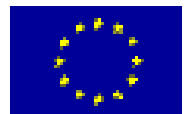




Quiet Night-time Deliveries in Barcelona

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1. Short history of quiet night-time delivery experimentations in Barcelona:
 - 1.1 Context, & interests of the food sector
 - 1.2 Operators, trials in MIRACLES, SILENCE projects
2. Report on procedure, latest progress
 - 2.1 Who, what, when & where?
 - 2.2 Results, conclusions
3. Experimentation continues... (FIDEUS)

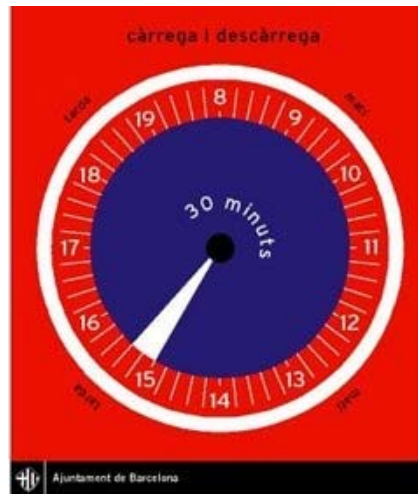
1 Context

- The majority of the city's 47,000 commercial premises have no off-street loading facilities and it estimated that each day, some 100,000 goods deliveries are realised from the kerbside (*Robusté*, 2003).
- A similar situation is found in other cities (for example, 49% of Dublin's deliveries are made from the street*).

* Finlay, POLIS Annual conference, Toulouse, 2007

General regulation

- Some 10,000 on-street spaces are reserved for un/loading between the hours of 08.00 and 20.00. Goods operators are provided with a disc to facilitate the identification of illegal occupation of the spaces, and to detect vehicles over-staying the 30-minute limit.



Food sector's interests

- Supermarket operators have a special interest in supplying fresh foodstuffs ready for when the stores open.
- They use refrigerated trucks, coming from transshipment centres, located outside the city.
- Within the Barcelona Mobility Pact, these operators initiated a process of night-delivery trials.

- The first night-time quiet delivery trial was made by operator Mercadona in 2003, with an adapted 40T truck (MIRACLES project)
- The Municipality introduced experimental exemption (6 months) to the traffic regulations.
- Traffic police collaborated to measure noise levels in residences close to the supermarket sites.

Mercadona, c. Valencia



- electric lift,
- insulating carpet
- kerb adaptations for access using fork lift
- staff trained to unload minimising verbal communication

Results

- Unloading realised with negligible increase in ambient noise levels (0.3 dB(A))
- Trip consolidation (7 day trips with medium trucks -> 2 large truck trips / week at night)
- Reduced journey times
- Return on investment in 3 years
- Extension to 115 outlets across Spain

Operator Condis

- Having smaller stores, with less refrigerated capacity, trials were proposed using medium 16T truck
- New trials coordinated within SILENCE project; this time with Municipality's Noise Unit as responsible for formally measuring noise levels



- Plastified roll-containers, soundproofing, wedges controlling roll-tainer movement
- Adapted refrigeration equipment
- Kerb adaptations for access
- Staff training to minimise verbal communication

