



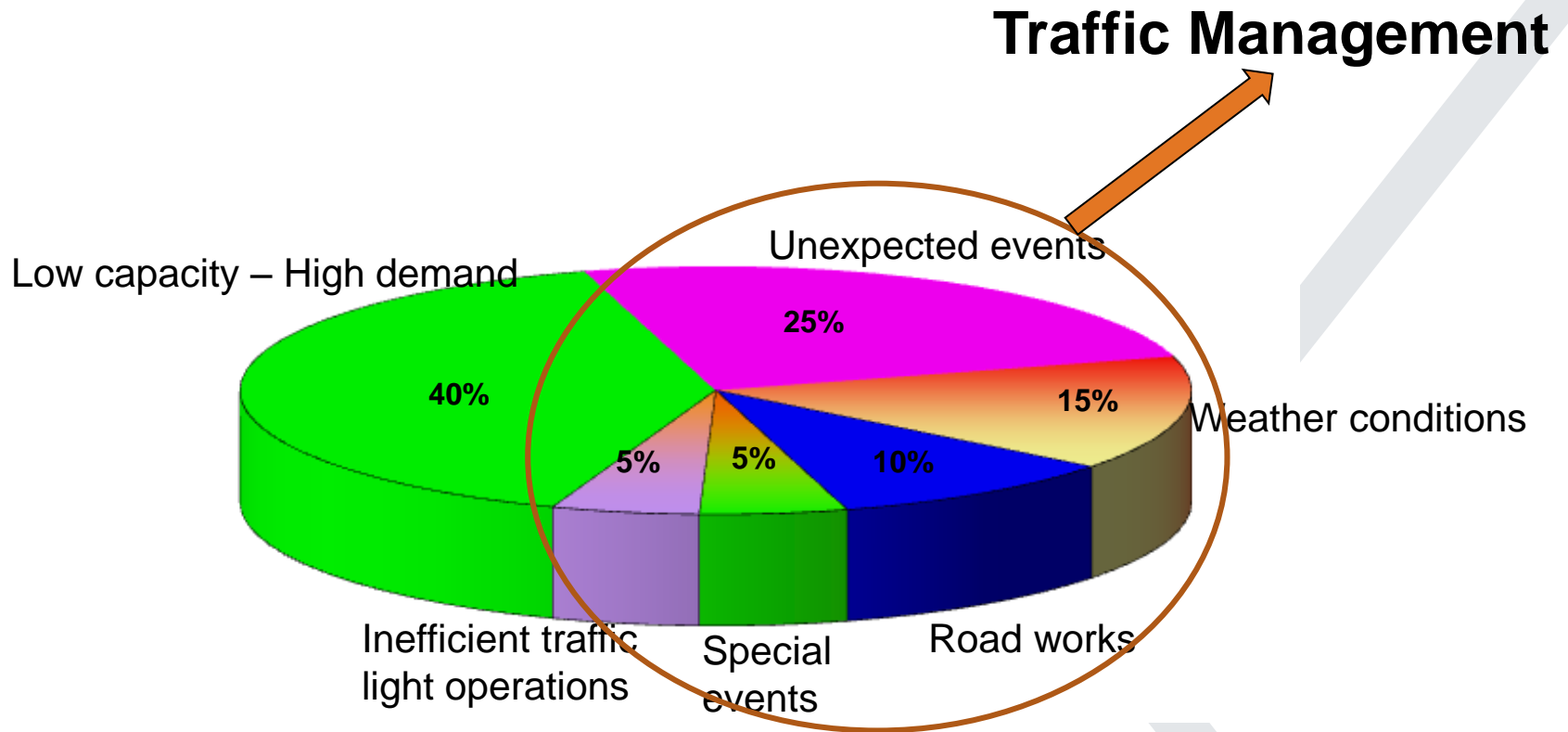
Traffic management systems in Greater Thessaloniki Area
Vassilis Mizaras, Managing Director Infotrip S.A.

