview of the Task 3.5 activities performed as part of WP3 Effective Urban Mobility in the Viajeo PLUS project. The document shows best practices of Verona city as part of EU best practices and also Jundiaí as part of the Latin American best practice. The information highlighted in this document was presented in workshop during the Gothenburg City Showcase that was held in Gothenburg, Sweden on 12-14 May 2014. The objective during the workshop was mainly to gain first-hand experience of innovative solutions, exchange knowledge, share information among city representatives, policy makers, technology providers and researchers from Europe, Latin America, China and Singapore.

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City showcase, Verona, traffic mgmt

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<tr>
<td>Prepared Samson Tsegay (SWARCO)</td>
<td>26/08/2014</td>
</tr>
<tr>
<td>Reviewed Manuela Flachi</td>
<td>3/10/2014</td>
</tr>
<tr>
<td>Authorised Yanying Li</td>
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</tbody>
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Table of Contents

1. Introduction ................................................................................................................. 5
2. Verona city Background ............................................................................................... 5
  2.1. Key Objectives ........................................................................................................ 6
  2.2. The Verona Traffic management centre ............................................................... 6
3. Verona’s Innovative Existing systems: .......................................................................... 7
  3.1. Purpose of integrated system .................................................................................. 8
  3.2. ITS subsystems of Verona ...................................................................................... 9
5. Going forward with Innovative services: ...................................................................... 13
  5.1. Private and public funded project ......................................................................... 13
    5.1.1. Outcome of the private and public funded project: ....................................... 14
    5.1.2. Compass4D EU funded Project .................................................................... 15
      5.1.2.1. Proposed Compass4D services in Verona pilot .................................. 16
6. Ultimate goals of Verona city ....................................................................................... 17
  6.1. Connected city ......................................................................................................... 18
7. South America - Jundiai .............................................................................................. 19
  7.1. Background / Rationale ......................................................................................... 19
  7.2. Key Details ............................................................................................................. 19
  7.3. Key Considerations ................................................................................................. 19
  7.4. Benefits & Future plans ......................................................................................... 20
8. Annex ............................................................................................................................. 21
  8.1. Newsletter ............................................................................................................... 21
9. References ...................................................................................................................... 22
1. Introduction

The main aim of the Viajeo PLUS project is to identify and define clear implementation strategies for the successful deployment of innovative sustainable urban transport solutions in European, Latin American, and Asian (China and Singapore) cities and in Mediterranean Partner Countries (MPC), fostering collaboration between these regions on a global scale.

To meet the Viajeo PLUS vision, successful experiences of implementing innovative urban mobility solutions across the world will be identified and shared. Experience and knowledge will be exchanged through showcases, site visits, workshops and dissemination learning materials. Viajeo PLUS will also facilitate “cross-learning”, a two-way approach introducing innovative urban mobility solutions in European cities to both Latin American and Asian cities plus MPCs and vice versa, whereby European cities and industrial organisation will gather first-hand experience of mobility.

This report is part of the Effective Urban Mobility WP3 activity of Viajeo plus. The outcomes of one of the tasks of this WP, Task 3.5 is to assistant organizing innovation weeks and as the result to produce D3.3. Therefore as part of this deliverable this report highlights the first-hand experience as a best practice from both Verona city and also south American cities is given. It describes also not only the existing mobility systems of the cities mentioned but also their impacts and also future intended activities in those cities.

2. Verona city Background

Verona is located in the Veneto region, northern Italy, with approx. 265,000 inhabitants and one of the seven chef-lieus of the region. It is the second largest city municipality in the region and the third of northeast Italy. The metropolitan area of Verona covers an area of 1,426 km² (550.58 sq mi). It is one of the main tourist destinations in northern Italy, owing to its artistic heritage, several annual fairs, shows, and operas, such as the lyrical season in the Arena, the ancient amphitheatres built by the Romans.
quality legislation and the difficulties of tackling congestions. The objective now is to enhance mobility while at the same time reducing congestions, accidents and pollution in European cities. Consequently urban transport has been placed at the heart of European transport policy. Urban transport produces around 40% of all CO2 emissions caused by road traffic and up to 70% of other pollutants from transport. Therefore a flexible approach has to be designed to cope with these challenges and which can be transferred to many other European cities.

