

# BESTUFS Conference

Athens

11 - 13th June 2008

*Bestufs WP3*

**Best practices in Urban Goods Movement data  
collection, modeling and application fields**

Jean-Louis Routhier, Daniele Patier  
*Laboratoire d'Economie des Transports*  
*University of Lyon*





## Bestufs WP3 Objectives

- **To collect, compare and describe different data collection approaches**
- **To provide a platform of urban freight transport modelling experts**
- **To help to exchange expertise and practical experiences**
- **To contribute to an harmonisation and a standardisation of data collection methods**





# Bestufs WP3 organization

## Tasks

➤ **1.Data harmonisation**

## Taskleaders partners:

**Michael Browne, Julian Allen, UoW, U.K.**

➤ **2.Modelling approaches**

**Herbert Sonntag, Bertram Meimbresse/TFH, Ge**

➤ **3. Use cases and Application fields** **Wanda Debauche, Davy Decock, BRRC, Be.**

➤ **4. Round tables organisation**

➤ **Platform of urban freight  
transport modelling experts**

**Danièle Patier, Jean -Louis Routhier, LET, Fr.**

## Country partners

➤ **Antonio MUSSO, University of Roma, Italy**

➤ **Jaap VLEUGEL, Johan VISSER University of Delft, Netherlands.**

➤ **Jesus MUNUZURRI, Univ. of Sevilla, Spain**

# Preparatory Tools

- A questionnaire (web-on line) in three parts:
  - description of the UGM data collected in 11 European countries
  - description of the UGM modelling approaches in Europe
  - description of the model applications

**\*43 experts have given a reply**

- 4 Round tables

**\*77 experts from 12 countries**

- A total contribution of **108 experts from 12 countries**  
(11 European + Japan)

**\*46 academics**

**\* 32 consulting**

**\* 28 authorities engineers**

# Roundtables

➤ **Objectives:** Which data are required and which models help decision makers towards best solutions to improve Urban Logistics?