- What is Traffic Management;
- The Case Study of Thessaloniki;
- New Trends affecting Traffic Management;

Incentive for Traffic Management



Origin of Traffic congestion problems



Key Targets for Traffic Management



Traffic Management and Technology



- Conventional Roadside sensors
- Variable Message Signs (VMS)
- Actuated or Adaptive traffic control
- Wired communication of roadside information
- Central System manned by human operators
- ITS infrastructure & data owned by Road infrastructure owner
- Usually total management the last years



Integration between Traffic Control and Public Transport



Contribution to Sustainability



Travel time by car: - 17%
Travel time PT: - 20%
Air pollution by traffic: - 10%

Torino, 1996

18% increase of average speed
20% decrease of total congestion volume
20% reduction in CO₂ emissions
25% decrease of travel time during rush hour
Kazan, 2013

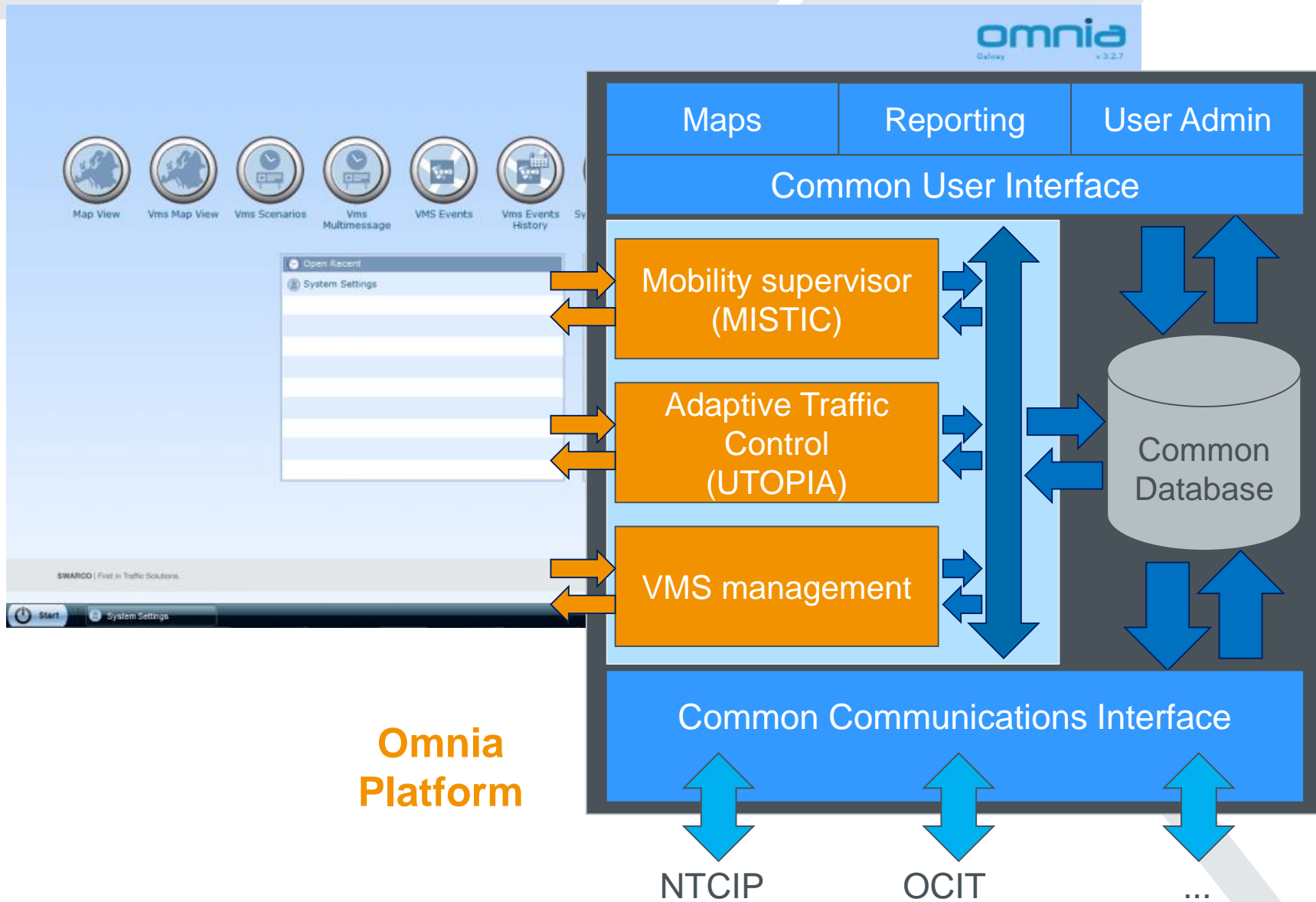


Adaptive UTC & Traffic Management in the City of Thessaloniki



- Adaptive Traffic Control for Tsimiski Road. Traffic control sensitive to current traffic conditions
- 5 VMS at strategic points around the City Center providing travel times, and road incidents.
- CCTV and incident detection around the main central arteries.
- Central management of Traffic and Transport in the city center (OMNIA application).

OMNIA: Central Overview



OMNIA user interface



The screenshot displays the OMNIA user interface, divided into two main windows: **Map View** and **Edit**.

