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BESTUFS Conference

Athens

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BestufsWP3

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

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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	Taskleaders partners:
➢1.Data harmonisation	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

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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

➢ **<u>Objectives:</u> 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?

2. **Inventory of existing UGM models**
   Are models efficient to simulate and forecast the global UGM management?

3. **How are the existing UGM data and models used?** ***Are they answering to the decision makers atempts?***

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

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

Modelling approaches in UGM
RT2, Berlin 2006 (27)

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

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

Progress and recommandations
RT4, Rome 2008 (29)

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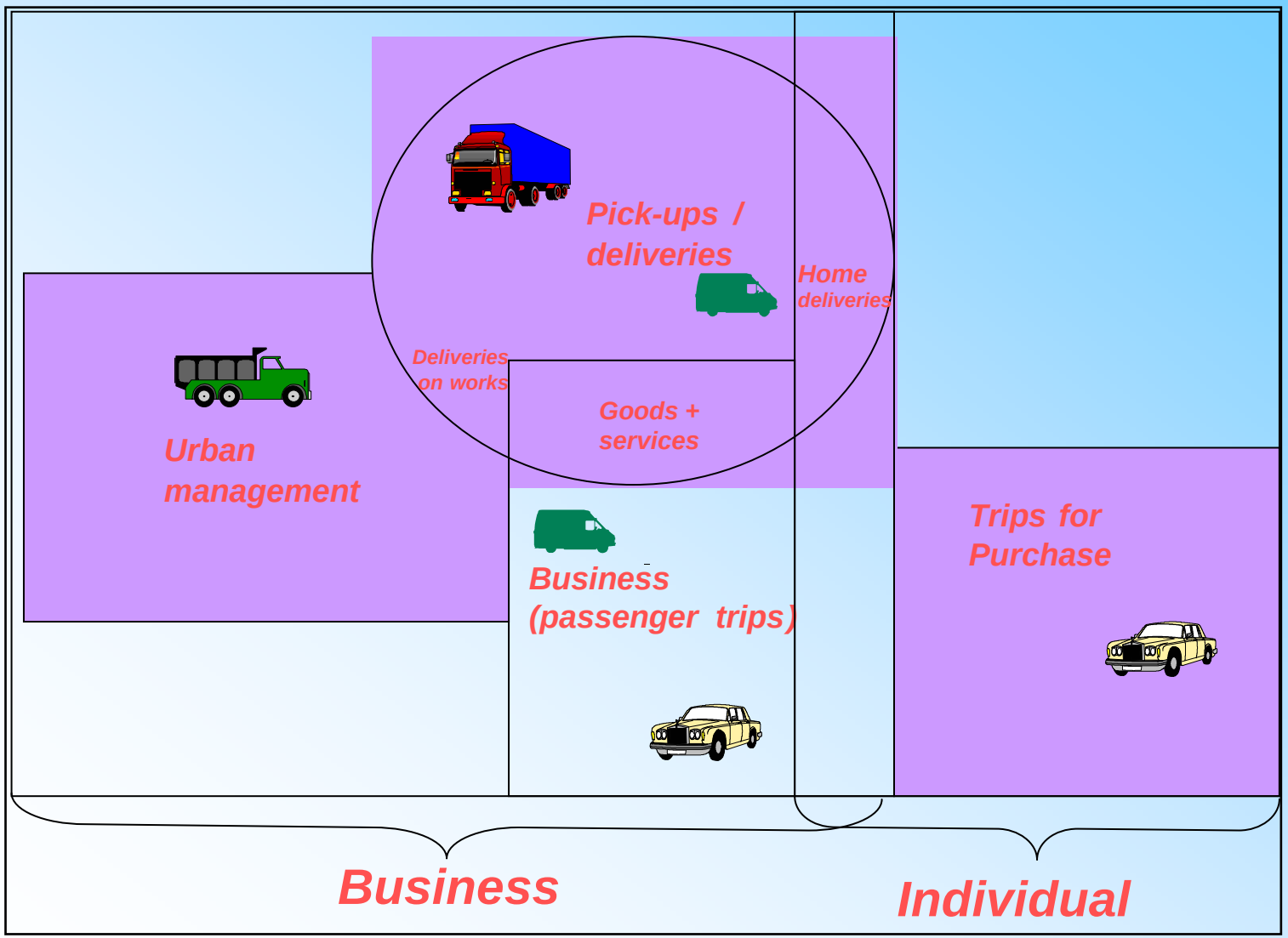
Expectations of decision makers

