

Urban Freight Distribution in Barcelona

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Overview

- City characteristics
- Conceptual design
- Improving transshipment
- Kerbside management
- Integration with Zone Access Control
- Services for goods delivery

The metropolitan expansion has overtaken the next urban areas, conforming an integrated territorial system of 3 million inhabitants and 5.200 inh/km².

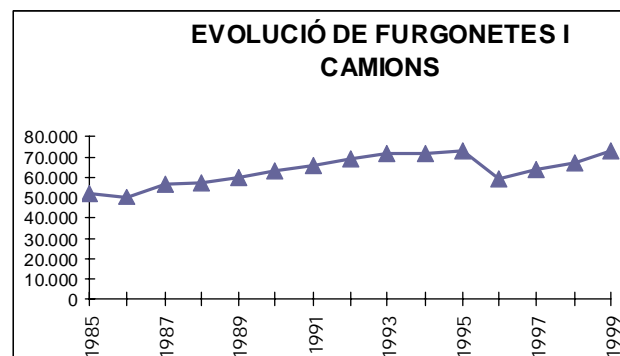
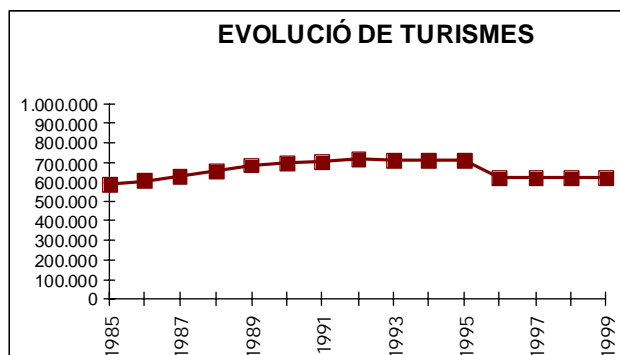


Barcelona is a very dynamic city, involved in a gradual increase in tertiary industry, leading to a growth of tourism.

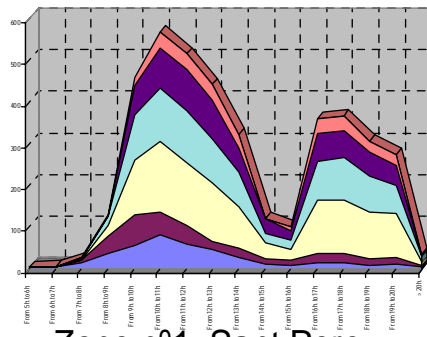
• Population		1 585 800 hab.
• Surface (km ²)		99,07 ha.
• Employees (1998)		721 000
• Professional and industrial activities (1998)		186 000
• Primary Sector	0 %	
• Secondary Sector	18 %	
• Tertiary Sector	82 %	
• Available Household Income		2 226 131 PTA (13 410 euros)

There are 41.000 vans and commercial vehicles in Barcelona, figuring the 5% of the total.

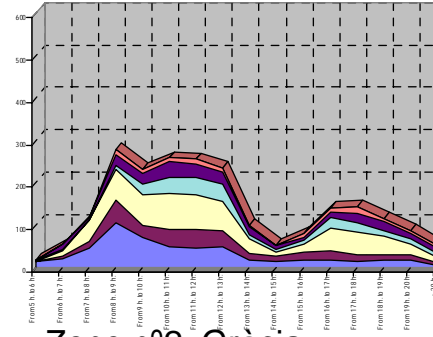
- Including commercial vehicles and trucks, reaches the **9% of the total**.
- In the period **1996-1999**, the number of commercial vehicles and trucks **increased 25%**; while number of cars was stable.



