

Optimizing space for urban freight delivery:

Night Delivery and Space Management Initiatives in the City of Barcelona

SUGAR PROJECT

Bologna 13 December 2011



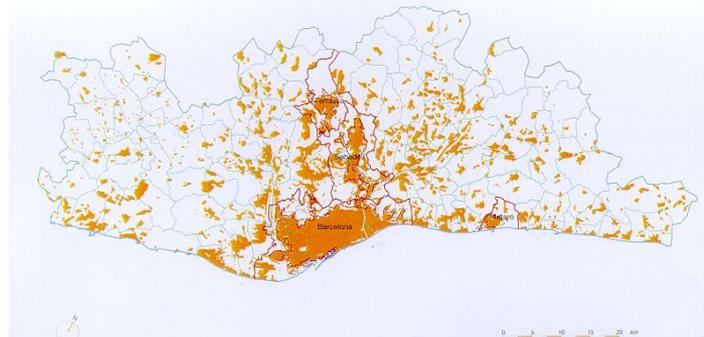
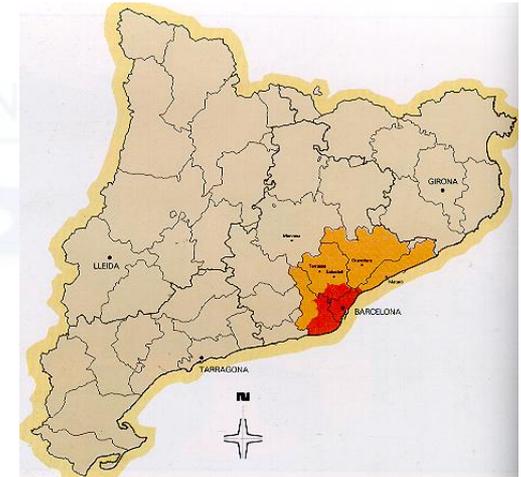
General Data

- **The City:**

- Area: 100 Km²
- Population: 1.600.000
- Density: 16.000 inhab/Km²

- **Its Metropolitan Area**

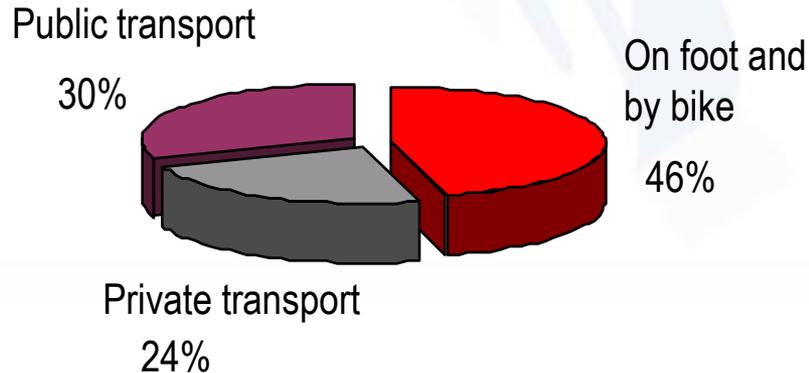
- Area: 3.237 km²
- Towns: 164
- Population: 4,4 million
- Density: 1.359 inhab/Km²



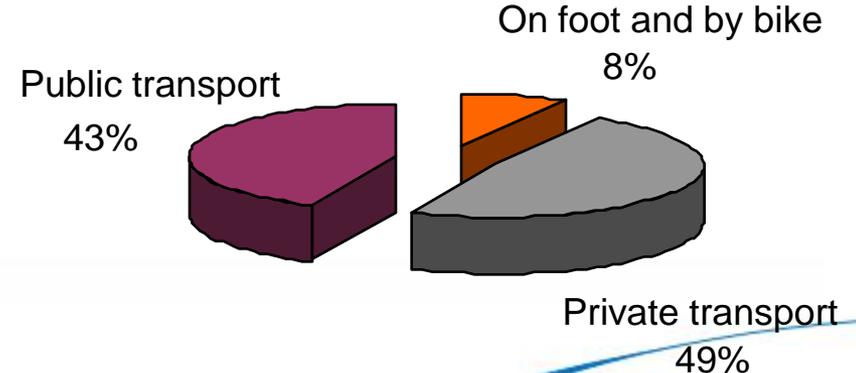
Introduction

Barcelona is the center of one of the biggest metropolitan areas in Europe: the **Barcelona Metropolitan Region**, which embraces 164 cities and municipalities and counts up for 4,4 million inhabitants (density: 1.359 inhabitants/km²)

Inner trips:
4.694.000 (61,57%)



Commuting trips:
2.929.000 (38,43%)



First approach to Freight Delivery in Barcelona City

- The majority of the city's 47.000 commercial premises have no off-street loading facilities.
- It is estimated that each day, some 100.000 goods deliveries are realised from the kerbside.