- 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



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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 description / National model of supply chain
→ **Specific UGM surveys**	
1 - Establishment based surveys	Deliveries generation / UGM generation model
2 - Driver surveys	Urban Freight transport org. /Urban logistic /modelling *

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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

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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?

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2 Modelling : available approaches to calculate UGM

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

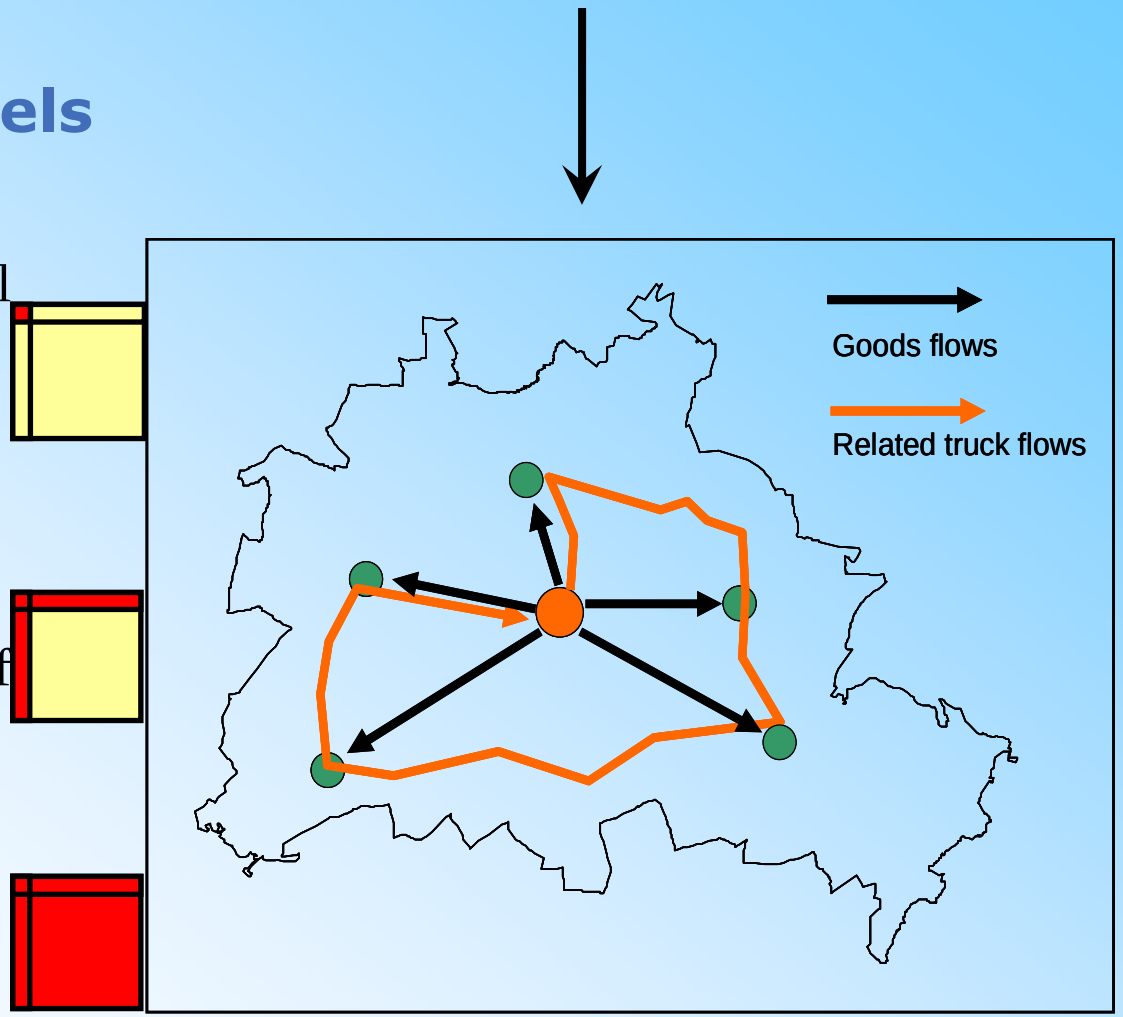
Main UGM modelling issue

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

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The most recent approaches

FRETURB

Full O/D matrx

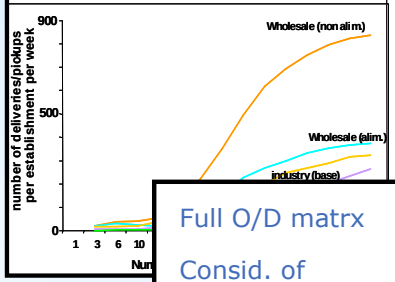
Consid. of industrial branches (45)

Car/truck types (3)
Type of actors (2)
monomodal

Spatial aspect:

Intra urban, inbound, outbound

Model sets up typologies to reduce not necessary calculations



Known Applications
(step 1: generation of movements)
Paris, Lille, Lyon, Marseille, Toulouse, Mont-pellier, Clermont-Ferand

WIVER

Full O/D matrix

Consid. of industrial branches (10)

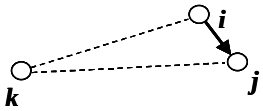
Car/truck types (4)

monomodal

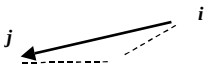
