Innovative Logistics for European Cities

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BACKGROUND

- Globalisation of production and trade has proliferated container movement, e.g. from ASPA +79% in 1997-2003 (2.9 to 5.2 mio TEU)

- European inland freight transport is growing near-synchronous with EU-25 GDP, +26% in 1995-2004 (1,832 to 2,318 bio ton-km)

- The building freight surge does not exempt the cities, for both receiving and shipping!

- Efficient logistics networks are key to digest the additional demand for goods movement
LOGISTICS PRINCIPLES

Professional logistics operators aim to optimise their planning, operations and equipment for a maximum utilisation of vehicles and drivers:

- saving costs
- reducing congestion
- minimising fuel consumption
- minimising local and global emissions

However, logistics providers are dependent in this on a set of framework conditions outside their immediate influence ....
.... that can make urban deliveries a frustrating experience!
PROBLEM ISSUES

- Lack of dedicated road(side) infrastructure for freight, in contrast to passenger transport
- Circulation and sizing of vehicles often impaired by physical and regulatory constraints
- Unproductive delays from congestion, search traffic etc recovered with additional vehicles
- No coherent automotive strategies to reduce energy consumption and pollutant emissions
- Urban logistics no issue for most municipalities and receivers, 15-50% unorganised deliveries
LOGISTICS ORGANISATION

Solutions aiming to bundle unorganised deliveries in collective networks around urban consolidation centres (UDC), in analogy to existing schemes for construction, manufacturing, or airports.

- Huge savings up to over 70% in freight traffic
- Applicable also to reverse logistics or waste
- Service models must respect competition rules
- Apportioning of extra costs to beneficiaries
- Receiver participation is essential
LAST MILE ORGANISATION

Transfer points may serve local sensitive areas with limited or no access for standard vehicles. Modern technologies can enhance the reach of such microplatforms reducing real estate costs.

- Stationary building or long-term parking
- Enforced reservation of logistics infrastructure
- Collective trunking with trucks, trams, vessels
- Extended access times for clean vehicles
- Possible combination with other services
THE **FiDEUS** APPROACH

Efficient urban logistics by bringing together:

- Adequate organisation in line with policies
- Low-emission, low-noise vehicles
- Better ergonomics and safety
- Dedicated infrastructures
- Advanced V2I communications

with participation from *all* stakeholder groups.
THE STAKEHOLDER PARTNERS

Cities
Technologies
Logistics
Academics
**VEHICLES AND SITES**

<table>
<thead>
<tr>
<th>Microcarrier (MCUV)</th>
<th>Urban Van (UDV)</th>
<th>Urban Truck (UDT)</th>
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<tr>
<td><img src="image1.png" alt="Microcarrier" /></td>
<td><img src="image2.png" alt="Urban Van" /></td>
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<th>Hannover (DE)</th>
<th>Lyon (FR)</th>
<th>Barcelona (ES)</th>
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<td><img src="image4.png" alt="Hannover" /></td>
<td><img src="image5.png" alt="Lyon" /></td>
<td><img src="image6.png" alt="Barcelona" /></td>
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HANNOVER - Objectives

Main issues in the local project:

- Demonstration of modified logistics setup for commercial deliveries to sensitive urban areas
- Consensus building between public authorities and logistics providers about vehicle access, delivery schedules and traffic control
- Minimisation of traffic disturbances and related pollutant and noise emissions from deliveries
HANNOVER - Scenarios

Three test cases operated from Aug-Dec 2007:

- **Urban Life**: deliveries in calmed mixed area with microcarrier from parked feeder van acting as mobile transfer depot
- **City Hub**: deliveries to pedestrian area with microcarrier from stationary transfer depot and dedicated urban van
- **Second Lane**: avoidance of on-street delivery stops inducing tailbacks in major throughfare
HANNOVER – Placing of transfer depots
HANNOVER – Urban Life
HANNOVER – City Hub
HANNOVER – Second Lane

- Double lane throughfare partially blocked up by stopped delivery vehicles in street due to lack of designated free spaces on kerbside
- Introduction of dedicated service zones with blue ground markings and signposts
- Persistent enforcement problems during trials
- Additional distances to be covered by operator
- Citywide impact of 2nd lane parking in similar streets in Hannover calculated to add 4,350 litres fuel use and 10.8 tons CO₂ per year
HANNOVER – Provisional findings

- Microcarrier can improve access to restricted areas, reduce peak motor traffic, and optimise delivery of small volumes to upper storey offices
- CNG van offers substantial noise reductions over conventional delivery traffic (-7dbA)
- Microcarrier joint last mile service for multiple small operators offers potential for further review
- Microcarrier needs further design development and serious industrialisation effort
- Urban space management absolutely critical to ensure availability of transfer points
MICROCARRIER DESIGN VARIANTS

DHL Iberia – Malaga, 2008
LOADING ZONE ENFORCEMENT
LYON - Objectives

Main issues in the local project:

- Test practicability of Low Emission Mode (LEM) on medium truck in controlled urban zones
- Measure impacts of LEM on fuel consumption and CO₂ emissions
- Analyse pedestrian exposure to noise from passing delivery vehicles with/without LEM
- Test influence of second lane parking on traffic and related additional fuel use
LYON - Implementation
LYON – Demonstrations
LYON – Demonstrations
LYON – Provisional Findings

- Very positive cooperation of DHL and Renault Trucks, technology well accepted by driver.
- Significant noise reductions compared to other trucks. Higher noise recorded in last test days due to back door issue, solved in Barcelona.
- No discernable reduction of fuel consumption; important impact of weight, short test duration, and different truck than before (7.5 vs 12 ton).
- Very few cases of 2nd lane traffic disturbances were recorded (10%), with very limited impacts like stops or speed reduction.
BARCELONA - Objectives

Main issues in the local project:

- Testing of Renault medium truck with Low Noise Mode (LNM) in support of municipal Quiet Night Delivery (QND) Programme (exempt permits)
- Consolidation of night delivery operations for supermarkets with innovative truck technology similar to LEM demonstrated in Lyon
- Examination as to how LNM/LEM can work as part of a scheme for serving controlled areas
BARCELONA - Implementation

- Night and day deliveries of caged dry goods from suburban Condis warehouse to urban outlets
- Night deliveries to Carrer Bruc (23:00-00:00) with LNM active on final leg in residential area
- Day deliveries to Sant Andreu with LNM active all the way, passing along 3 different speed limits
- Access authorisation and monitoring through onboard telematics platform
- Noise measurements in service and at depot
BARCELONA – Demonstrations
BARCELONA – Provisional Findings

- Very positive cooperation of Condis and Renault Trucks, also in solving ad hoc problems
- Activated Low Noise Mode reduces truck noise compared to other trucks of the same category
- Lower speed reduces vehicle noise with other positive side-effects (emissions, safety, traffic)
- Overall noise level determined by combination of vehicle + equipment + driver behaviour
- High efficiency in logistics and less traffic in the night leads to excellent results for energy intensity and CO$_2$ emissions per delivery
PUBLIC PERCEPTION

Excellent feedback in all 3 sites:

- from Residents
- from Retailers
- from Press
- from Politicians
Urban Logistics – local solutions for global business.

Thank you for your kind attention!