- The road space is scarce, so the Municipality has had to deal with goods operator's requests in parallel with other claims for more road space from other user groups (mainly, pedestrians and cyclists).



Urban Freight delivery: an innovative approach

In Barcelona City, Urban Freight Delivery responds to a two-fold goal:



Traffic improvement: Multi-Use Lanes

Multi-Use Lanes aim to improve goods delivery on roads that form part of the primary roads network and which have a lot of commercial activity. **Different users are allocated exclusively use** -for specific time periods over the day.

The measure consist of **Variable Message Signs** installed along the controlled section to clearly communicate the regulations to road users.



8.00 - 10.00	Circulation
10.00 - 17.00	Goods Delivery
17.00 - 21.00	Circulation
21.00 - 8.00	Parking

By the end of 2005, some 6.5 kms of multi-use lane had been implemented, and further schemes are under preparation.

Traffic improvement: Multi-Use Lanes

- Reduction in average travel time along the sections varying between 12 to 15%.
- Journey times were still lower after the special police enforcement (supporting scheme introduction) had been completed.
- Reduction in overall illegal parking activity (for both cars and goods delivery)
- Delivery time was reduced, so reductions in fuel and operation costs were.



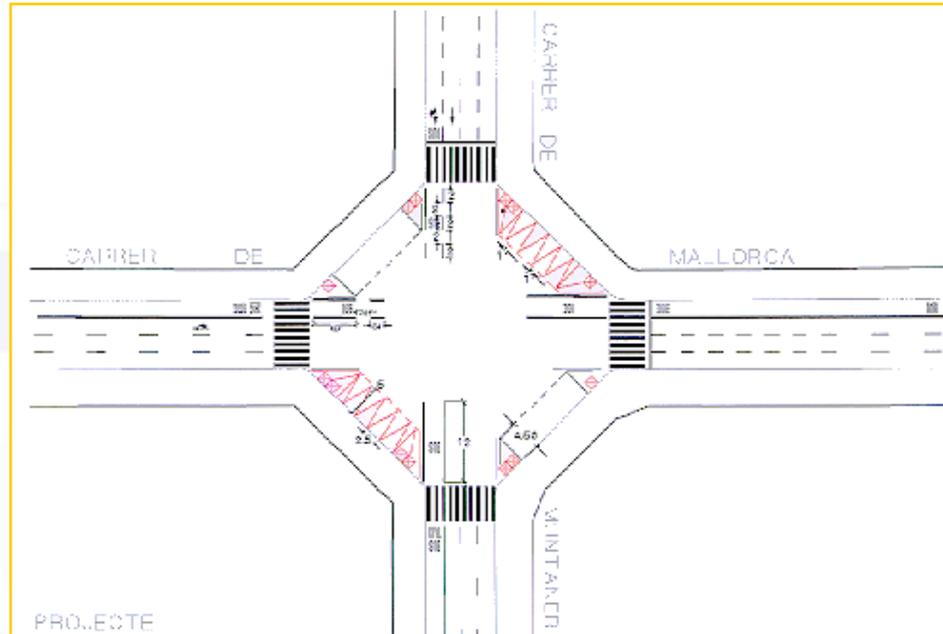
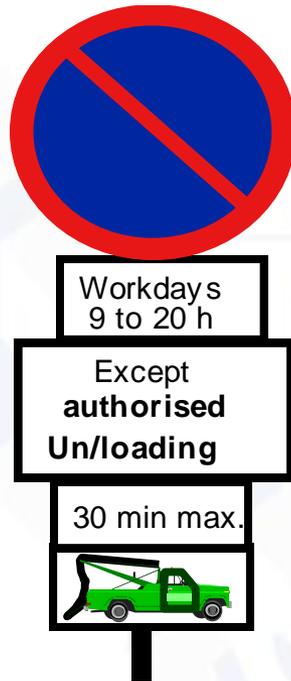
Traffic improvement: Zone Access Control (ZAC) in the Historic Centre

They are designed to provide pedestrian priority and to improve the quality of streets and citizens. Therefore, delivery vehicles are only allowed to enter during defined time (“called “windows”).

