



How public transport can benefit from cooperative systems. Ideas from the Bologna test site

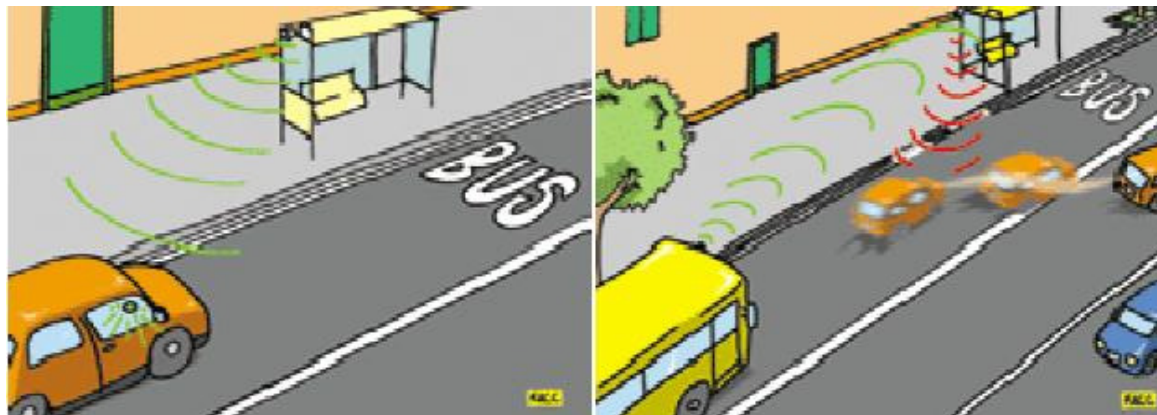
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Flexible Bus Lanes



- Share bus lane capacity
- Ensure priority for public transport
- Negotiation process
- Individual gain: travel time, travel costs
- Collective gain: network performance, reduction of traffic congestion and urban pollution (in accordance with traffic strategy)





Who is involved

Application design and implementation

- Thetis (Application coordinator)
- Atc (PT Company of Bologna)