**1. Inventory of current data about UGM**

*Are collected data useful for answering decision makers' concerns?*

**Urban freight data collection  
RT1, Lyon 2005 (23 participants)**

**2. Inventory of existing UGM models**

*Are models efficient to simulate and forecast the global UGM management?*

**Modelling approaches in UGM  
RT2, Berlin 2006 (27)**

**3. How are the existing UGM data and**

**models used? *Are they answering to the decision makers attempts?***

**Application fields, use cases  
and opportunities  
RT3, Bruxelles 2007 (33)**

**4. Policy, Data collection and modelling  
methods, integration : *how to progress?***

**Issues and gaps in UGM data and  
models - Workshop, Paris 2007 (12)**

**Progress and recommendations  
RT4, Rome 2008 (29)**



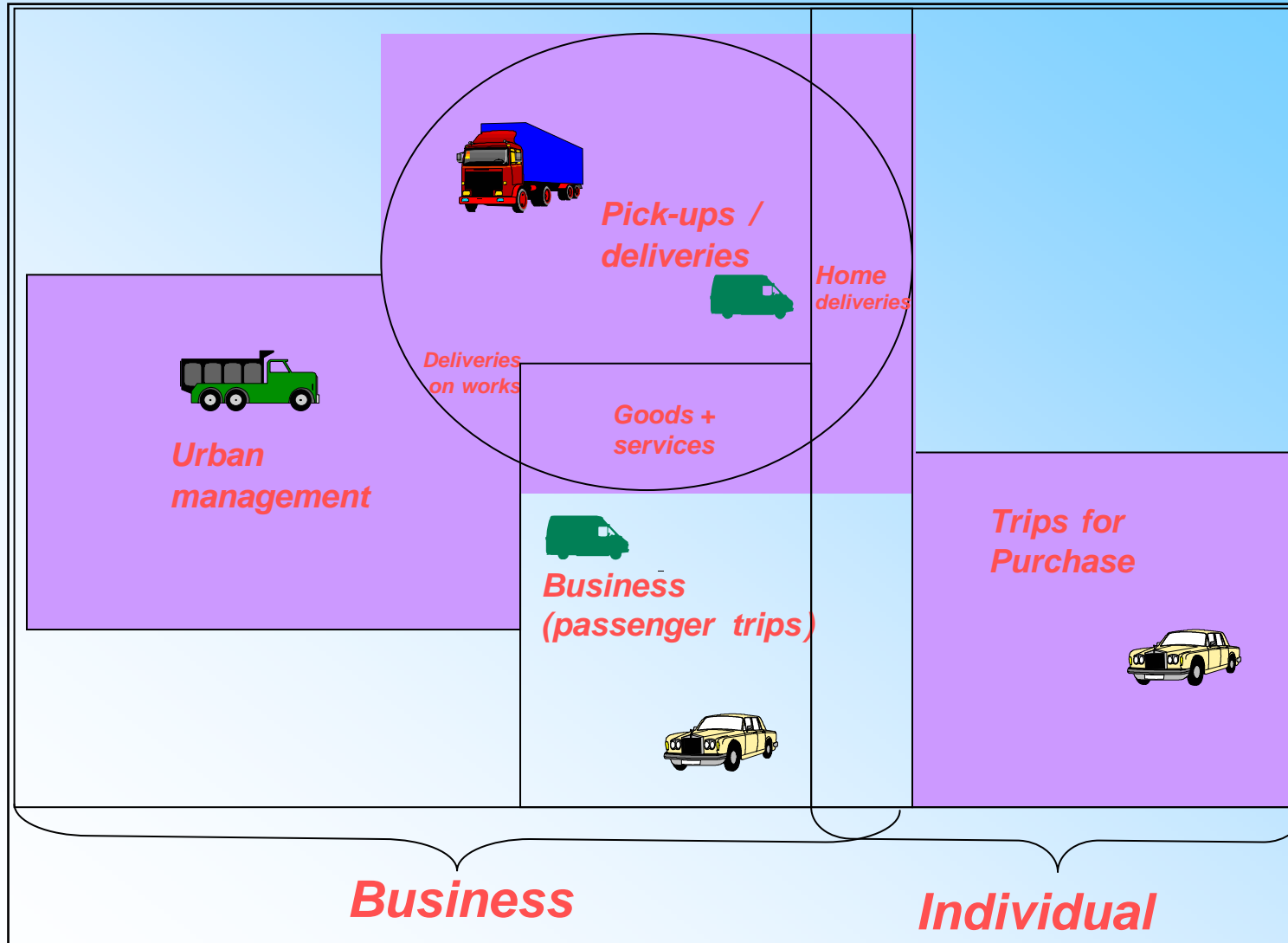
## **Expectations of decision makers**

- **UGM traffic calming**
- **Equitable road sharing,**
- **Safety, pollution and noise decreasing**
- **Energy saving and greenhouse gas decreasing**

## **Need for knowledge on UGM**

- **Contribution of economical activity on lorries and van traffic,**
- **Role of urban environment in distance covered,**
- **Number + type of vehicles involved in deliveries and pickups,**
- **Role of organisation and management in UGM traffic.**
- **Integration of the purchase flows in the UGM simulation**
- **To compare the efficiency of different local policies  
(regulation, land use, incentives)**

# The scope of UGM data collection





# Available UGM data in Europe and their utility

## 20 different types of data

## Urban data collection / Modelling

➔ **Registers (activity, vehicles)**

**Sampling / Calibration of deliveries / veh. flows**

➔ **Common surveys**

**1 - Automatic counting**

**Network burden / Calibration**

**2 - Road side surveys (cordon surveys)**

**In-Out traffic / Calibration**

**3 - Vehicle based surveys**

**National flows / National model**

**4 - Shipper surveys**

**Supply chain / National model description of supply chain**

➔ **Specific UGM surveys**

**1 - Establishment based surveys**

**Deliveries / UGM generation generation model**

**2 - Driver surveys**

**Urban Freight /Urban logistic transport org. /modelling \***





# Addressing gaps in urban freight data collection

## Data gaps in several countries:

- light goods vehicle activity (<3.5 tonnes)
- the supply chain as a whole
- freight and logistics infrastructure
- loading and unloading operations and infrastructure for goods vehicles
- geographical data about goods vehicle trips in urban areas
- trips carried out by consumers for the purposes of shopping
- speed and route data for goods vehicles
- non-road modes