The Verona city in order to improve the urban mobility based on the European Commission agenda in relation to the national strategies for ITS directives, it is moving fast to give answers to the new challenges that have emerged in recent years with respect to climate change, energy policy, air quality legislation and the difficulties of tackling congestions. Some of the evidences for this in addition to the involvements to different EU initiatives. In October 2008 the city of Verona has acceded to the Covenant of Mayors sponsored by European Commission as part of the Campaign for Sustainable Energy in Europe. In April 2011 it was adopted the Environmental energy plan, which contains guidelines and strategic objectives in the field of energy. In October 2011 it was approved the Action Plan for air Quality and Remediation based on the result of two years of work of the municipal offices with the technical and scientific support of the University of Trento, ARPAV of Health Units and 17 municipalities that have joined the agreement. The Plan provides for the adoption of structural measures to counter air pollution. Among many factors considered, one of the main things taken into consideration was mobility.

Verona city is an active member of TTS Italy, which is the national ITS association. As main member of the association, it plays a big role in defining the Italian ITS strategies at a national level.

2.1. Key Objectives

- Reducing overall delay, waiting times in traffic through enhancements adaption and through the introduction of new cooperative telematics applications;
- Reducing pollution generated by traffic density - by adopting an optimum traffic strategy, in order to give a good traffic info for traffic participants, and to lower impact in environmental terms (emissions etc.);
- Further positive side effects are the generation of higher comfort for the driver and passenger and the improvement of traffic safety. With a harmonized traffic flow the occurrences of accidents is decreasing
- Improvement of Public Transport service
  - increased regularity and commercial speed
  - Reduced operational cost
- Dissemination of information on road conditions and services

2.2. The Verona Traffic management centre

Verona city in order to achieve this national, regional and EU level objectives in transport and mobility has already introduced a complex and fully integrated advanced Traffic management platforms (see below) in the traffic management center (TMC) where autonomous ITS systems and applications exchange data and are coordinated by a higher level subsystem OMNIA² the supervisor that can easily hook and Integrate different ITS subsystem. The implementation of this platform made Verona to be one of the modern cities in terms of urban mobility and also to be a center and pilot site of different EU, regional and national level initiatives.

² OMNIA is a Swarco Mizar product
3. **Verona’s Innovative Existing systems:**

One of the main Existing urban and Interurban Mobility is controlled by the OMNIA Platform-Supervisor. It offers an high level framework and provides a single access point for all the component systems and support for the whole life cycle of a system: implementation, operation, updating and planning, by integrating an homogeneous and user-friendly interface for the operation of different traffic control and traffic management systems. This ITS platform supports open architecture where any ITS system can be integrated within the platform, independently of the supplier product or technology used such as Urban Traffic Control system, Public Transport management system, Parking, Streetlights, VMS, etc. It give a single access point for all integrated systems and all the traffic measures are gathered and stored in the central system archive together with their estimated statistical profile such as traffic volumes, speed, etc and traffic related data (e.g. signal plan, clearance capacity, turning proportions etc).
3.1. Purpose of integrated system

The Integrated ITS Platform in Verona city is a telematics framework that permits data to be shared between different types of ITS application implemented within the same geographical area. The aim is to achieve more efficient management of transport as a whole, and to make available more and better quality information to operators as well as to final users (travellers). Such a Platform permits synergies which provide numerous benefits, including:

- the possibility of implementing a coordinated transport management strategy in a given urban or interurban area as all ITS applications can operate collaboratively
- increased quality and scope of information services for transport users (e.g. sharing of operational data between traffic control, parking and public transport systems);
- the reduction of costs due to the possibility of shared equipment, databases, and staff.
- better information available for making operational decisions.