Map View: This window shows a satellite-style map of a city area in Thessaloniki, Greece. The **Selection Tree** on the left lists the following items:

- Thessaloniki
 - Tsimiski Road
- Controllers
 - 1001-1 (ITC) - 1 - YMCA
 - 1002-1 (ITC) - 2 - Aminis
 - 1003-1 (ITC) - 3 - Mela
 - 1004-1 (ITC) - 4 - Germanou
 - 1005-1 (ITC) - 5 - Sofias
 - 1006-1 (ITC) - 6 - Ntil
 - 1007-1 (ITC) - 7 - Aristotelou
 - 1008-1 (ITC) - 8 - Komminor
 - 1009-1 (ITC) - 9 - Venizelou

The **Map area** contains navigation tools and a toolbar. The map shows a junction with several roads and traffic lights. The **View** menu is open, showing the current view settings.

Edit: This window provides a detailed view of the selected junction. It shows the layout of the roads, traffic lights, and signal groups. The **View** menu is open, showing the **Signal Group Diagram** and **Objects tree**. The **Signal Group Diagram** displays a horizontal bar chart with 14 rows, representing different signal groups. A vertical blue line indicates the current time, which is 25. The **Objects tree** is also visible on the right side of the window.

Traffic cameras and sensors



- 5 Traffic cameras Autoscope:
 - Traffic measurements
 - Incident detection
- 1 PTZ traffic camera for supervision
- Traffic measurement sensors used for traffic control



Radar



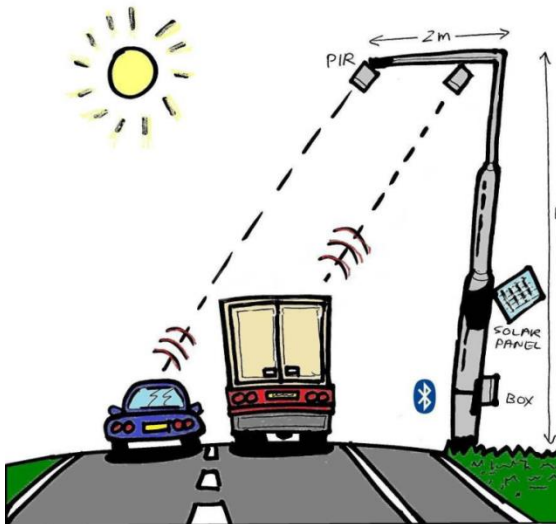
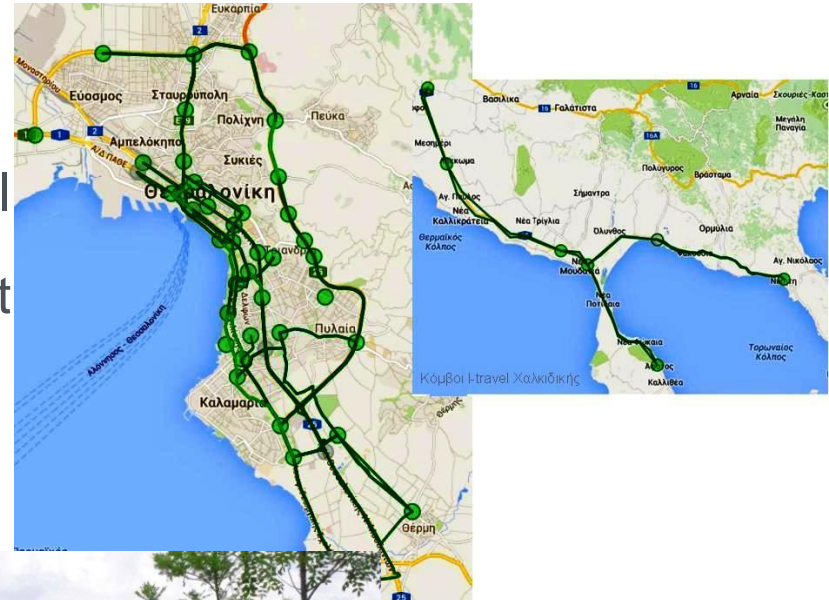
Cameras