## **Data collection Statements**

**A consensus about national freight data collection**

**Available specific urban goods data are seldom**

**The main issues :**

- No consensus about data collection methodology;
- Standard data do not exist at urban scale;
- Available data are not often suitable with objectives;
- Lack of reliability for urban goods data collection;
- Difficult to compare figures (<>cities, <>countries)
- A problem with : Who has to pay for the collection?



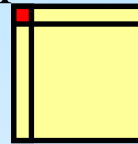
## 2 Modelling : available approaches to calculate UGM

Method	Advantages	Disadvantages
<b>Flat-rate</b> addition to the values of individual traffic	cheap, quick	very rough
Calculations based on <b>traffic counts</b> , e.g. inner city road crossings	Evaluation of hot spots	personnel intensive, no information about behaviour and O/Ds
<b>Surveys</b> in city areas with traffic problems	Local measure oriented approach (e.g. traffic regulation, technical measures)	only suitable for small areas
<b>Model</b> calculations	<b>Policy oriented models (POM)</b> mid-long term	Cost : need a lot of data

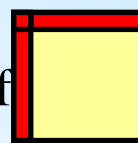
# Main UGM modelling issue

## Definition of UGM Models

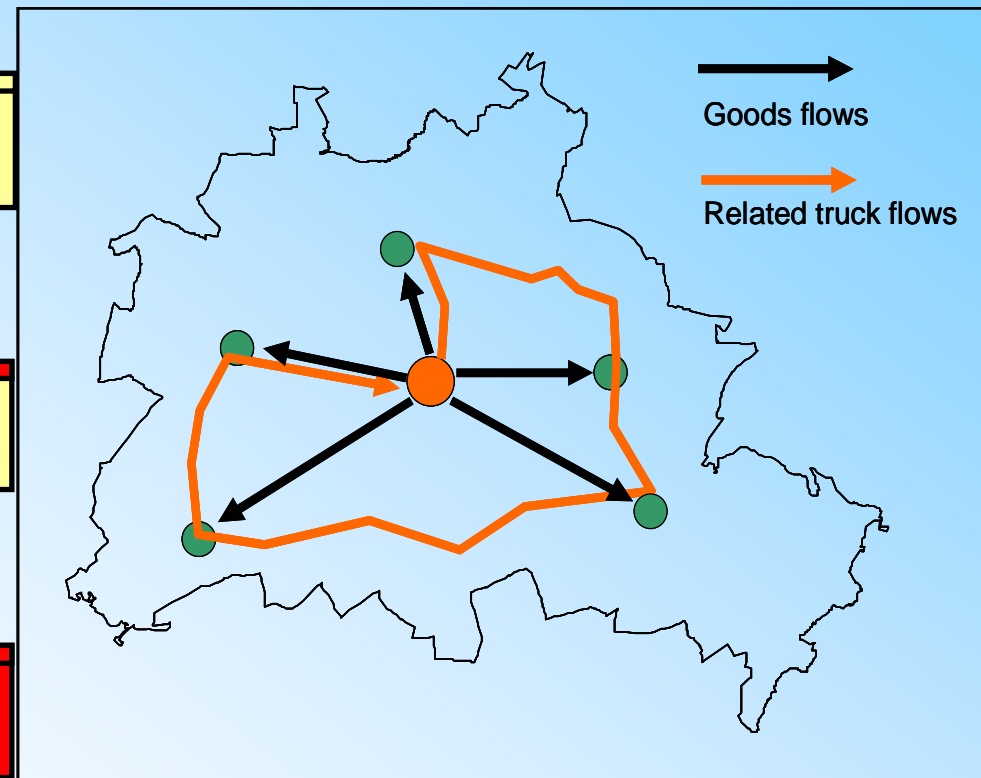
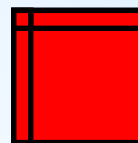
1/ UGM Econometric Models to compute key figures without spatial distribution (e.g. for a whole city/region).



