The freight distribution plan and the access to the Environmental zone in the city of Bologna

Bestufs II, 8th Workshop

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## General data of Bologna

<table>
<thead>
<tr>
<th>Area</th>
<th>Inhabitants</th>
<th>Area (Km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall demographic size</td>
<td>~650,000</td>
<td></td>
</tr>
<tr>
<td>Municipal area</td>
<td>~373,539</td>
<td>140,85</td>
</tr>
<tr>
<td>Historic Centre</td>
<td>~53,000</td>
<td>4,51</td>
</tr>
<tr>
<td>Limited Traffic Zones (L.T.Z.)</td>
<td>~45,000</td>
<td>3,20</td>
</tr>
<tr>
<td>Pedestrian Areas</td>
<td>~12,000</td>
<td>0,88</td>
</tr>
</tbody>
</table>
Daily movements ~ 2 million
- internal 45%
- exchange 28%
- crossing 27%
peak times ~ 200,000

Among internal movements the occasional component exceeds the regular one. Opposite situation in exchange and crossing movements.
INTERNAL DAILY MOVEMENTS ~ 950,000 (45% of total daily movements)

MODAL SPLIT OF INTERNAL COMPONENT

- PT = 242,000
- CAR (passenger+driver) = 336,000
- MOTORBIKE = 100,000
- BICYCLE = 65,000
- PEDESTRIAN = 201,000

<table>
<thead>
<tr>
<th>Public Urban Transport Year 2005</th>
<th>Users (million)</th>
<th>VehiclesxKm (million)</th>
<th>Km</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>92.8</td>
<td>18.4</td>
<td>559</td>
</tr>
</tbody>
</table>
LTZ ACCESS CONTROL GATES “SIRIO”

The Municipality has activated in 2005 an IT enforcing system called “SIRIO”: 11 cameras installed at the main access streets to the Limited Traffic Zone. The LTZ area is 3,2 km² and roughly corresponds to the city’s historical centre. Restrictions are in force from 7.00 to 20.00; the system automatically issues a fine to car drivers not authorised to access.

BUS LANES CONTROL GATES “RITA”

Same IT system (called RITA) active since 2003 with 14 cameras for bus lanes and semi pedestrian areas; active control 24 hours/day
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ITS IN BOLOGNA: LTZ RESULTS

WORKING DAYS

<table>
<thead>
<tr>
<th>Year</th>
<th>H 7-20</th>
<th>H 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>69463</td>
<td>68550</td>
</tr>
<tr>
<td>2001</td>
<td>71616</td>
<td>69667</td>
</tr>
<tr>
<td>2002</td>
<td>72685</td>
<td>69756</td>
</tr>
<tr>
<td>2003</td>
<td>66696</td>
<td>67857</td>
</tr>
<tr>
<td>2004</td>
<td>69321</td>
<td>68326</td>
</tr>
<tr>
<td>2005</td>
<td>56587</td>
<td>55686</td>
</tr>
<tr>
<td>2006</td>
<td>51330</td>
<td>50030</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2006/2004 YEARS</th>
<th>7-20</th>
<th>0-24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working days</td>
<td>-22.7%</td>
<td>-24.0%</td>
</tr>
<tr>
<td>Saturday</td>
<td>-27.8%</td>
<td>-26.2%</td>
</tr>
<tr>
<td>Sunday</td>
<td>-35.5%</td>
<td>-30.9%</td>
</tr>
</tbody>
</table>
Reduction of more than 70% of unauthorised cars in PT dedicated lanes and 30% in the main roads in the centre
CISIUM

Goals

• Better real time traffic monitoring
• Provide tools for traffic planning
• Real Time Information for road users

Actions

• Improvement of centralised traffic light control (new sensors and traffic light equipment)
• Integration to the LTZ/bus lanes control gates
• Integration of the real time bus control centre for BUS prioritisation
• More than 40 Variable Message Signs
• Real Time Traffic Information on web, sms, email, satellite GPS car navigator systems
• Mobile centre for pollution monitoring
Survey to freight operators: distribution

<table>
<thead>
<tr>
<th>category</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>sale representatives</td>
<td>39</td>
<td>2,0%</td>
</tr>
<tr>
<td>own account operators</td>
<td>841</td>
<td>43,6%</td>
</tr>
<tr>
<td>third party operators</td>
<td>941</td>
<td>48,7%</td>
</tr>
<tr>
<td>shopkeeper in LTZ</td>
<td>110</td>
<td>5,7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1931</td>
<td>100%</td>
</tr>
</tbody>
</table>