An Integrated Platform consists of a central server which is able to collect, process and make available different types of data from different sources. Typical functions provided by such a platform are:

- Network Monitoring: real time information on traffic across a road network (e.g. congestion, traffic flows represented on a cartographical form)
- Traffic forecasts;
- Monitoring of System Status: the operational state of ITS systems and equipment;
- Public Transport Monitoring: location of public transport vehicles, relationship to schedule (whether running on time, delayed, etc) and forecasts of arrival times at bus/tram stops;
D3.3 Effective mobility management solution for city showcase

- Traffic Control Status: information from the UTC system on signals, queues etc
- Variable Message Signs: location of signs and current message displayed.

More advanced functions:
- VIP/Emergency vehicle routes
- Support to maintenance (Fault / Work-Order management)
- Advanced Performance Monitoring (analytical graphs)
- Incident detection and Congestion Warnings

The basic components of an Integrated Platform are:
- Control Centre: requiring a LAN architecture based normally on standard computers (servers and workstations) with a series of modular and scaleable functions
- Communication network: a WAN architecture supporting several different kinds of wired and wireless communication media (e.g. optic fibre, dedicated telecommunication lines, VPN based on DSL connections, etc) and protocols (standard TCP/IP, proprietary serial protocols, etc),
- Databases: a set of relational databases used to store data related to the system configuration, field measurements and diagnostics.
- User Interface: this is an essential element which allows the operator to have access to real-time and stored data in order to be able to efficiently monitor and/or manage the transport system. Data can be presented in different forms: cartographic, tabular, graphical etc on a common GUI (Graphical User Interface). In more advanced platforms, it is possible to call up several data representations at the same time (for comparison) and zoom in on specific parts of the network, e.g. an intersection, for a detailed view.

Access to data via the Platform will normally be protected, so that given information and rights are available only to specific authorised users (e.g. the system administrator, traffic supervisor, maintenance teams, system operators, etc).

3.2. ITS subsystems of Verona

The Verona System consists of various functional sub-systems. Each sub-system (UTOPIA 3-adaptive traffic control, Mistic4, FLASH5-PT management system) performs its own specific task and co-operates with all the other sub-systems in exchanging data and information needed to achieve the optimum control of the whole urban area. All the sub-systems are integrated by the Supervision module, the Town Supervisor OMNIA, which is able to co-ordinate all the sub-systems, to define a real-time traffic control strategy, to give commands to each sub-system, to co-operate to the common result and to support the operators through a common user interface.

Utopia

It an adaptive traffic control system designed to optimise flows and give selective priority to public transport without sacrificing travel times for private traffic.

The system offers a wide range of strategies designed to suit any road network. In the fully adaptive mode, it constantly monitors and forecasts the traffic status and optimises the control

---3 UTOPIA is Swarco Mizar product
4 Mistic is Swarco Mizar product
5 Flash is Swarco Mizar product
strategy according to flow efficiency and/or environmental criteria. This gives high performance even with unpredictable traffic conditions.

There are more than 150 intersection in Verona (see figure 2 below) and are interfaced to OMNIA. The Verona Traffic systems uses both actuation and adaptive plan.

![Fig 2 - existing RSU locations](image)

**MISTIC**

It is another subsystem makes available the middleware needed to validate, normalise and synchronise the information and data provided by the systems connected, and monitors the status of road network and systems availability.

- calculates the optimal distribution of traffic within the network
- estimates and updates the traffic demand O/D model
- establishes the actual network availability
- forecasts the traffic distribution and performance on the whole controlled areas
It also operates as a platform for producing and publishing multimedia information for travellers. It can operate in different contexts: urban areas, motorways, rural roads.

Different standard formats are already supported by the system. Adding specific conversion modules MISTIC is able to convert the data into other formats as requested by non-standard customers systems.

Built-in supported formats for distribution are:
- Xml
- Voice / Voice-Xml
- Html/WML
- Edifact for DATEX exchange
- SMS/WAP
- “Ready to use” formats (texts, traffic bulletin, etc...)

The channels supported by the system for the information distribution are:
- Internet e.g. web site (HTML, XML)
- Digital Video Broadcast (DVB-T and DVB-H)
- Smart Phones
- Voice channels with services based on IVR systems
- RDS and DAB Radio channels for the TMC message broadcasting
- On-board equipment’s (PDA, navigation systems, SmartPhone, ...)

