BESTUFS II Work package 3 - Urban freight data harmonisation and modelling

Task 2: Survey of UGM Models
2nd Round Table at the TFH Wildau 08+09/06/2006

Coordinator and manager of task
from TFH Wildau

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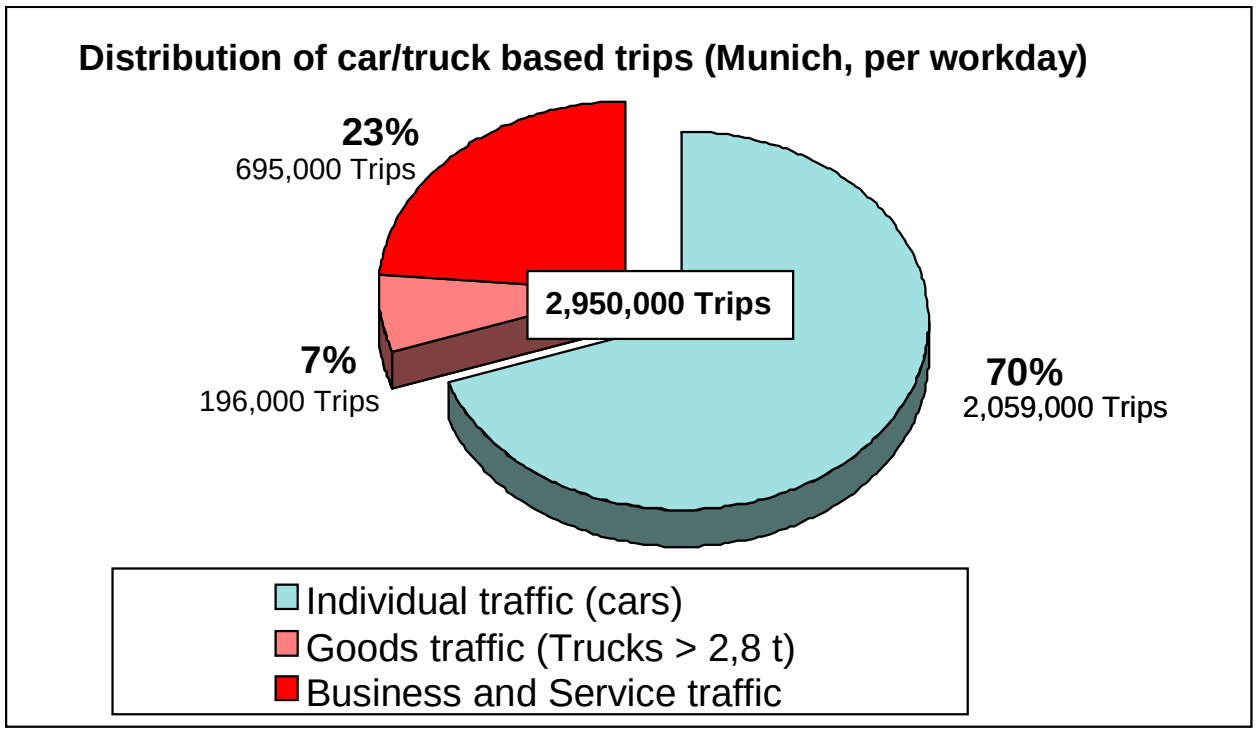
Commercial and freight traffic in cities has a high share of total road traffic and a heterogeneous structure

The share is approx. 30 % of the total mileage
From this 30%, approx. 2/3 are commercially used cars



Aims

- Modelling and data harmonisation addressing urban freight movements were recognised as basic requirements for city transport planners in order to obtain a full urban transport picture, including all commercial activities and needed to introduce innovative measures. The work package will focus on practical support for cities.
- To collect, compare and describe different data collection approaches, transport models and transport modelling use cases with respect to urban commercial activities (Urban Goods Movement - UGM).
- To provide a platform for urban freight transport modelling experts to exchange their expertise and practical experiences.
- To contribute to a harmonisation and standardisation of data collection methods in the European countries.