There are 60 gates installed (city-wide), 5 zones centrally controlled, 8.000 residents cards issued. ZAC system now incorporates digital video enforcement.



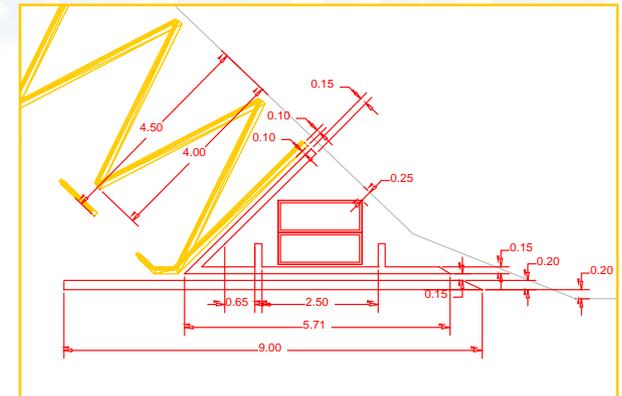
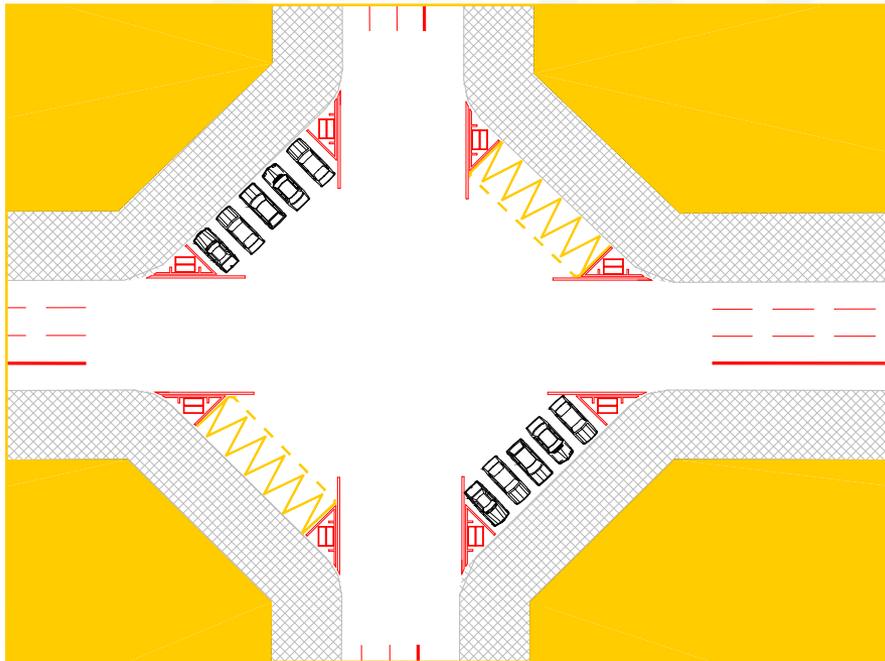
Improve Parking facilities: Eixample District



- Zones reserved for loading/unloading only from 08.00 until 14.00 (or 20.00),
- Maximum stay period is 30 minutes.
- 700 reserved zones have been signed in this manner throughout the Eixample District
- Over 2,500 vehicles towed-away in two years.

Improve Parking facilities: Eixample District

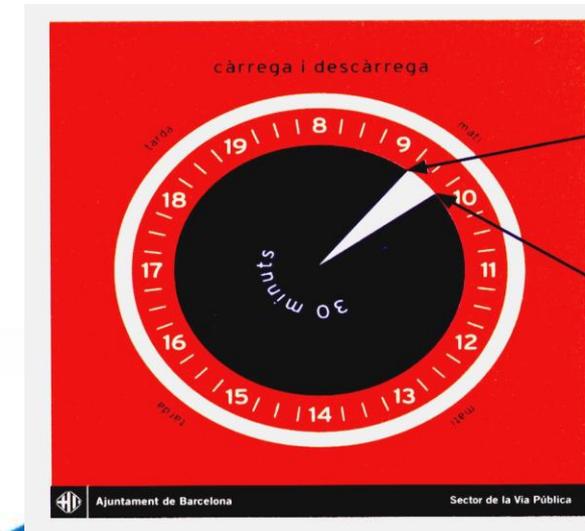
The system will be complemented by an increase of vigilance, signposting and regulation of load&unload areas.



Improve Parking facilities: The Sticker Clock

Added to the Green Area scheme, other measures were launched to increase the parking chances. The Sticker Clock it's a measure that aims to control the stay period.