CCTV
CCTV Cameras on 30 traffic light Intersections for traffic monitoring are Installed

AVC
the Automatic Vehicle Classification (AVC) sub-system automatically acquires and classifies traffic data related to the vehicles which are coming and going across the areas monitored by the AVC peripheral stations. This sub-system implements a classification correlation engine to categorize vehicles starting from the key vehicle features (length, weight) with the aim to gather the road traffic conditions, to provide the central operators a detailed vision on the traffic problems

Variable Message Signal (VMS)
The Variable Message Signal (VMS) management system, is based on 33 signs integrated by the software MISTIC. Through VMSS, placed in strategic areas of the city, citizens are continuously (and real-time) informed about traffic conditions, traffic events, environmental situation, suggested roads and parking availability.
SoS emergency assistance system
13 emergency assistance system

Parking system

Smart Phone RTTI Services
There is mobile service veronamobile.it, that gives the RTTI services that include: parking, incident, event, bike sharing, info for disabled people, metrological info, ZTL (traffic limited zone) and PMV (Personal Mobility Vehicle).
4. Benefits of Integrated Platform

Integrated Platforms can be exceedingly valuable for large events due to the possibility they offer for implementing a harmonized transport management strategy and improving information availability. An Integrated Platform which includes not only transport-related systems but is also connected to the information systems managed by the events organizations have the benefit of enabling real time event information (e.g. the finishing time of a sports event) to be made available to transport operators. Given the inherent problem of the intensive and unpredictable movements of people associated with large events, this can be very valuable in helping to match transport demand and supply.

Integration and interfacing of different subsystems as in the case of use of OMNIA software through a WEB desktop, enable operators to manage different subsystems with an unified user interface. In particular OMNIA provides: real time monitoring of traffic data; system diagnostic status for all the integrated components; displaying and reporting of diagnostics and VMS operational conditions. Furthermore performance analysis tools are provided to support maintenance procedures.

In terms of benefits by using the integrated platform and its subsystems, a cost-benefit analysis, (comparing centralized traffic management system performances with those regarding a locally controlled system (Pezzuto, 2012) demonstrates that, by this solution a reduction in travel time by 28.9% and related reduction of CO2 emissions by 14% have been obtained.

Similar Integrated Traffic management solutions are implemented in different countries to mention some: Bucharest, Prague, Torino, Rome, Trondheim, Berlin, Budweis, Bergen, Stockholm etc.

5. Going forward with Innovative services:

5.1. Private and public funded project

In addition to the above mentioned existing systems, Verona city in order to give a full response to the European ITS Directive with the law on Growth & Development issued on the 17 December 2012, In particular the article 8 which is dedicated to “telematics linking between vehicles and transport infrastructure” the city participated in a private public funded projects (Swarco, Verona city and Audi) and EU funded projects Compass4D described below:

In Verona city as private and public funded project an I2V tests were carried out in 2012. This was a collaboration project between municipality of Verona city and important leader industry in ITS solution SWARCO and car manufacturer-OEM AUDI.
5.1.1. Outcome of the private and public funded project:

Traffic light assistant:
Based on the architecture above Traffic light assistant application that provides a Speed Advice to a driver was developed. This application informs the driver at which speed he can pass through green lights.

The test was carried out using a number of Vehicles equipped with cooperative systems OBUs that were directly receiving speed advice from the TMC. This speed advice application is designed to produce green waves, with aim to have environmental benefits for citizens. Vehicles by communicating with the infrastructure to travel at optimum speed so that they are not required to stop-and-start at traffic lights, thus reducing the stop-and-stat behaviours which produces more emissions and congestion than continues traffic flow. This is not only of interest to small private vehicles but also heavy goods vehicles. Generally the aim of the project was to give to citizens energy optimized driving in the city through reduced number of stops & and to potentially reduce/avoid accidents.