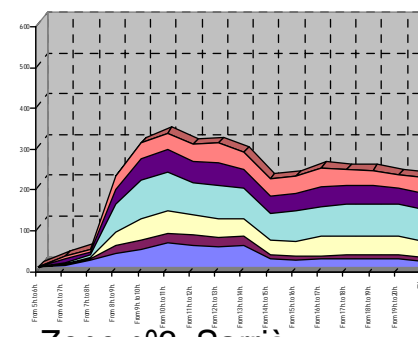
Contributions of the different retail sectors over a typical day for the six L/U survey zones



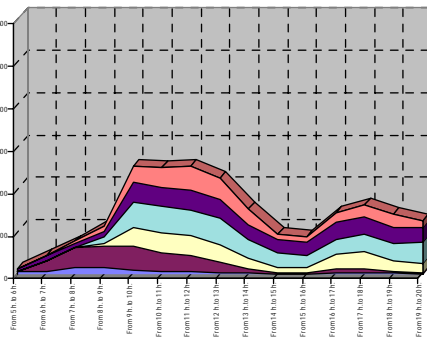
Zone n°1: Sant Pere



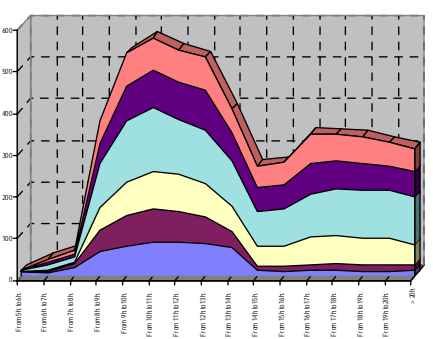
Zone n°2: Gràcia



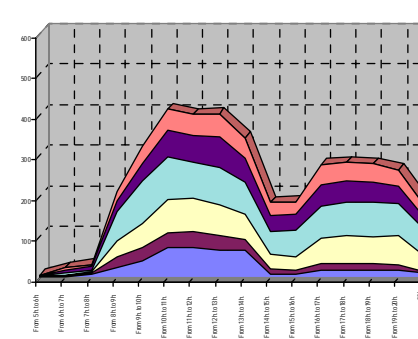
Zone n°3: Sarrià



Zona n°4: Balmes



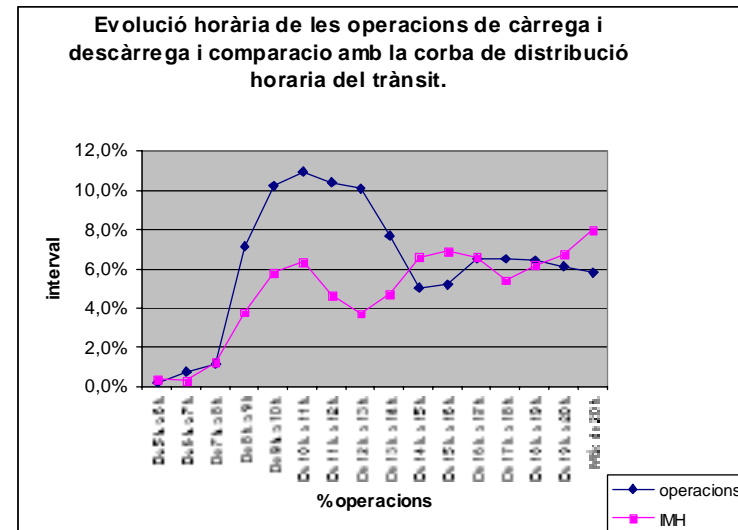
Zone n°5: Ninot



Zone n°6: Gaudí

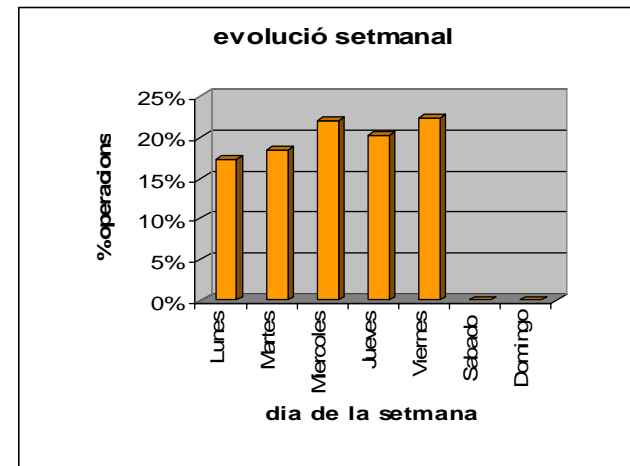
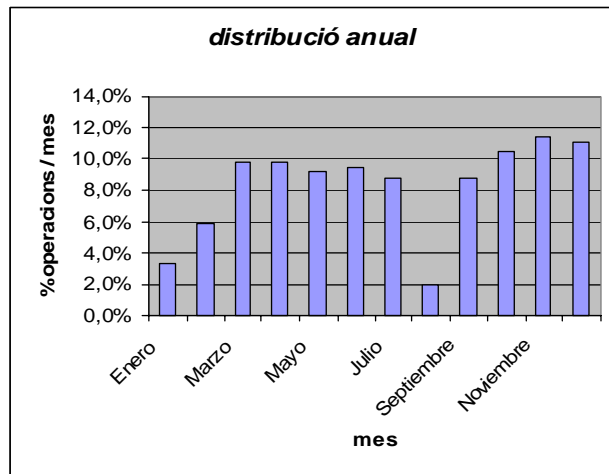