Spatial aspect:

Intra urban, inbound, outbound

High savings effect



Low savings effect



Known Applications:
Hamburg
Berlin
Munich
Augsburg
Nuremberg
Hanover
Trier
Roma

Goodtrips

Full O/D matrx

Consid. of industrial branches

Goods types/ supply chains (6)
monomodal

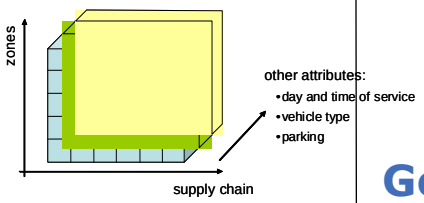
Spatial aspect:

Intra regional

Model uses extensive economic surveys

Data geocoded and with NACE attributed

Multidimensional allocation of supply chains



Known Applications
Region Emilia-Romagna

Viseva-W

Full O/D matrx

Consid. of industrial branches (4)

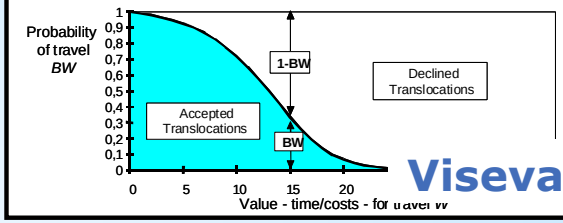
Car/truck types (4)

monomodal

Spatial aspect:

Intra urban, inbound, outbound

Known Applications:
Stuttgart
Frankfurt



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).

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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**

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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 plateforms 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 Recommandations

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*

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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 autorities involvement (funding and incentives)***

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Some recommendations

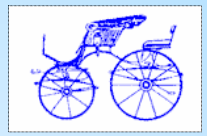
A necessary integration in the global urban stakes:

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.