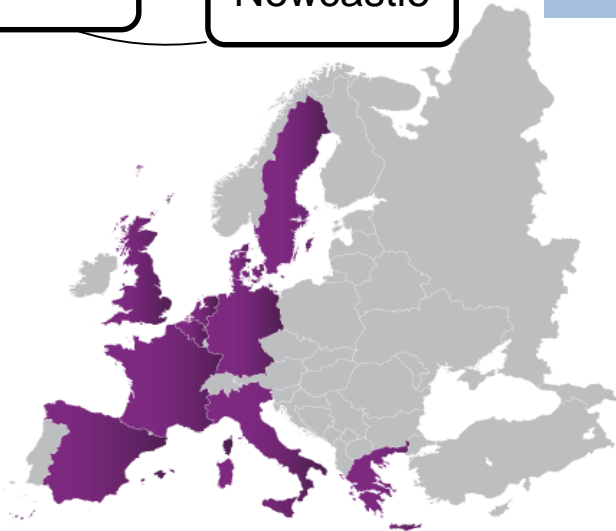
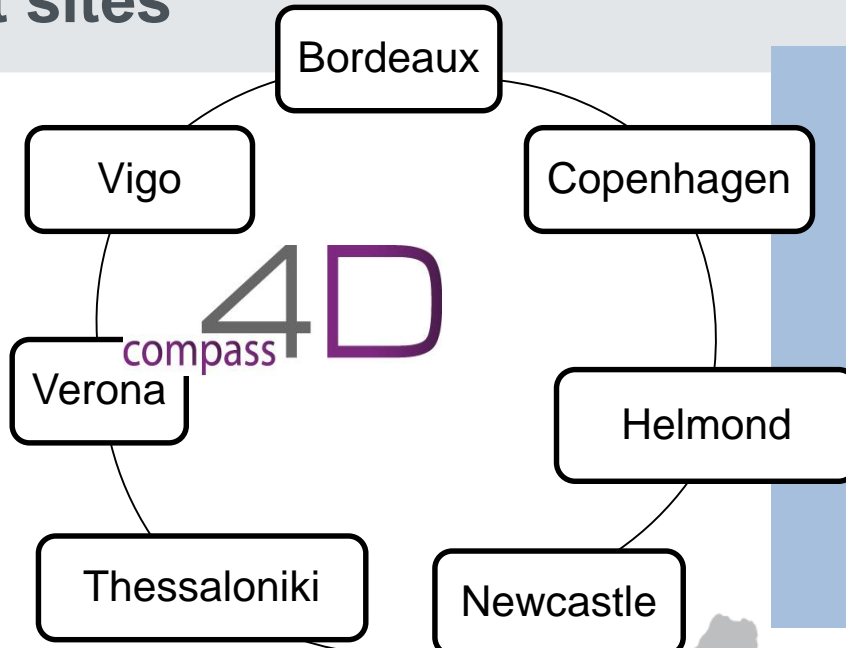
Bluetooth technology