Results

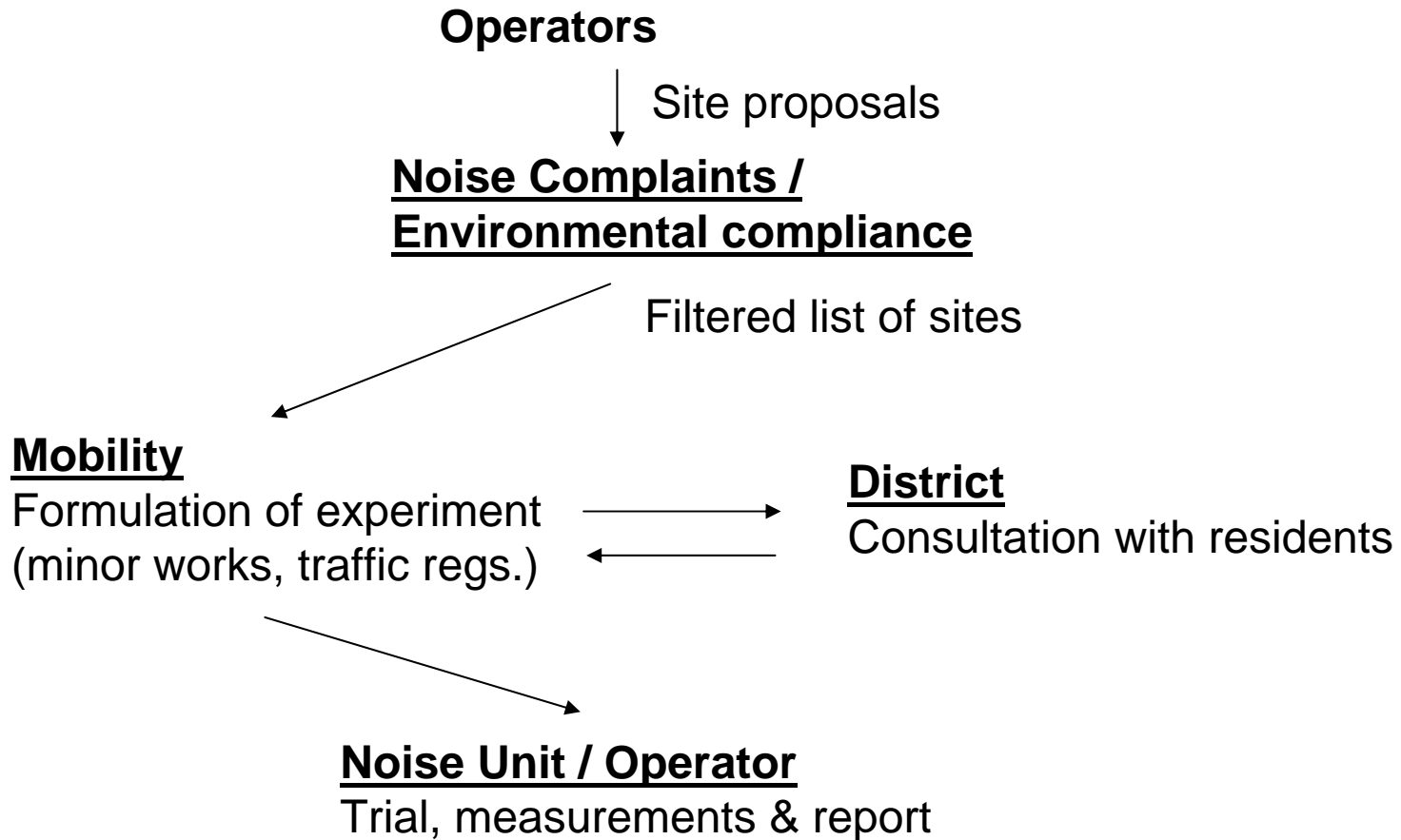
- Noise readings show the moment of truck arrival (IVECO Eurocargo of 16T) exceeding the level during the unloading operation.
- Rate of return: 15 months



2 Report on programme of noise measurements

- Receipt of Operator's proposed locations (Noise Unit)
- Coordination with Traffic Dept & Districts (citizens in the neighbourhood)
- Programme of measurements: Noise Unit
- Sept 2007:
 - **14** sites assessed, in **5** different districts
 - Responding to petitions from **3** supermarkets operators

Procedure overview



Noisemeter readings of the unloading operation at the locations proposed by operators, together with measures of ambient noise levels without unloading.

Measures of: L_{eq} & L_{max} .