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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

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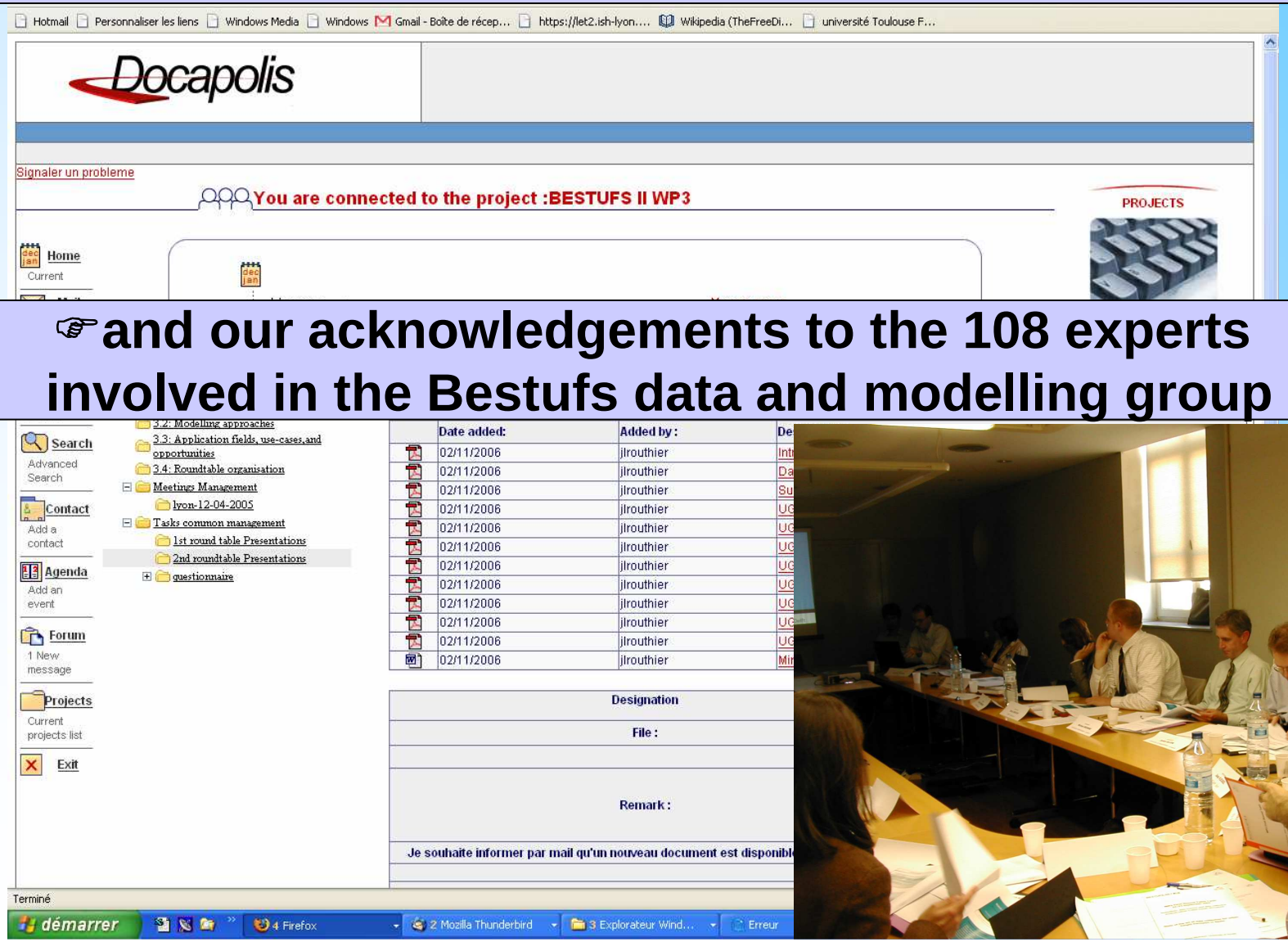
☞Thank you for your attention



☞and our acknowledgements to the 108 experts involved in the Bestufs data and modelling group