Traffic management systems in Greater Thessaloniki Area
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Contents

- What is Traffic Management;
- The Case Study of Thessaloniki;
- New Trends affecting Traffic Management;
Incentive for Traffic Management
Origin of Traffic congestion problems

Traffic Management

- Low capacity – High demand: 40%
- Unexpected events: 25%
- Weather conditions: 15%
- Inefficient traffic light operations: 10%
- Special events: 5%
- Road works: 5%
Key Targets for Traffic Management

- Traffic Control
- Congestion Mitigation
- Incident Management
- Special events 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

- 18% increase of average speed
- 20% decrease of total congestion volume
- 20% reduction in CO$_2$ emissions
- 25% decrease of travel time during rush hour

Torino, 1996

Kazan, 2013

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

- Bordeaux
- Copenhagen
- Vigo
- Verona
- Helmond
- Thessaloniki
- Newcastle

Compass4D 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

UTM – UMTS/LTE
ETSI ITS G5 – IEEE 802.11p

Urban Traffic Controller
Traffic Control Center
Municipality

Prognoses

Mobile Communication – UMTS/LTE
ETSI ITS G5 – IEEE 802.11p

OEM
PUBLIC
RSU
CAR’s OBU

«Bi-directional communication between the field and the Traffic Control Center»
C-ITS by AUDI

- 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 manufactures 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

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The connected city..!!

- Remember there is a two way communication!
- Cars and mobile phones can provides us valuable data...
  - Travel time information
  - Congestions
  - Feedback on traffic signal performance
  - Weather data
  - And much more...
- Trade data!
Probe Vehicles Data complement Sensors

- Improved geographical coverage and reduced system startup time
- Strategic alliances with Data suppliers
Thank you for the attention!

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https://youtu.be/aJBObh_XEic