2/ UGM Transport Demand Models to compute traffic volume per zone (only lines and columns of O/D matrices).





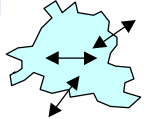

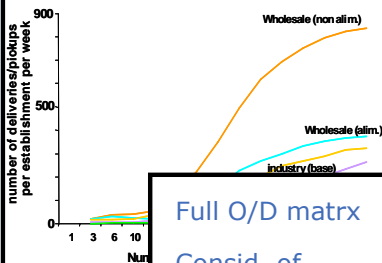





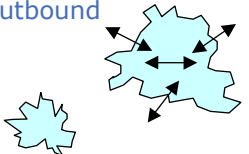
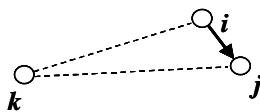


3/ UGM Transport Distribution Models to compute complete O/D matrices




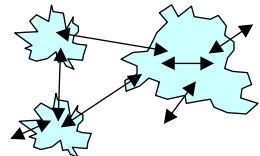
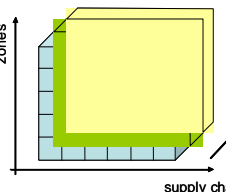
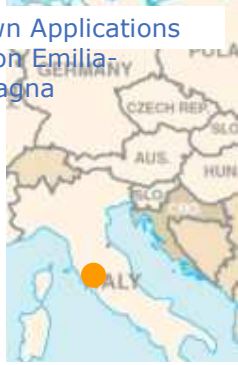





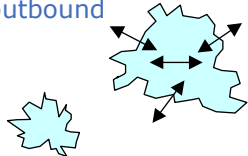
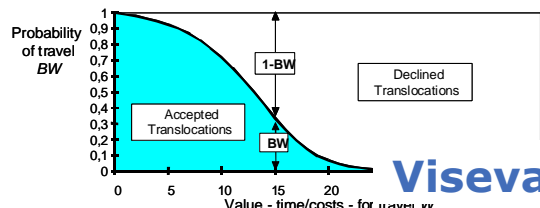

***12 models have been identified***



<p>Full O/D matrix </p> <p>Consid. of industrial branches (45) </p> <p>Car/truck types (3) </p> <p>Type of actors (2) monomodal </p>	<p>Spatial aspect: Intra urban, inbound, outbound</p> 
<p>Model sets up typologies to reduce not necessary calculations</p>	<p>Known Applications (step 1: generation of movements) Paris, Lille, Lyon, Marseille, Toulouse, Montpellier, Strasbourg, Clermont-Ferrand</p>  <p><b>FRETURB</b></p>
	

<p>Full O/D matrix </p> <p>Consid. of industrial branches (10) </p> <p>Car/truck types (4) monomodal </p>	<p>Spatial aspect: Intra urban, inbound, outbound</p> 
<p>High savings effect</p>  <p>Low savings effect</p> 	<p>Known Applications: Hamburg, Berlin, Munich, Augsburg, Nuremberg, Hanover, Trier, Roma</p>  <p><b>WIVER</b></p>

<p>Full O/D matrix </p> <p>Consid. of industrial branches </p> <p>Goods types/ supply chains (6) monomodal </p>	<p>Spatial aspect: Intra regional</p> 
<p>Model uses extensive economic surveys</p> <p>Data geocoded and with NACE attributed</p> <p>Multidimensional allocation of supply chains</p>  <p>supply chain</p> <p>other attributes: • day and time of service • vehicle type • parking</p>	<p>Known Applications Region Emilia-Romagna</p>  <p><b>Goodtrips</b></p>