Levels of UGM calculations

Method	Advantages	Disadvantages
Flat-rate addition to the individual traffic	cheap, quick	very rough
Calculations based on traffic counts	good for evaluation of "hotspots"	personnel intensive, no information about behaviour and O/Ds
Surveys in city-areas with traffic problems	measure oriented	only suitable for small areas
Model-calculations	complete O/D matrices	need a lot of data

Models as a Interface between Data Collection and Measure Applications

Problem addressed > Selected method > Data needed > Models used > Gained results > Solved problems

- Network planning
- Traffic problems
- Elab.Transport plan
- Environm. analysis
-
-
-

General
- Simulation
- Modelling
- Flow-Analyses
- Estimation method
-
-

Area
- Region, Town
- Urban district
- Blocks
- Specific city zones
-
-

Transport
- Cargo flows
- Truck flows
- Behaviour pattern
-
-

Economy
- Employees
- Comp. structure
-

Land use
- Large traffic points
-
-

Environment
-
-
-

Trip generation
- O/D region
- O/D district
-
-
-

Trip assignment
-
-

Others
-

- O/D matrices
- key figures
- specific flows
-
-

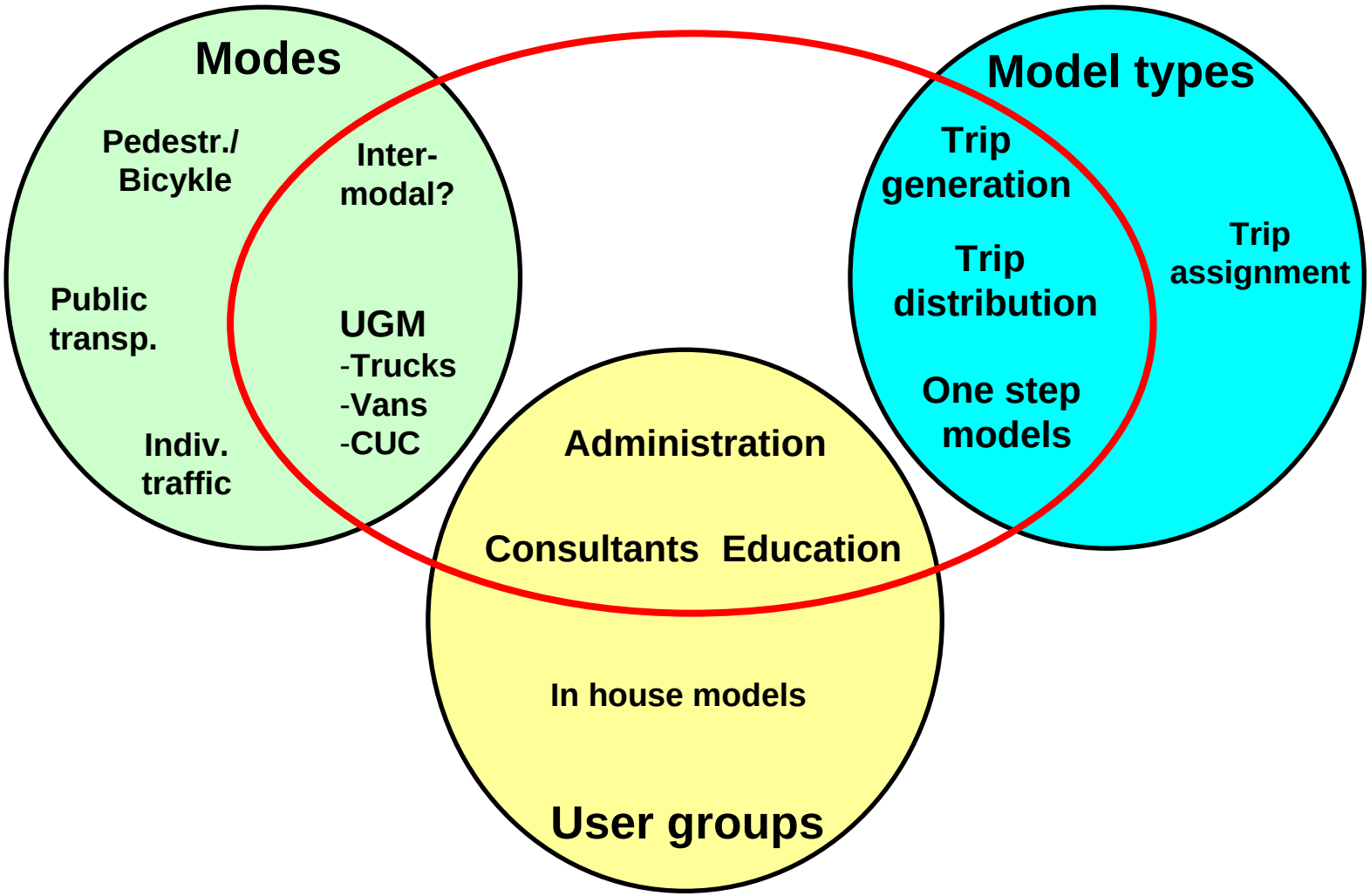
-
-
-

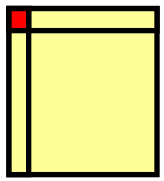
WP 3.2 Modelling approach

WP 3.1 Data harmonisation

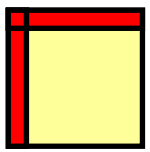
WP 3.3 Application fields

Modelling

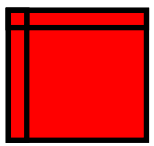

Modes
Pedestr./
Bicykle
Inter-
modal?
Public
transp.
UGM
-Trucks
-Vans
-CUC
Indiv.
traffic
Model types
Trip
generation
Trip
distribution
Trip
assignment
One step
models
Administration
Consultants
Education
In house models
User groups



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)