Demonstration event:
A demonstration event was carried out in 4 November, 2014 and the outcomes were published in newsletters and national journal L’ Arena (http://www.ferpress.it/?p=121710) see below.
5.1.2. Compass4D EU funded Project

In addition to the above activities that are going on in the city, Verona is also part of the EU funded project named as Compass4D (Cooperative Mobility Pilot on Safety and Sustainability Services). Three years EU funded CIP Cooperative system project coordinated by Ertico.

The key driving force behind Compass4D is to deploy cooperative intelligent Transport services (ITS) to improve road safety, as well as enhance the energy efficiency of road transport. This project was started beginning of 2013. As part of this project, the whole city of Verona is considered a pilot of the project. For this purpose, part of the city centre and the main corridor and arteries will be installed with ETSI ITS- G5 short range communication RSU as seen in Fig 2. In addition for the first time in Italy, in Verona city LTE or 4G that covers the whole city road network will be installed, this means that vehicles will get cooperative systems services directly from cooperative traffic management center through long range
communication even in areas where the ETSI ITS-G5 RSU (short range communication) is not available. Such kind of Traffic management architecture that provides a pre-commercial Cooperative system services listed below, from any corner of the city using both a dedicated short range communication and long range communication in such a large scale does not exist in Europe yet.

As mentioned above as part of the Compass4D project, the following Cooperative system equipment’s will be installed in 2014 that will work in conjunction and in a harmonized way with already existing systems and mainly as a subsystem of the main Verona ITS platform in the traffic management center.

- 25 cooperative RSU will be installed ETSI G5 complaint along the route as seen in the figure 2 above
- OBU for 15-20 vehicles
- 2 Cameras for the safety application
- 30 test vehicles or user panel will be selected by the city of Verona to make tests using smart phones or tablets that uses 3G/LTE communication (this will enable the city to give some cooperative services also in the road network where the RSU are not equipped with 5G)
- Installing LTE network for the first time in Italy that covers the whole city

5.1.2.1. Proposed Compass4D services in Verona pilot

The efficiency and safety apps that will be deployed and tested in Verona starting end of 2013 - 2014 are listed according to the priority that the city of Verona has.

- speed advice to drivers, in urban area
- forward collision warning based on local traffic jam
- Red light violation
- Cooperative PT priority

Citizens with equipped vehicles, or smartphone apps, will receive real time speed advises to cross the intersection in front with the green light and remaining waiting time while at the red traffic lights. The users group in Verona will be offered also with additional cooperative safety related services beyond the environmental and efficiency services. The C-ITS services that will be implemented such as the Red Light Violation Warning (RLVW) will support the driver, for example, through in-vehicle notifications (audio/video), when a potential own red light passing can occur. Moreover, Road Hazard Warning (RHW) will give advices to reduce incidents by warning drivers about queuing traffic in blind spots, or hazard situations ahead.
The outcomes of these pre-commercial Cooperative system apps are expected to reduce Co2 emission, pollution and accidents. It is expected that it will improve the records achieved already from the tests that has been conducted in the city using the existing systems, before the inclusion of cooperative system.

- Average reduction in fuel consumption
  - Vehicle (Benzene) 17%
  - Vehicle (Diesel) 14%
- Travel time reduction 28.9%
- Emission reduction (traffic) 14.5%
- Social cost reduction related time lost
  - Inhabitants (approx.) 265,000
  - Movements per day (average) 318,000
  - Duration of movement per day 20'
  - Reduction in percentage 7% (1,4')
  - Overall time in hours saved per day 3,500
  - Cost in Euro saved per hour €10,00
  - Overall saving per year €9,450,000

6. Ultimate goals of Verona city

Demonstrate how traffic infrastructure communicates with cars (V2I)(C-ITS)

In the short run: Car manufactures offers a unique service

In the long run: Automated vehicles...
6.1. Connected city

Above all the ultimate goal of Verona city in addition to the above described services is to be a connected city:

Fig 5 Verona Connected city
7. South America - Jundiaí

7.1. Background / Rationale

Jundiaí is a city and municipality in the state of São Paulo, Brazil, situated about 60km to the north of the São Paulo conurbation. The municipality covers an area of 433,958 km² with a population of 393,120 (for the year 2013, according to the Instituto Brasileiro de Geografia e Estatística). The city of Jundiaí has witnessed a steep population growth in recent years, up by 2.1% from 2010 to 2013, in large part fuelled by the inward migration of residents from nearby São Paulo.