- Bluetooth roadside sensors collect Mac addresses by bluetooth devices
- Central algorithm can calculate Travel times
- Travel time information is displayed at VMS



Pilot sites

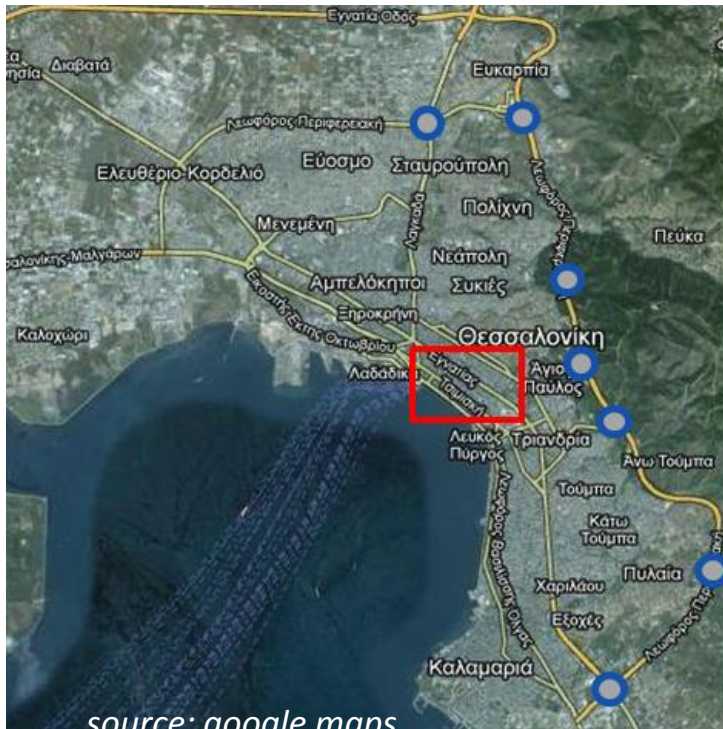


Geographical distribution of Compass4D partners

Thessaloniki pilot



- The Energy Efficient Intersection Control service along Tsimiski road
- The Road Hazard Warning service along the Peripheral Ring Road of Thessaloniki.



Innovative C-ITS Services

Overall architecture



Other UTC systems

utopia
Urban Traffic Controller

omnia
Traffic Control Center



- (1) Mobile Communication – UMTS/LTE
- (2) ETSI ITS G5 – IEEE 802.11p

OEM



(1)



PUBLIC



(1)



RSU



(2)

CAR's OBU



«Bi-directional communication between the field and the Traffic Control Center»

- When approaching a traffic light: Speed advice to driver
- When waiting for green: Time to green, countdown, Activates "Start and stop"
- AUDI – SWARCO first pilots in Berlin and Verona



Innovative C-ITS Services

Other "in-vehicle applications"



➤ In vehicle signaling

- Traffic information
- Speed limits
- Roadworks
- Incidents
- Traffic Jams



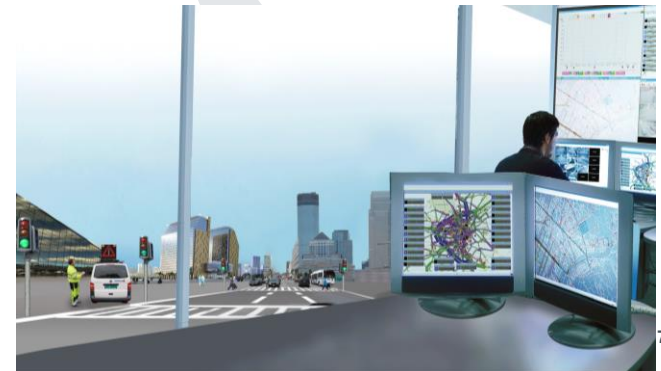
➤ Public transport

- Priority request
- Request granted
- Speed advisory (Traffic Light assistant)



➤ Traffic information exchange

- Travel time information
- Enhanced traffic control algorithms
- Optimization of traffic flow



Ultimate goal...