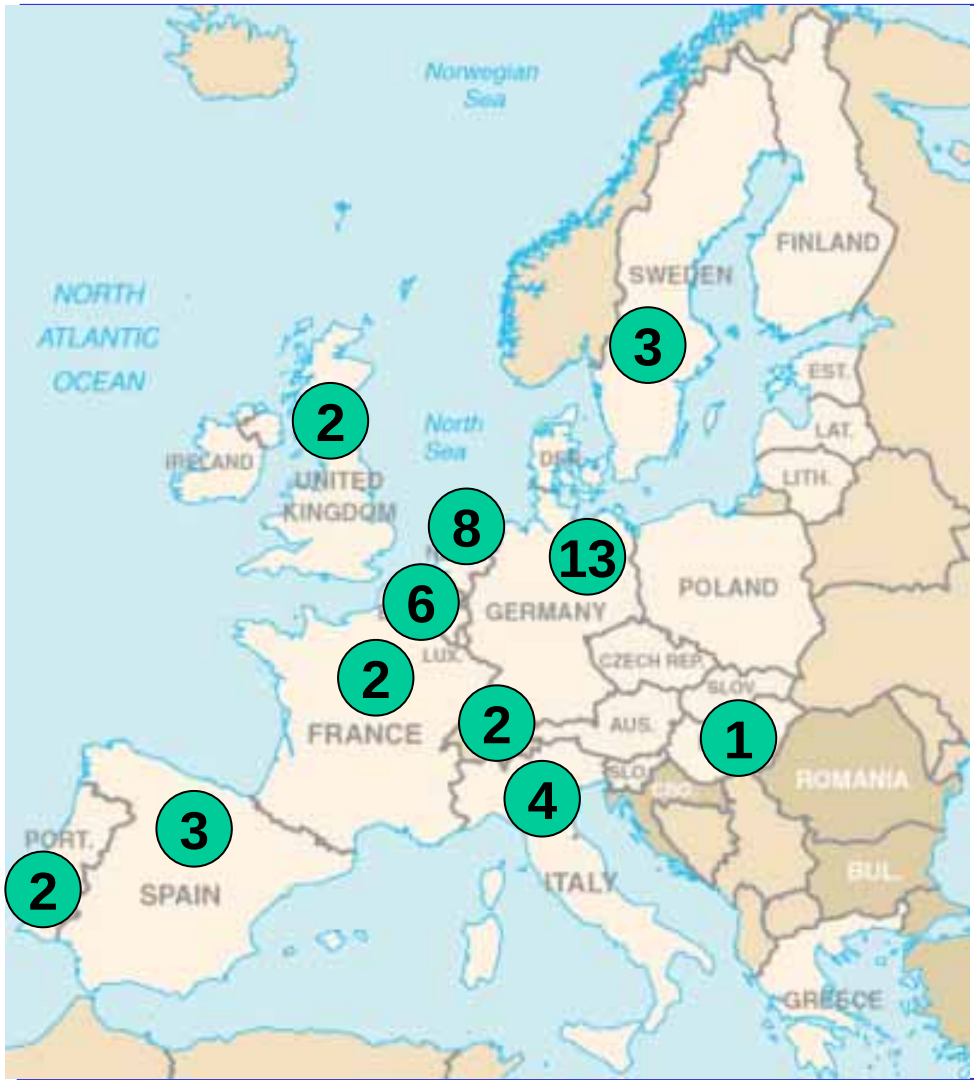


3/ UGM Transport Distribution Models to compute complete O/D matrices

Asked Questions

Country
Name of the model
Provider
Aim of the model (Purpose of the development, planned application cases, e.g. reflection of the current situation, prognosis, modeling of certain measures, etc.)
Model concept (e.g. calculation approach, basic assumptions, used mathematical model, definition of groups, gravitation, logit or estimation model)
Is the model a software-tool or a mathematical method only?
Conceptional model restraints regarding significance, discriminatory power and spatial aspects
Calculatory limitations (e.g. no. of trip purposes, no. of branches)
Technical requirements