<p>Full O/D matrix </p> <p>Consid. of industrial branches (4) </p> <p>Car/truck types (4) monomodal </p>	<p>Spatial aspect: Intra urban, inbound, outbound</p> 
	<p>Known Applications: Stuttgart, Frankfurt</p>  <p><b>Viseva-W</b></p>



# Modelling Statements

- Availability of data strongly influences the chosen methodology for the modeling.
- Gravity models use commodity flows data and cannot reflect the round organization.
- UGM models very often calculate the more helpful trip chains than goods flows.
- A group of UGM models use land use pattern another group use transport surveys. Using both is the better solution.
- UGM Models tend to consider supply chains more and more in the simulation process to reflect better the behavior of the market actors.
- Newest models consider a wider range of urban management issues like environment, parking policy, policy making support (land use, regulation, incentives).



### **3 What about application fields?**

**Too often: a lack of interest for urban freight transport data collection and modelling**

**→ For the general public**

**→ For the decision makers**

- UGM is considered as a cause of problems, but not as a factor of economy development**
- There is a competition between freight and passenger transport**
- Lack of knowledge of the urban goods stakes**





## **3 What about application fields?**

### **Some important modelling results (environmental issue)**

**It is possible to know the part of different industry in terms of UGM generation in the different zones of the city**

**Impacts of trips for purchase > impacts of urban goods deliveries**

**Land use is determinant in the UGM generation:**

- location of platforms and industry
- density effect: balance between efficiency and congestion

**Cooperation between the transport operators and the shippers is determinant for trucks-km decreasing**





## → Main issues for UGM data and models uses *and Recommendations*

- 1. Common goals, different policies** *Models to compare policies*
- 2. Link between urban deliveries and the whole logistical chain** *Integration of UGM in the global transport system*
- 3. Multiplicity of stakeholders** *Standardisation of data and modelling approaches*
- 4. Freight transport is a Business activity (not considered by local authorities)** *To prove the impacts of UGM (dissemination)  
To prove the efficiency of measures thanks to simulation models*



# Main issues for UGM data and models uses

## *Recommandations*

**5. Lack of awareness and knowledge**

*Training of administrations  
carry on with dissemination*

**6. Poor data collection on local level**

*Specific urban goods  
data collection (UGM surveys)*

**7. Acceptability**

*(public concern, private actors)*

**Confidentiality**

**Cost and funding**

*National or regional authorities  
involvement*

*(funding and incentives)*

## Some recommendations

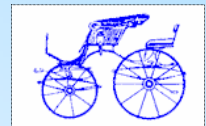
**→ A necessary integration in the global urban stakes:**

Urban goods and individual trips data integration

Space and time connection

Land use and goods transport

Need of comparison and evaluation



# Some recommendations

## In order to feed policy oriented approaches

- ➔ **Data collection needs to be more comprehensive:**  
To take into account all UGM components, own account and third party transport, all the goods exchanged between establishments, as well small as big firms, from light commercial vehicles to maxi-code trucks
- ➔ **Data collected have to show the relations between the business logistics needs and the transport conditions:**
  - to put road occupancy in touch with parked or running vehicles (impact on congestion, management tool for decision maker).
  - to make existing modelling approaches efficient on simulation

## Towards a standardisation of urban freight surveys :

- ➔ To associate business (establishments) and vehicle travel (drivers) data collection.



## Main future working tracks

- ➔ To enhance new IT for data collection and data management (on line, GPS, mobile, camera, RFID data for traceability, reliability, cost)
- ➔ To produce a technical guide on definitions and harmonisation of collection methodology, types of data and indicators.
- ➔ To encourage a shared development of data collection and modelling programs
- ➔ To develop new modelling methods to integrate the complexity (e.g. multi-agent methods?)
- ➔ To improve the comparability of data collected and results of models in different countries