- Demonstrate how traffic infrastructure communicates with cars (V2I)(C-ITS)
- In the short run: Car manufacturers offers a unique service
- In the long run: Automated vehicles...



Other possibilities: Upgrade of OMNIA



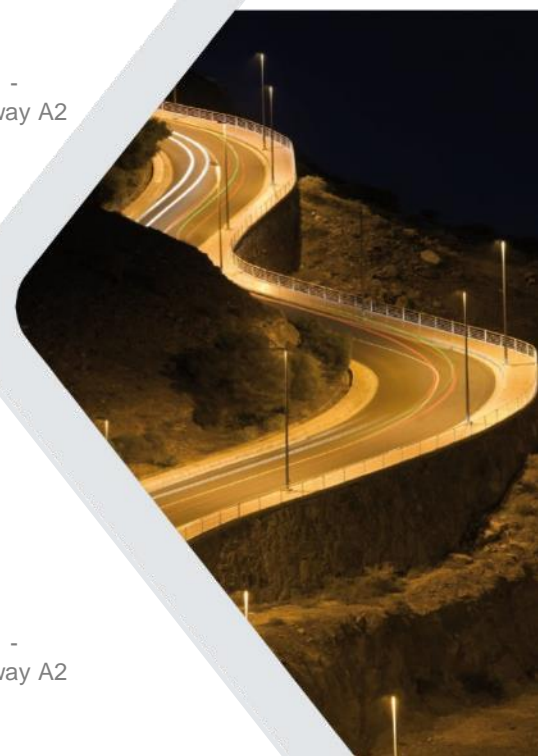
- Traffic modelling and strategic control
- City Dashboard:
 - Key performance indicators
 - QoS
 - Reports and statistics
 - Support for future planning
- Big Data ready



Other possibilities: Integration Traffic and Energy



FUTURLUX installation -
Project COSMO Motorway A2
direction Vienna



FUTURLUX installation -
Project COSMO Motorway A2
direction Vienna

The connected city...!!



- Remember there is a two way communication!