In 2012, the city of Jundiaí deployed an advanced Transportation Management System which incorporated:

- 20 intersections equipped with an adaptive traffic signal control system
- 130 inductive detector loops
- A centralized control and management platform

Key drivers for implementing the advanced Transportation Management System was to deliver a system intended to:

- Enhance traveller safety
- Improve traveller mobility, typically measured through the duration of delays and the variability in travel time
- Improve the capacity and throughput of the network, measured by the maximum number of persons or vehicles per hour at a given point
- Maximise the system efficiency, productivity of transportation providers, energy conservation and environmental protection
- Introduce advances diagnostics, equipment monitoring, operation reliability, through both central and remote monitoring solutions

7.2. Key Details

The advanced signal control systems include a centralised control for all traffic signals, which has many positive benefits over the previous fixed-duration systems which were installed across Jundiaí. These dynamic systems are able to manage the traffic more effectively, providing reductions in traffic travel time, delay, number of vehicle stops and exhaust emissions for all road users.

The adaptive traffic signal control systems were installed as subsystem of the overall integration platform. This subsystem coordinates and controls the traffic flow on arterials across the wider Jundiaí metropolitan area, and continually adjusts signal timing parameters based on current traffic volumes.

The OMNIA platform implementation is considered as a strategic approach and as an initiative towards wider deployment of the municipality of Jundiaí to their future ITS plans, such as traffic light priority for buses, city wide Infomobility services, the inclusion of VMS for collective routing, CCTV based enforcement and surveillance.

7.3. Key Considerations

Stakeholders Involved

The traffic and transport department of Jundiaí City collaborated with third-party providers in order to successfully implement the advanced traffic management system.

Funding Mechanisms
Municipality funds were used for traffic light control maintenance

Planning Phase
12 months - the tendering process began in 2009 and was completed with the award of contract by 2010

Implementation Phase
24 months (2011-2012) - implementation of the intersection plants and communication network, renewal of numerous traffic signal controllers, implementation of traffic detectors, procurement of central hardware systems
12 months (2012) - installation, configuration and commissioning of the centralized software

7.4. Benefits & Future plans

The successful implementation of the advanced Transportation Management System has delivered a range of benefits to the city of Jundiai. Indeed the innovative platform which is able to interface with many other ITS systems bringing their functionality into the overall traffic management centre, presents a harmonized monitoring capability for the traffic corridors.

The system in Jundiai has an impact in terms of:
- Reduction in fuel consumption and environmental pollution
- Optimization of travel time and mobility on the main arterial routes of the traffic network
- Improvement of Public Transport service (increased regularity and commercial speeds)
- Reduced operational cost

The outputs from the system are additionally used for the dissemination of information on road conditions and services (through B2C services).

Future plans for the system in Jundiai include the extension of the adaptive traffic light control system to more intersections, including priority solutions for buses. Jundiai is considering city-wide Infomobility services, the inclusion of VMS for collective routing, and CCTV-based enforcement and surveillance functionality.

The implementation and experience of the system in Jundiai has encouraged the expansion to other Latin American cities.
These including:
- Buenos Aires (ARG, installation started in 2012);
- La Paz (BOL, installation started in 2013);
- Neiva, Bucaramanga and Barranca Bermeja (all COL, each installation was scheduled to start in 2013).

Each location has different requirements and the modular nature of the system allows for the specific conditions to be accounted in each implementation.

In addition next year there is a plan where Latin American stakeholders (mainly the V+ partners and also other 3rd party stakeholders) to make “Latin American city mobility week”. Recently in Paris (on the 16th of April 2014), V+ WP leaders and Latin American representatives meet to discuss “Latin American city mobility week” (see planning in annex 8.3 below).
8. Annex

8.1. Newsletter

Smart City: a Verona il primo sistema per attraversare semafori “sempre verdi”
(FERPRESS) - Verona, 4 NOV - Verona sarà la prima Smart City italiana dove automobili e semafori potranno dialogare e consiglierranno la velocità ottimale per attraversare i semafori con il verde e in sicurezza. Il sistema per una mobilità più sicura ed efficiente, tra i primi in Europa, è stato realizzato grazie alla partnership industriale tra la Casa automobilistica Audi e la Swarco, azienda leader per gli ITS e alla disponibilità di del Comune che da anni investe per posizionarsi come una delle più avanzate Smart City in Italia.