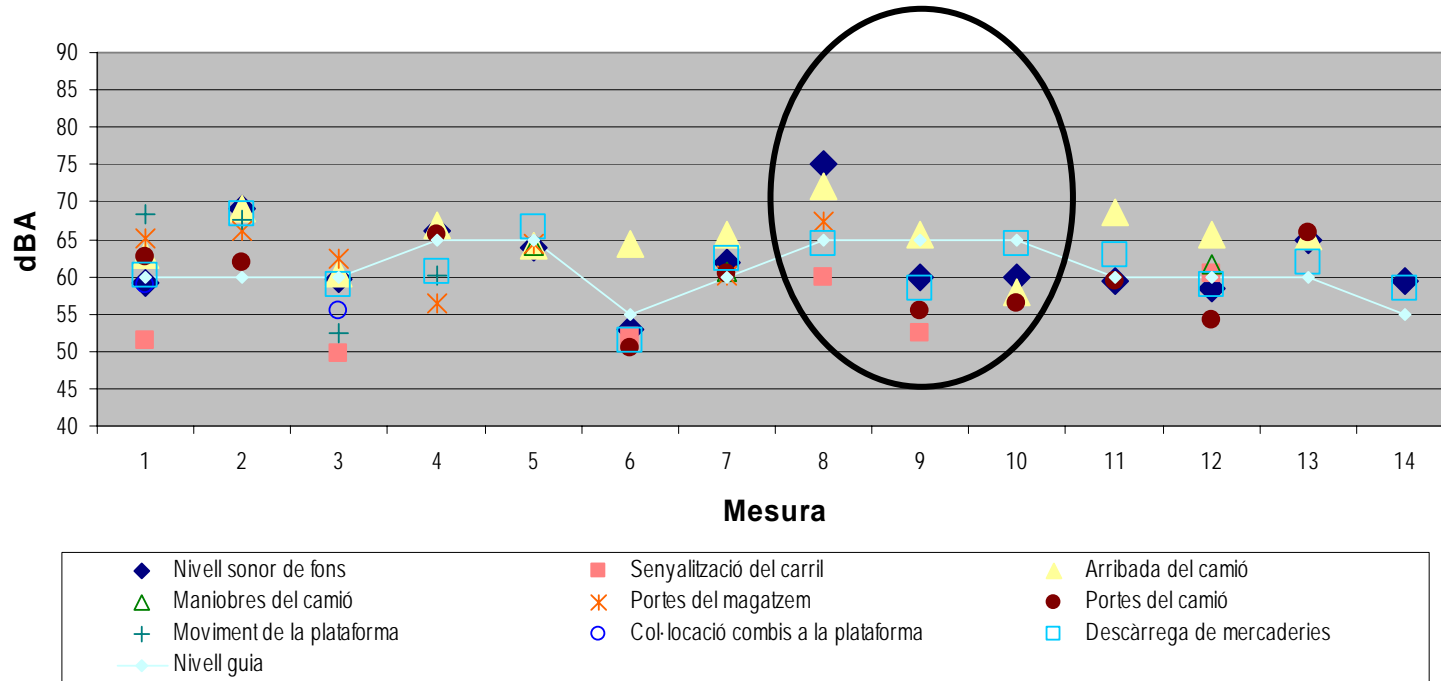
Identification of the sources of maximum sound levels

Comparison of L_{eq} values with the ambient levels and the reference level of the location.

Noise measurements: who, where, when?

Titular	Establiment	Districte	Núm. mesura	Data
Condis	Bruc, 166	Eixample	1	10/04/07
	Roger de Llúria, 47	Eixample	2	11/04/07
	Bailen, 56	Eixample	3	11/04/07
	Aragó, 520	Eixample	4	08/03/06
			5	18/04/07
Mercadona	c/Bilbao-Pl.Unió	Sant Martí	6	16/04/07
	Sant Pere de Abanto,4-12	Sants-Montjuic	7	17/04/07
	València,531	Eixample	8-9	01-02/03/06
			10	18/04/07
	Calàbria, 129	Eixample	11	17/04/07
	Ausias Marc, 101	Eixample	12	23/04/07
	Pl.Bonanova-c/St.Gervasi Cassoles 104	Sarrià-St.Gervasi	13	25/04/07
LID'L	Pg. Valldaura, 122	Nou Barris	14	29/03/06

Nivells sonors equivalents (Leq)



- Cases 8, 9 & 10: C. Valencia
- 2006 measurements (8 & 9) by police, 2007 reading (10) acc. to Ordenanza show a large variation.

- In 45% of cases, unloading actions cause noise levels above ambient level
- In 55% of cases noise levels exceed reference guideline levels
- The actions within the unloading operation that cause most noise are:
 - Truck arrival (62% of cases)
 - Goods unloading (15% of cases)
- Maximum noise levels generally exceed ambient and reference levels (due to engine / braking noise: 40%, and doors of supermarket: 23%)

Conclusions

- Supermarket Operators and Truck Manufacturers are willing to make investments to facilitate quiet night deliveries
- Municipal interest in trials with 12T (and smaller) trucks is to facilitate access to supermarket outlets on local roads.
- Innovation is adopted in coordinated programme involving various Municipal actors

Check on Actors

- What regulations currently govern legal ability to make trials?
- Who runs the Mobility Pact / has access to operators?
- Who handles noise complaints?
- Who makes formal noise measurements?
- Who consults with residents?