Phase I : 1.650 places
Phase II : 1.975 places.



		Before	After
Vehicles per space	Phase I	8,3	4,4
	Phase II	7,42	3,89
Empty space	Phase I	0,6	1,2
	Phase II	0,62	2,15

Improve Parking facilities: Enforcement measures (“Ordenances”, by-laws)

New enforcement measures have been implemented in order to raise parking facilities within commercial areas.

- If the commercial area has (or is bigger than) 400 square meters, there must be an inner space for loading or unloading goods.
- Off-street parkings placed near markets must have also specific loading and unloading spaces.



Fullfill the citizenship's new demands: Quiet Night Deliveries

The objective is providing better conditions for delivery of foodstuffs, avoiding morning congestion, so as to ensure citizens' quality of living.

□ It was focused on a major supermarket operator (Mercadona) and on a mid-sized operator (Condis).

□ The City benefits from lower congestion and a reduction in emissions associated with stop-start driving.





Major technical improvements:

- For Mercadona, it was used an adapted 40T truck (electric lift, insulating carpet and adaptations for access using electric fork lift).
- For Condis, it was preferred an adapted 15T IVECO truck (with plastified roll container -instead of fork lift).



Major achievements:

- It is estimated that 2 trips/week at night can save 7 trips using smaller lorries during day-time traffic.
- Noise measures: for maximum values, no difference was recorded for measurements inside buildings.
- Operator Mercadona estimates that full investment in vehicle adaptation is recoverable within 3 years. The trials with CONDIS forecasts a cost recovery within 18 months.



Fullfill the citizenship's new demands: FIDEUS Project

INTELLIGENT TRANSPORT SYSTEM

It's a project that aims to reach a high-efficient delivery system through sustainable vehicles use and the implementation of new information tools that would help planning activities.

□ Main research issues: Noise reductions, new vehicles (lighter, middle-sized) such as a microcarrier.

□ Lyon, Hannover, Geneve and Barcelona are the cities where this project is carried out.

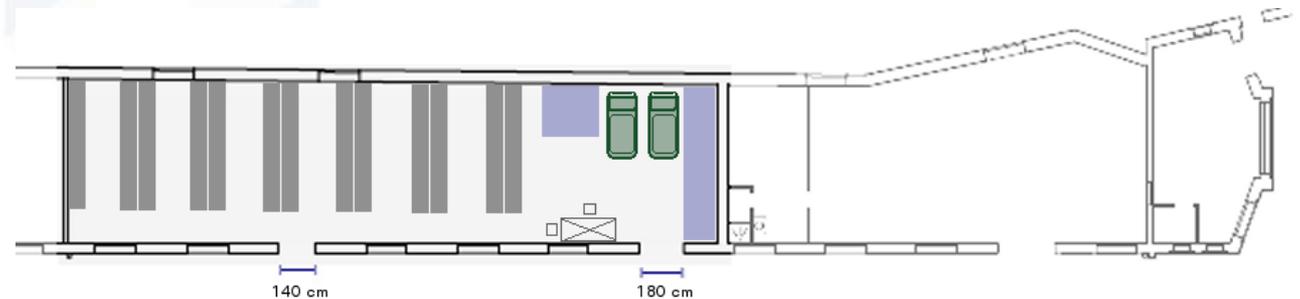
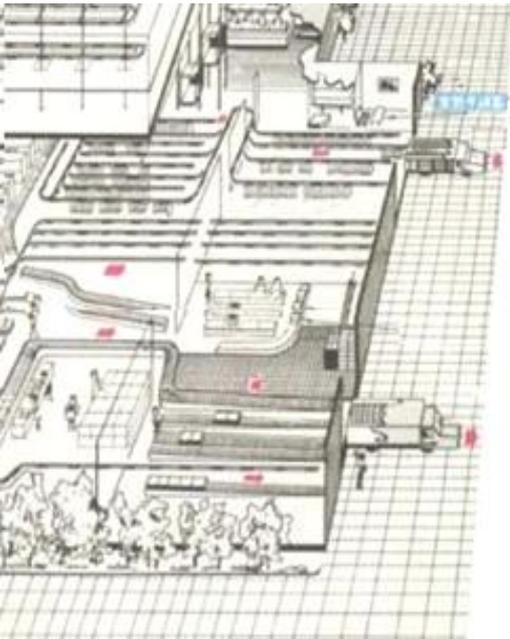