Barcelona has 6.200 places for loading&unloading. The use features are:

- From 9 to 13 hours, the major part of operations take place.
- 96% take less than 30 minuts and 90% less than 15 minuts.



- November and December concentrate the major number of delivery operations.

- Weekly, Fridays are more active days in terms of supply for the weekend.



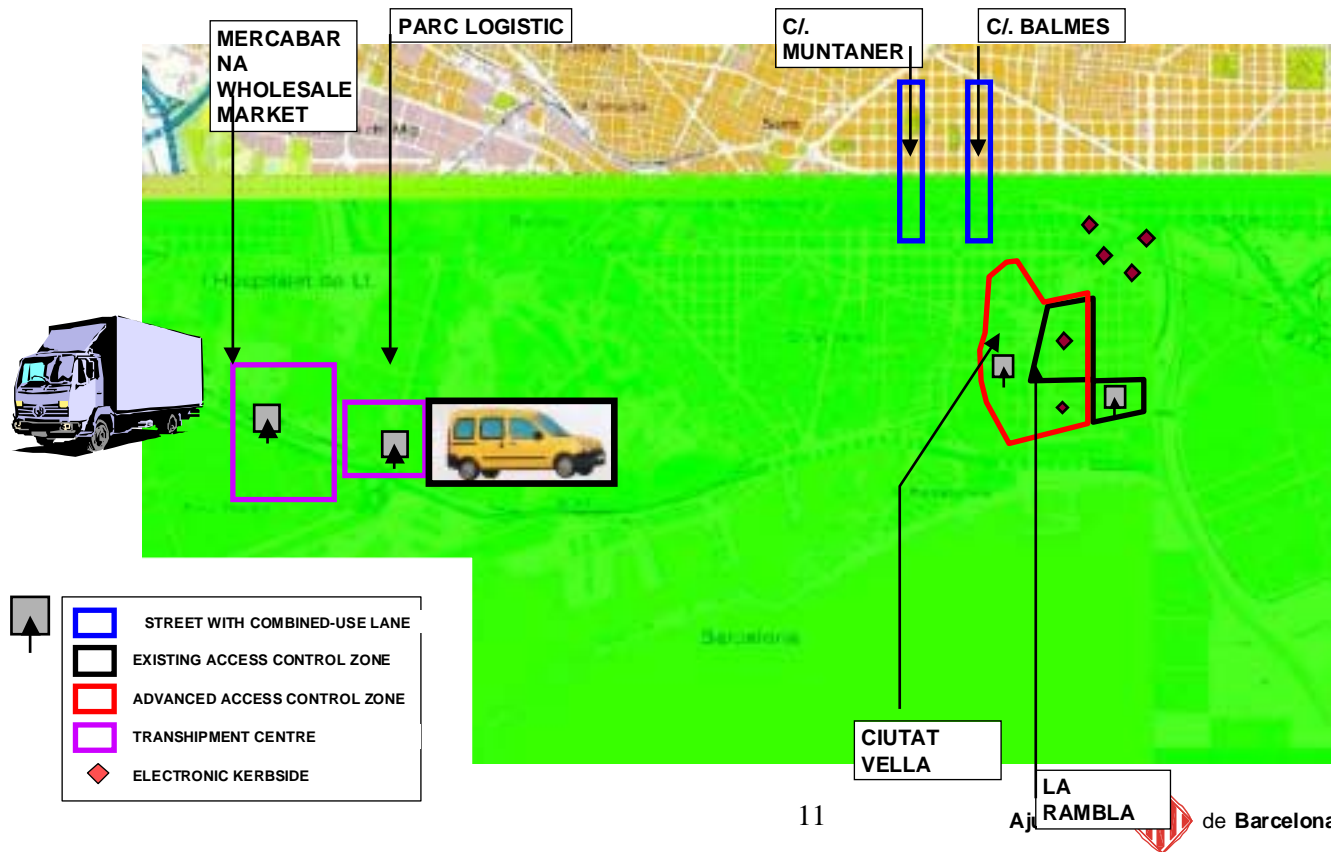
In general, the number of places for load&unload is considered to be adequate, except for:

- Inadequate use: other vehicles not operating occupying places.
- Only 36% of the vehicle parked are commercial vehicles and operate.
- Stays are usually long and often not related to a proper use (sometimes occupied by the tenants of the shops).

Key results from surveys (PROINTEC, 1997)

- Some 25,000 vehicles realise approx. 100,000 loading/unloading operations each day in Barcelona.
- The average time for un/loading on-street is 13 mins. Almost all actions are realised within 30 mins.
- 4,000 kerbside spaces are required to accommodate the needs of goods delivery vehicles
- Trend is for smaller vehicles / consignments & more dispersed pattern of demand
- Measures are needed to improve final-stage of delivery, ensuring a correct balance between operator's needs & authority's obligation to maintain service levels for road traffic circulation
- Telematics techniques can improve performance at transshipment points & at final point of delivery

Measures are applied at points of transshipment & delivery



Transshipment at Mercabarna wholesale market



- Entry is by toll payment - system supplied by BTSA/ Tecsidel in 1998:
- Contact-less card payment, with automated pre-classification & NPR systems, covering 11 lanes, with manual payment restricted to 2 entries
- System handles good vehicles of different sizes, & monthly subscription is offered
- Average entry volume is 10,000 vehs. per day

Transshipment at PLZ - Parc Logistic Zone



- Controlled access system operating since opening of PLZ, Feb. 2001
- Contact-less card, magnetic ticket & digital video technologies control entry & exit movements for 4 lanes, supplied by BTSA
- System handles good vehicles of different sizes, & monthly subscription is offered
- The PLZ units are already 100% subscribed.