- 67% of the trips with saturation < 25%
- only 12% of the trips with saturation > 50%
- third party operators have a double delivery rate than own account operators

Freight reserved parking slots: situation

- better regulation needed
- optimisation of the insufficient public space
Approved on 2006

**Goals:**
- Optimisation of access in LTZ, better organisation of the distribution processes in the urban area
- Conversion toward less pollutant vehicles
- Promoting joining process between small operators and optimising load/upload process
- Optimising road and parking slot occupation

**Actions for freight operators**
1. Access rules depending on pollution category
2. Pricing policies
3. Van Sharing Project
1. Access rules depending on pollution category

The access to the inner city (T area), controlled by enforcing cameras, has been modulated on temporal windows depending on the pollution category of the vehicles:

- 3.5 hours/day for non-Euro vehicles
- 7.5 hours/day for Euro vehicles
- 9.5 hours/day for Methane/LPG/Electric vehicles

**Results:**
Methane/LPG/Electric vehicles, before almost non existent, raised until 4%
Good results also for conversion toward Euro vehicles

**Future action:**
Extension of the same rule to the entire Limited Traffic Zone
2. Pricing policies

LTZ access has initially based on an authorising/enforcing system: the support of ITS (SIRIO and RITA systems) has also allowed the deployment of pricing policies for the LTZ.

1. PAYMENT OF YEARLY DELIVERY PERMITS

The permits, which were previously released for free and with no time limit to all operators, have been issued under the payment of a yearly subscription, which varies in relation to the pollution category of the vehicle (i.e. Euro category), and with a validity of 2 years.

Prices: from 25 € to 300€ per year

2. LTZ “PAY-TO-ACCESS” TICKET

Tickets have been introduced to allow people, not otherwise entitled, to occasionally access the LTZ area.

Features:

- daily ticket (5 euro)
- 4 day ticket. Valid for 4 consecutive days (12 euro)

Limits: Each month, only 3 daily tickets (or just one 4-day ticket) can be used for the same vehicle.
“PAY-TO-ACCESS” TICKET

1 - Validation of the ticket
2 - Sending secret code and car plate number, via:
   - SMS
   - WEB
   - CALL CENTER
3 - If ok, SIRIO authorisation released
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THE FREIGHT DISTRIBUTION PLAN: INITIAL RESULTS

BEFORE PRICING POLICIES:

66,000 TOTAL PERMITS AT 31/07/06

22,710 DELIVERY PERMITS

= 30,000 DELIVERY VEHICLES

AFTER PRICING POLICIES:

60,000 TOTAL PERMITS AT 26/10/06 -10%

16,671 DELIVERY PERMITS -27%

= 21,535 DELIVERY VEHICLES -28%
3. Van Sharing Project

Set up of a virtual transit point made on a technological platform. The objective is to create a centre doing the same efficient task deployed by the main distributors (the third account) but acting on a conceptual (virtual) unified centre and on a physically distributed architecture. This design seems to be the appropriate response for a light-shape consortium, made by a group of small operators that don’t have the economic power to invest in physical big structures.

Features:
- trip programming and connection to real time traffic centre via On Board Equipment
- Advanced Vehicle Monitoring for a fleet network
- rationalisation of load/unload procedures
- reserved parking slot remote booking and enforcement

Goals:
Promotion of the joining process for own account operators by free use of the technological transit point
Promotion of the methane conversion: at least new 30 vehicles for the fleet
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VAN SHARING: THE ARCHITECTURE

- Parking Booking System
- Traffic Info Centre
- Transit Point (deposit)
- Municipality Offices (monitoring activities)
- Destination (shop keepers)

- Statistics and Reports
- Monitoring
- Trip Planning
- Vehicles Loading
- Orders Collection

Fleet
Some remarks

De Minimis EU regulation prevents or restrict institutions from funding private companies but Without incentive actions the small operators will not perform efficient distribution in the urban areas

How to solve the dilemma:
• Public platform for free shared use (Bologna trial)
• Very strict accessing rules (the small operator will not survive)
• Distribution performed by public companies (strict interpretation of the free market)

The free market gives to citizen more choice at lower prices... or sometimes ...shift some (hidden) costs toward the community?
THANK YOU!

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