Fullfill the citizenship's new demands: Delivery MicroPlatform

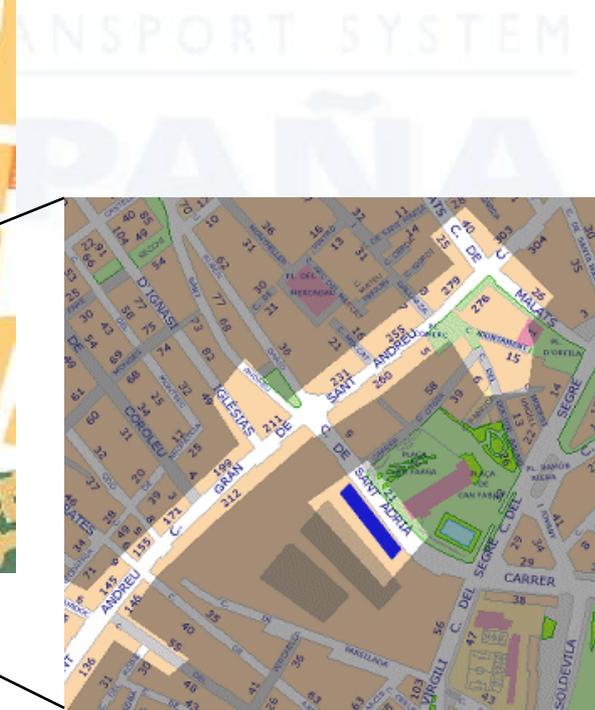
INTELLIGENT TRANSPORT SYSTEM

The objective is to dwindle delivery vehicles traffic through using an urban deliverly platform which would deliver goods in a smarter way.

The MicroPlatform was under trial at the “Eix Comercial Sant Andreu” (Commercial Axis), which embraces 190 commercial premises.



Sant Andreu microplatform (I)



- This pilot comprises a 200m² warehouse adapted to store and forward merchandise for commercial outlets along the High St.

Sant Andreu microplatform (II)

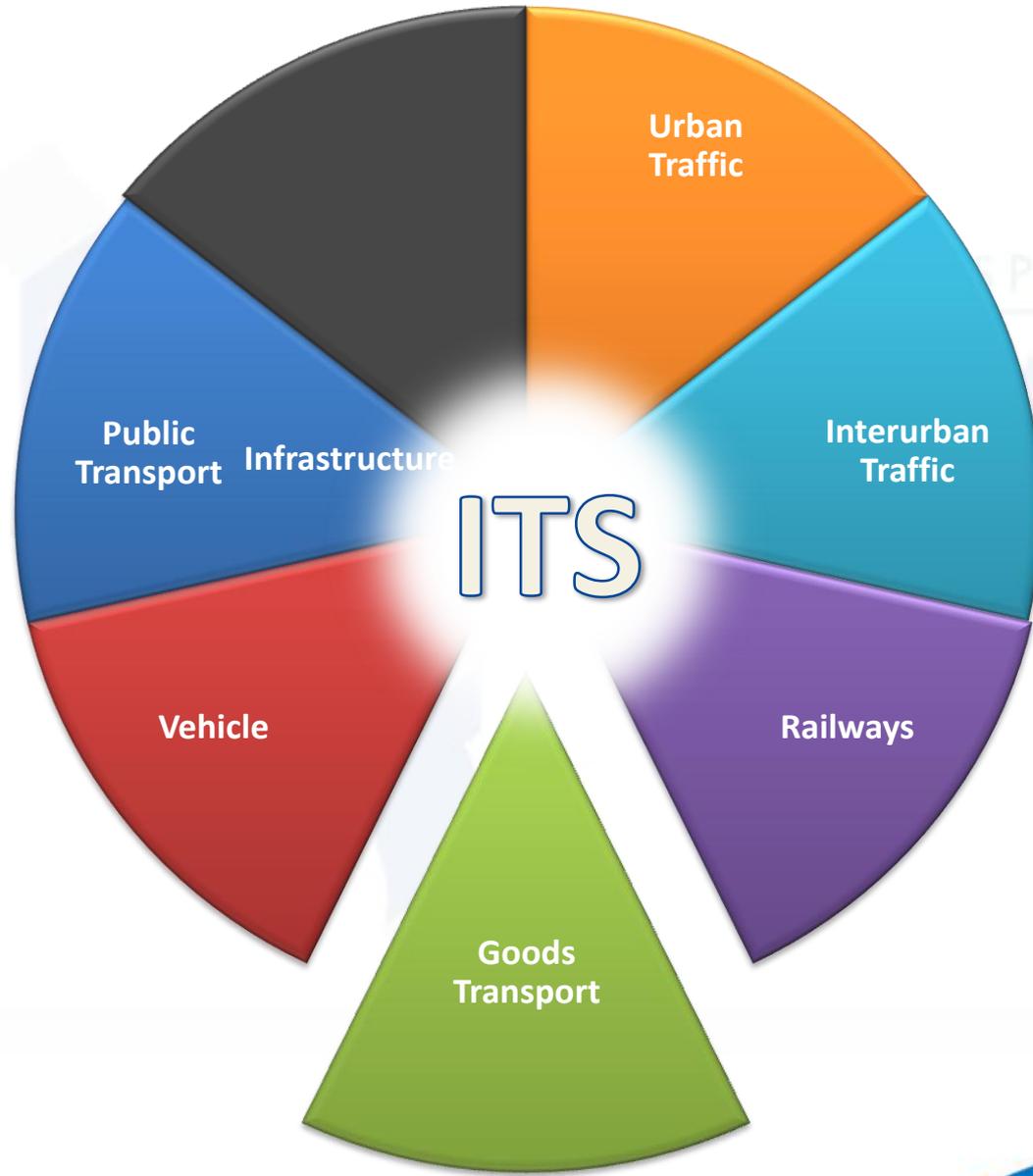
Deliveries were made using electric minivans supplied by private sector participants:

- Aixam-Mega (model 05) from Trèvol
- Aixam-Mega (model 06) from Autosconchita
- Bellier from ADTS

... as well as bicycles (Trèvol)

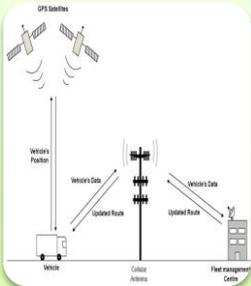


Freight transport and ITS

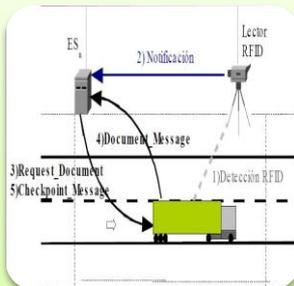


PORT SYSTEM
AÑA

Freight Transport



Fleet Management System



Goods Identification
•RFID



Digital Tacograf



Loading and Unloading Management



Dangerous goods control System



*Eurovignette

ITS inside Car



Navigation Systems

- OEMS
- Smartphones
- Dynamic Navigation
- Customerized Services



Cooperative Systems

- On board Devices
- Services



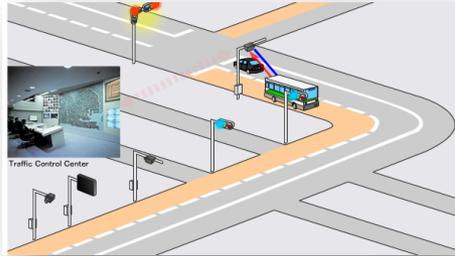
Safety Systems

- Actives
- Pasives



Electric Vehicle

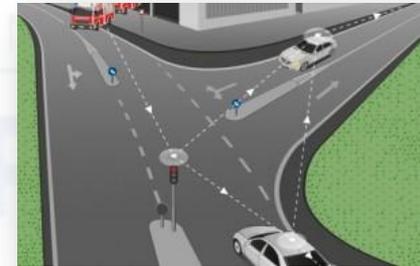
New trends in the Vehicle



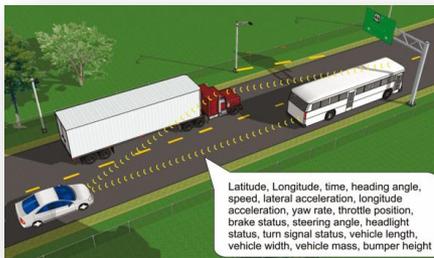
Urban Traffic Management



Red Traffic Signal Alert



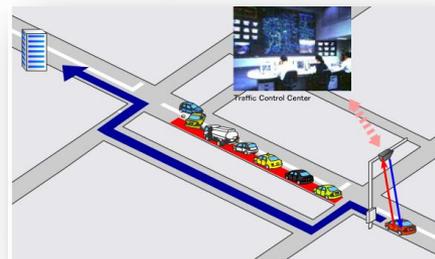
Intersection Safety



Overtaking Safety



Parking Information and Services



Urban Traffic Guidance

Many thanks

INTELLIGENT SYSTEMS
ITS ESPAÑA

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