Combined-use Lanes: Balmes street



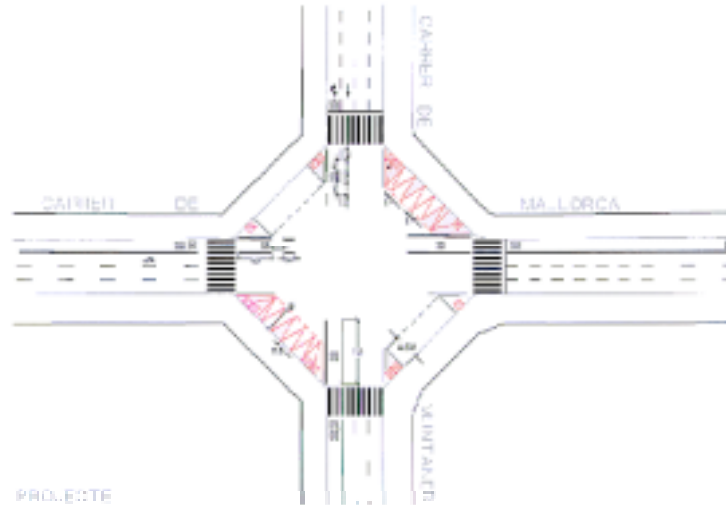
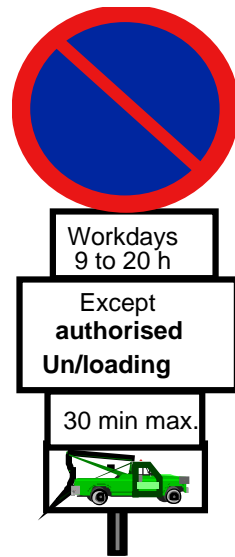
- VMS messages clarify use (residents, clear-way, deliveries) according to time of day.

Combined-use Lanes: Muntaner street



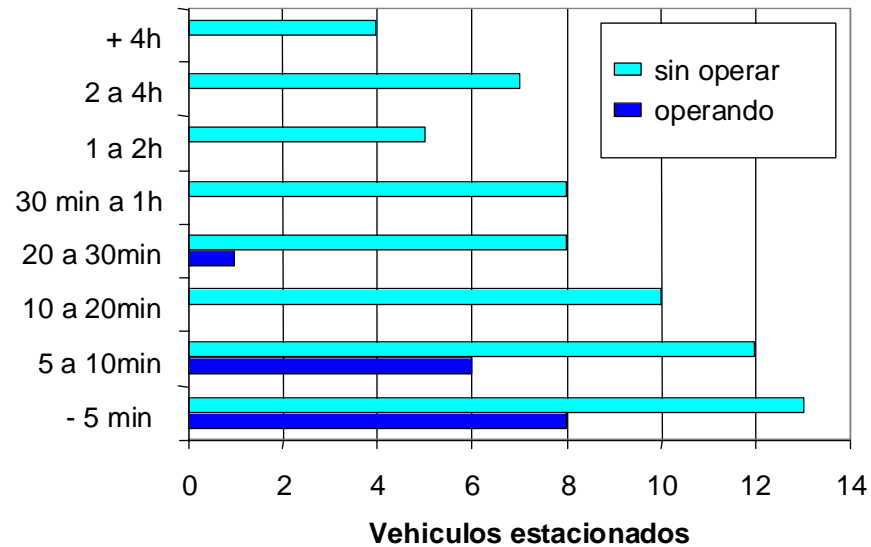
- VMS messages clarify use (residents, clear-way, deliveries) according to time of day.

Traffic regulations at Junctions, Eixample



- 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.

Kerbside delivery - automated enforcement is the commonly perceived need



- The roadside surveys conducted by the Municipality indicate that un/loading actions are almost always realised within 30 minutes
- ..but that, often, the vehicle parked in the reserved space does not make a delivery.

Zone Access Control in the Historic Centre

BARCELONA (La Ribera)						
Friday-Saturday	6:00	11:00	14:00	17:00	20:00	24:00
RESIDENTS & AUTHORISED VEHICLES		RESIDENTS & AUTHORISED VEHICLES		RESIDENTS & AUTHORISED VEHICLES		
Bollard activated by smart card transaction	Unrestricted access	Bollard activated by smart card transaction	Unrestricted access	Bollard activated by smart card transaction		