Application simulation

- Peek Traffic

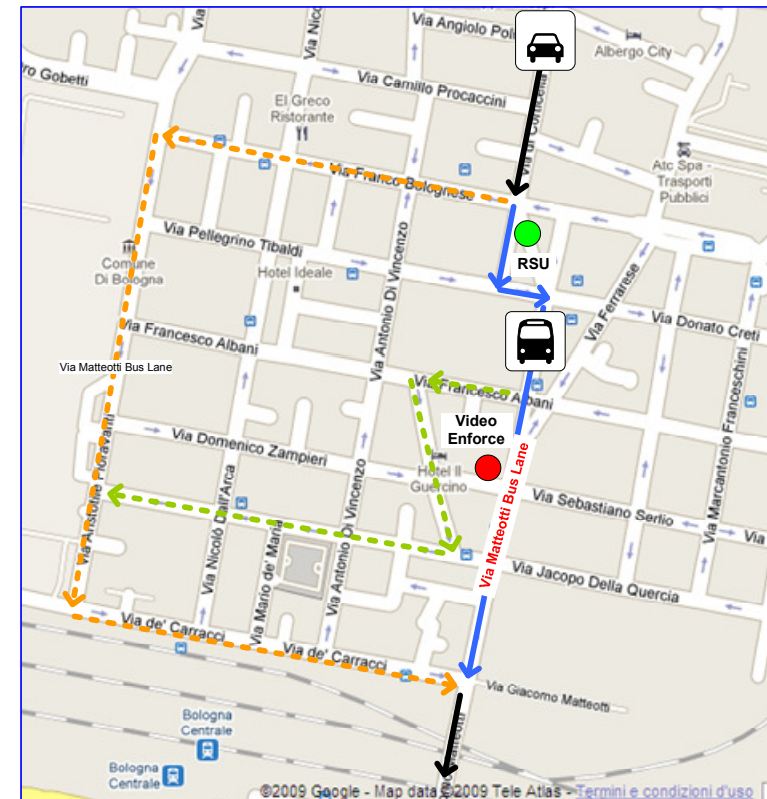




Test site in Bologna

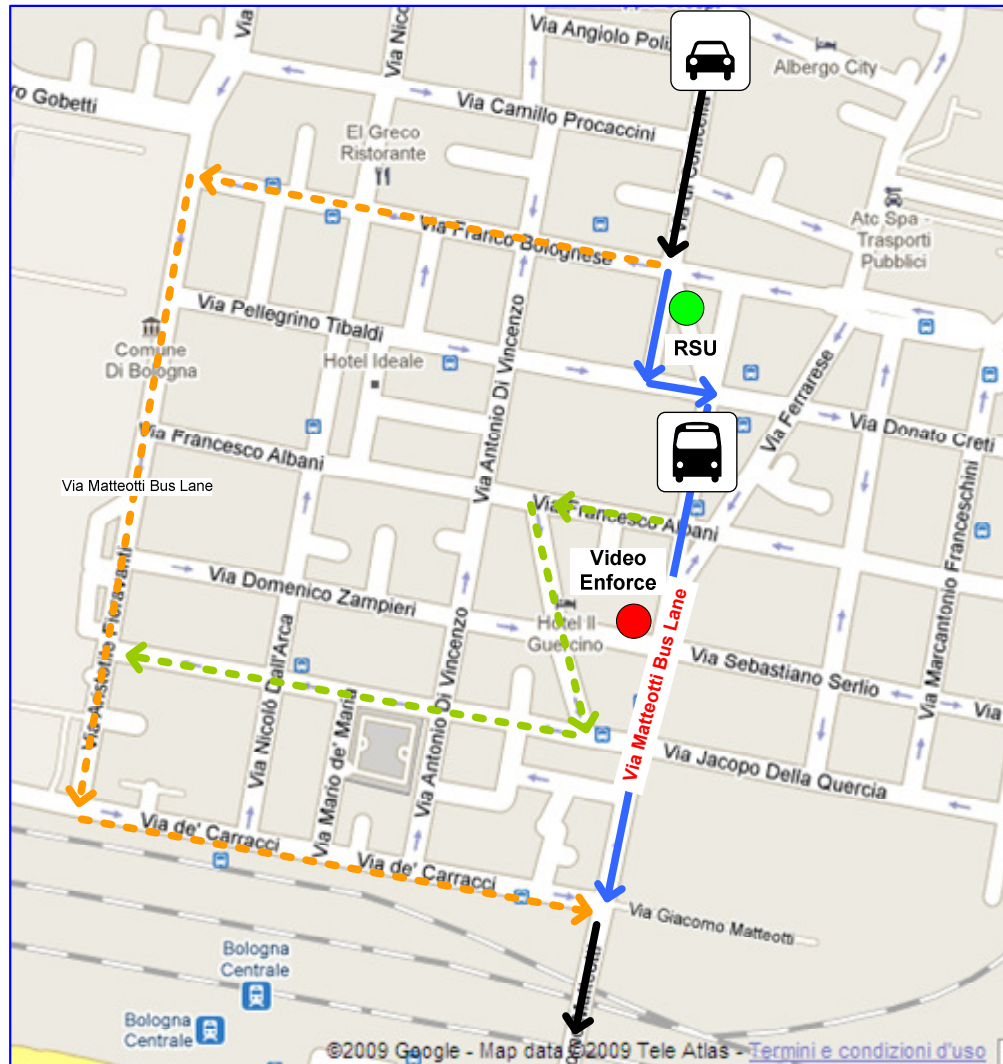


- Tests take place along Via Matteotti *which connects the North of Bologna with the city centre*
- Via Matteotti is reserved only to buses in the direction of the city centre *it forces private vehicles to a much longer trip*
- One ATC operational vehicle has been equipped with CVIS on board system
- The road side unit has been installed onboard a vehicle parked in Piazza dell'Unità close to the BL entrance (due to authorization problems)
- Interfaces with legacy systems
 - ATC Public Transport Management System which monitors the entire bus fleet
 - Video enforcement system (through update of the white list)





Test site map





Field tests: results

- **Measurements**

(average travel time)

- Using BL 107 seconds
- Normal route 245 seconds
(more than 300 sec in peak hours)
- Leave BL scenario 170 seconds

- **Application performance**

- Tests show significant reduction in travel time
- No impact on public transport
- No significant impact on vehicle travel time when following a bus (despite bus stops)
- Network topology has a high impact on the application performance
- Co-operative technology is essential: public transport performance suffers from random insertion of vehicles on the bus-lane



Conclusions

How can public transport benefit from cooperative systems?

The development and diffusion of cooperative systems that means the standardisation of on board equipment for private vehicles and buses, the realization of common road side infrastructures for several cooperative applications will favour Public Transport with **direct** and **indirect benefits**.



Conclusions

How can public transport benefit from cooperative systems?

Indirect advantages:

- Cooperative systems application will contribute to mobility rationalization and will give a benefit in terms of reduction in traffic and congestion. An improvement in private mobility has positive effects also on public transport (increase in average speed, decrease in accidents)
- Cooperative systems applications allow to favour specific vehicle categories: an example could be car sharing vehicles. This is in line with sustainable mobility policies which aim to reduce private mobility. Car sharing users are people that renounce to own a car and use it only when it's strictly necessary. This means that car sharing users are almost always public transport users for their daily trips.



Conclusions

How can public transport benefit from cooperative systems?

Direct advantages:

- Possibility to use Priority Application (priority for buses at the traffic light crossroads) without ad hoc investments for infrastructures and on board devices.
- The development of the bus lanes application will favour the realization of new bus lanes. At the moment it's very difficult to realize new bus lanes in the city because of the opposition of shopkeepers, inhabitants, etc... The possibility to give access to bus lanes to restricted private vehicle categories will contribute to stop objections.



Thanks for your attention...