Noise Complaints / Environmental compliance

- Proposals are best received (filtered) by Unit(s) handling:
 - noise complaints
 - environmental certification of commercial licences

3 Experimentation continues

- Renault 12T Midlum truck – next candidate for testing (FIDEUS project)
- Incorporating the vehicle in the delivery routine of operator CONDIS fleet (service to Aragó St. outlet)
- Demonstrating the benefits of incorporated improvements (truck innovations + telematic tools) with special focus on noise abatement.



RENAULT Truck specifications

Truck base EUR4/5, Midlum provides a new development platform:

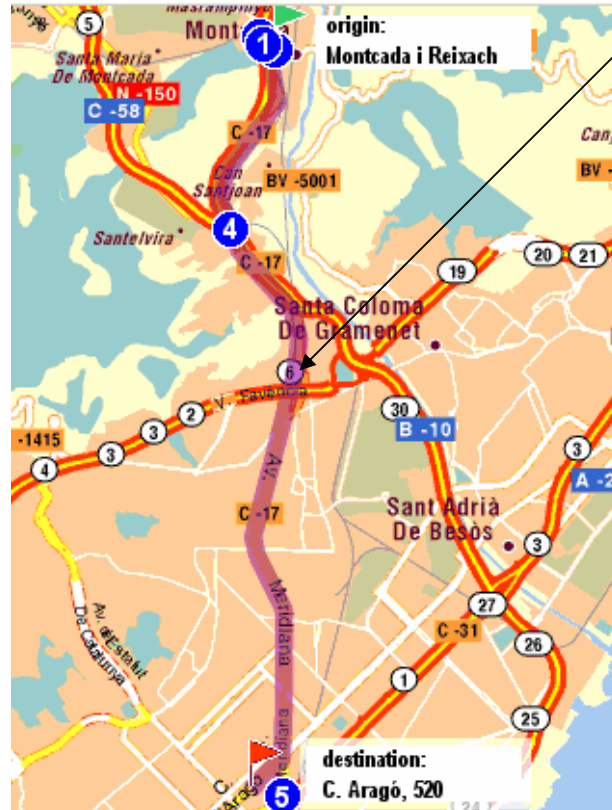
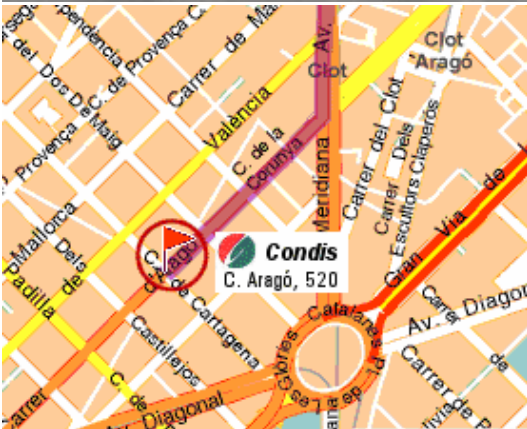
- **A new cab interior** with, in particular, a dashboard mounted gearshift lever and parking brake, unique on the market assertive design, modern and easy to live, a new display
- **A new powertrain** , new Euro4 engine DXi5 190
- **A new Improved gearshift**, Higher specification, Two systems make gear shifting more comfortable

The cable controls which provide added comfort (by filtering vibrations), a gearshift lever and parking brake on the dashboard, The Servoshift: aid system enabling a 75%reduction in the effort required to change gears.

- **A new chassis**, new range of wheelbase, front air suspension
- **A new braking system** EBS braking system,new exhaust brake and engine brake
- **A new electronic architecture**

Barcelona Trial plan

Jan – Feb 2008: standard journey from Condis logistic platform, 15 km outside Barcelona, to one of the outlets authorised to make night deliveries.



At city limit, prototype must tell driver to switch operating mode

Basic standard trip:

Merchandise:
dry goods (+ fruit)

Time schedule:
23:00 to 00:00

Frequency:
daily (5 trips per week)

Load (average):
7-8 T (19 combis^[1])



Thanks for your attention!
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