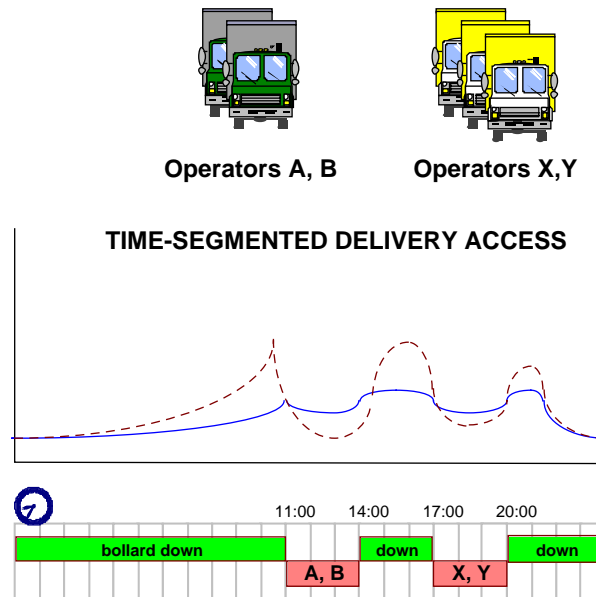
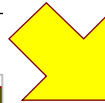
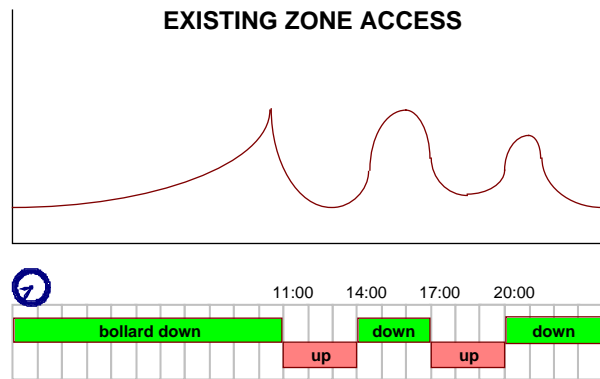
- Designed to provide pedestrian priority & to make streets liveable
- 50 gates installed (city-wide), 5 zones centrally controlled, 8,000 resident cards issued
- ..delivery vehicles only allowed to enter during defined time “windows”