Vehicle to infrastructure

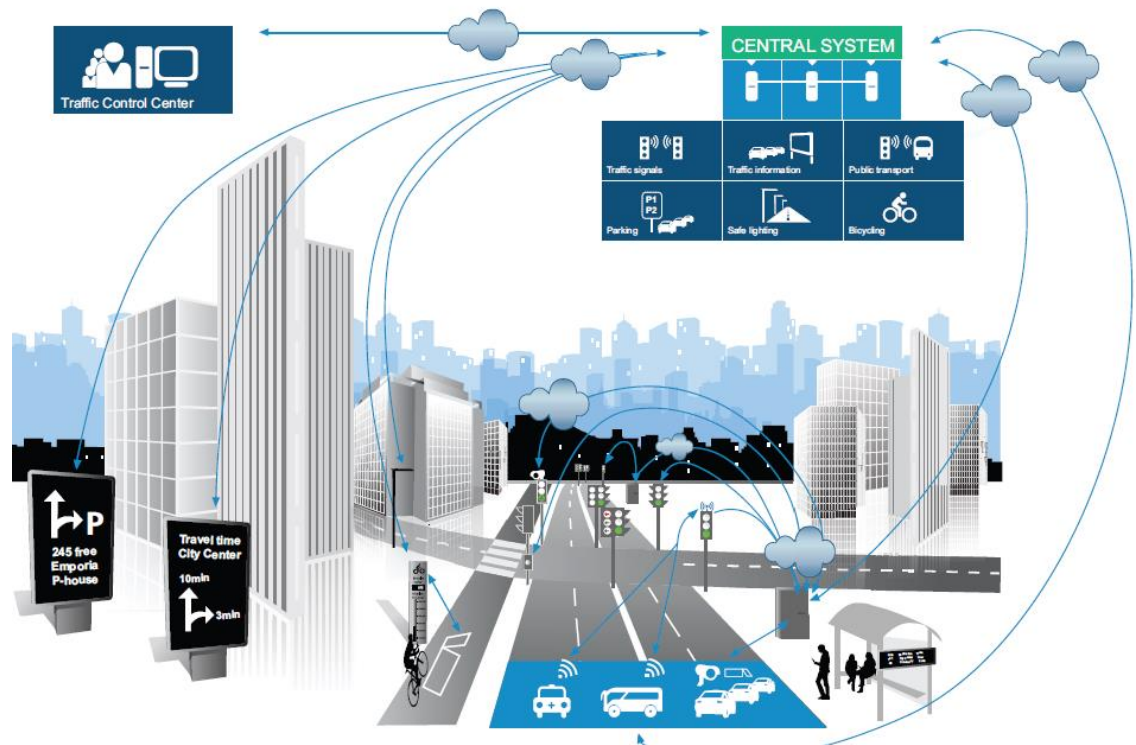


Bike to infrastructure

- Cars and mobile phones can provides us valuable data...

- Travel time information
- Congestions
- Feedback on traffic signal performance
- Wheather data
- And much more...

- Trade data!

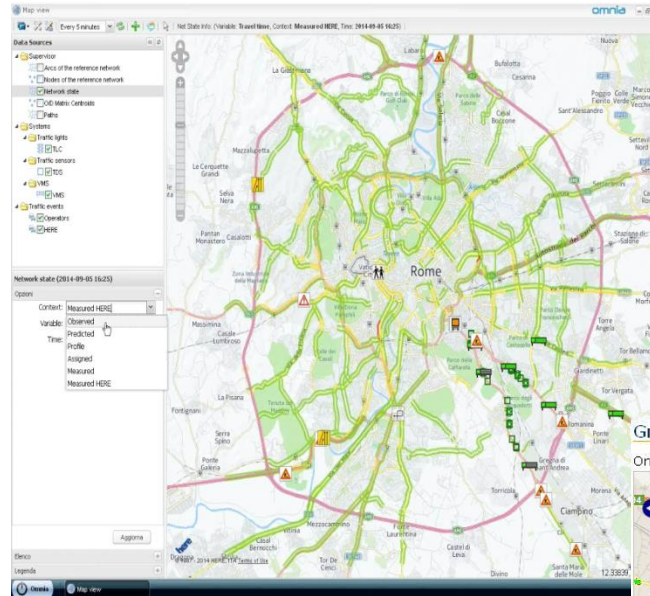


Probe Vehicles Data complement Sensors



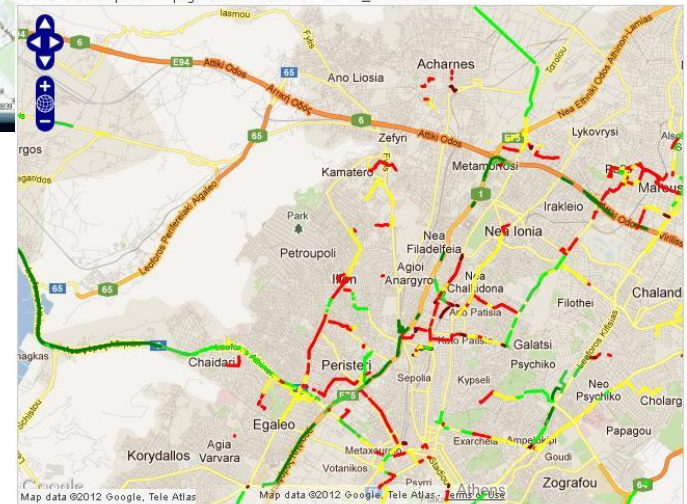
Improved geographical coverage and reduced system startup time

Strategic alliances with Data suppliers



Greek Speed Map

Online Greek speed map generated at 2012-04-13_17:12:01.





Thank you for the attention!

www.infotrip.gr

www.swarco.com

https://youtu.be/aJBObh_XEic