Il collaudo è stato affidato a giornalisti ed esperti durante la presentazione avvenuta oggi a Verona alla presenza del sindaco, Flavio Tosi. Il test, effettuato direttamente sulle strade cittadine, ha dimostrato che il sistema di navigazione è in grado di segnalare direttamente sul cruscotto di bordo la velocità consigliata per attraversare con il verde l’incrocio successivo.

La funzionalità si chiama “sistema cooperativo” e si ottiene grazie al collegamento in rete tra il sistema di controllo del traffico della città ed i veicoli. Queste due entità si parlano, avvertendosi a vicenda e in tempo reale delle proprie azioni. E’ così che il veicolo conosce in anticipo le prossime fasi del semaforo e le comunica al guidatore tenendo conto della sua posizione, velocità e direzione. I semafori, a loro volta, hanno una previsione più accurata di cosa sta succedendo sulle strade e possono adattare dinamicamente i tempi di verde e rosso per ridurre le code e i tempi di attesa.

Il Comune di Verona ha effettuato negli ultimi anni importanti investimenti, specie nell’ambito delle tecnologie telematiche avanzate, volte a migliorare i servizi per i cittadini, che per la Smart Mobility ricoprono un ruolo fondamentale. Tra le soluzioni adottate, i sistemi cooperativi costituiscono l’inizio di un processo che porterà il cittadino ad interagire direttamente con i sistemi di gestione della mobilità come la funzione di assistenza al semaforo che sarà presto seguita da altre funzionalità.

Oltre ai veicoli equipaggiati di nuova generazione, il cittadino potrà presto accedere infatti attraverso il proprio smartphone a funzioni molto simili, anche muovendosi a piedi o in bicicletta. Queste ed altre evoluzioni sono infatti oggetto del progetto Compass4D, cofinanziato dalla Commissione Europea, che vede la città tra i partner principali insieme ad altre città europee (Bordeaux, New Castle, Vigo, Copenhagen, Helmond e Tessaloniki).

Omnia, il software della soluzione di controllo del traffico che consente la cooperazione attiva tra veicoli e semafori, è stata realizzata da SWARCO MIZAR, la società italiana appartenente al Gruppo Swarco, operante al livello mondiale e leader in Europa per gli ITS (sistemi intelligenti per il traffico). Negli ultimi anni ha focalizzato la ricerca sull’utilizzo delle potenzialità offerte dai nuovi mezzi di comunicazione wireless per migliorare e adeguare le soluzioni da offrire sul mercato.

La nuova generazione di sistemi di controllo del traffico, attraverso la condivisione dei dati con i veicoli, è in grado di offrire maggiore accuratezza e flessibilità, con conseguente effetto sui costi di gestione per il comune. I nuovi sistemi sono sempre più efficaci nel prevenire le congestioni, rendendo il traffico più fluido, quindi abbassando i livelli delle emissioni nocive con un significativo impatto sulla qualità della vita dei cittadini e sull’ambiente. In questo processo è stata fondamentale la collaborazione con le case automobilistiche ed, in particolare, la partnership con Audi ha consentito la messa a punto di un nuovo prodotto che può essere replicato in tutte le città europee.
Swarco e Audi stanno dimostrando l’efficacia della stessa soluzione a Berlino e a Garmisch (Baviera), per consolidare tutti gli aspetti di adattabilità e di portabilità del sistema cooperativo. La collaborazione tra i due partner industriali si focalizzerà ora sulla diffusione della soluzione su scala sempre più ampia in Europa, assicurandone l’innovazione, l’affidabilità e la robustezza per garantire ai cittadini spostamenti sempre più semplici e confortevoli.

9. References

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