ZAC system now incorporates digital video enforcement

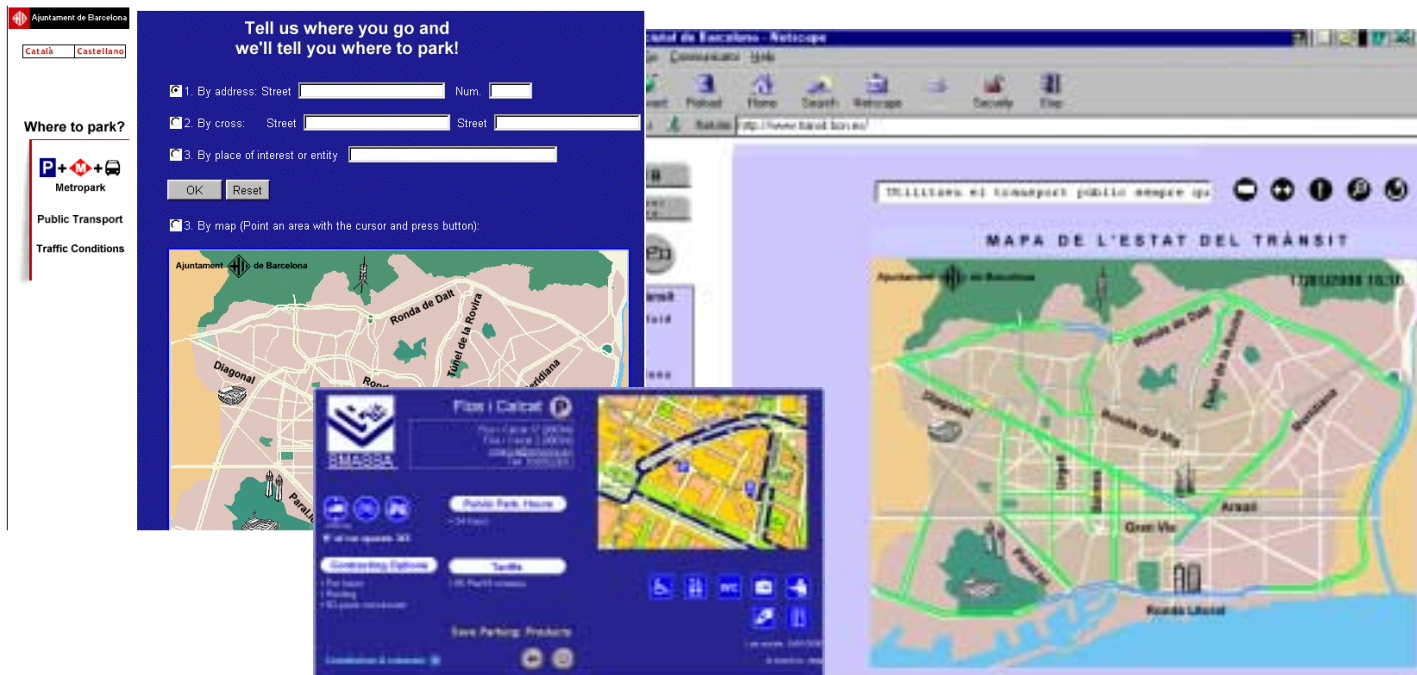


control infraccions (Accés restringit, C/D)

Plans to extend Zone Access Control will offer more flexible time-slots to clean goods vehicles

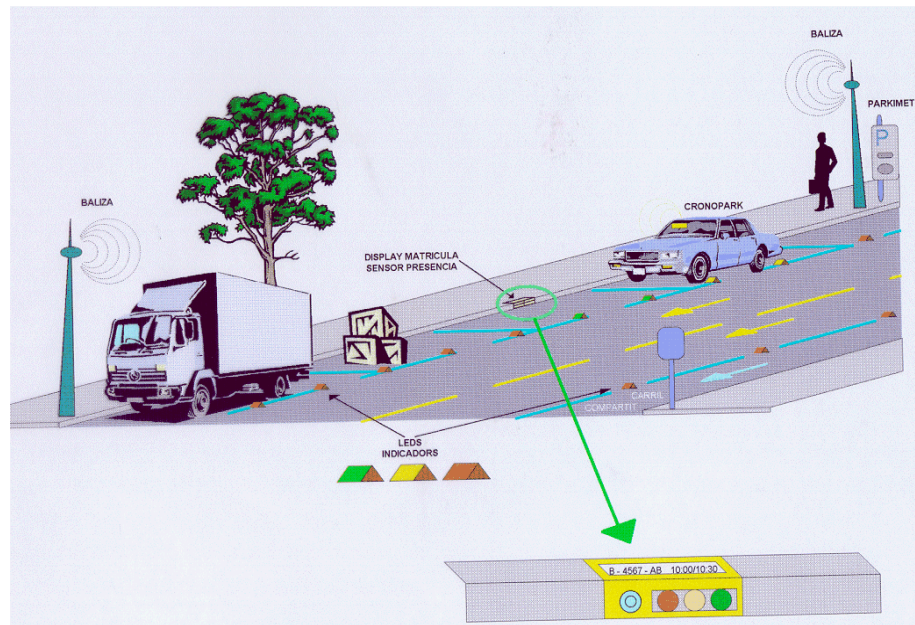


Internet road network information services



- Finding the closest car park to one's trip destination
- Current congestion levels for primary road network links, with forecasts for next 15 mins.

The widening of controlled specific places for load&unload is under consideration.



Vision for 2005: customised services

- Internet search for controlled kerbside space(s) closest to delivery destination
- Clean zones with special access windows for registered, low-emission goods vehicles
- Automated enforcement guarantees services
- Fixed/mobile Internet itinerary guidance - integrating kerbside & network info. systems
- Assurance of final stage of the delivery chain for registered goods vehicles / operators (eg: those recognised at transshipment centres)