Necessary input and sources of information (e.g. national statistics, regional statistics, own survey, ...) Is the acquisition of the necessary input easy, rather difficult, exceedingly difficult ? (please add per input category)
Output and resolution
Model resolution
Consideration of other transport modes
Considered types of urban/regional goods vehicles
Known applications

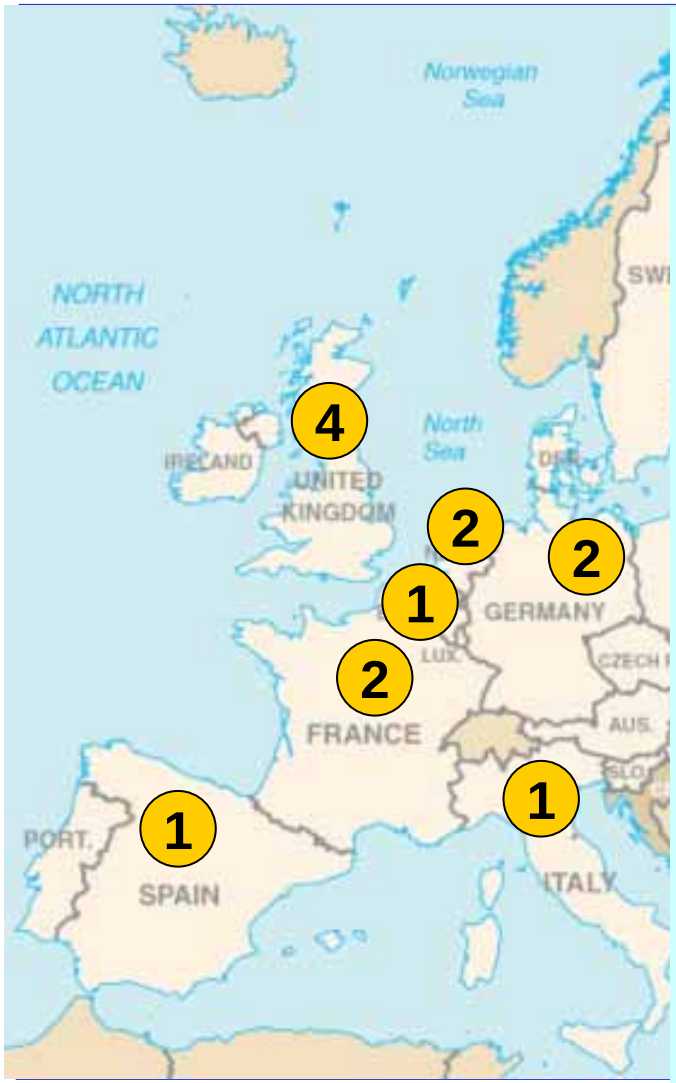
Numbers of asked experts



Numbers of Answers Regarding Task 2 UGM Models

15 of 46 = 33%

Identified UGM Models



Belgium:
Planet (traffic volume per zone);
Federal Administration of transport, in progress

France:
MODUS – matrix programme; DREIF
FRETURB - simulation programme; LET

United Kingdom:
GB Freight Model; EUNET/MEPLAN; PRISM; LEFT

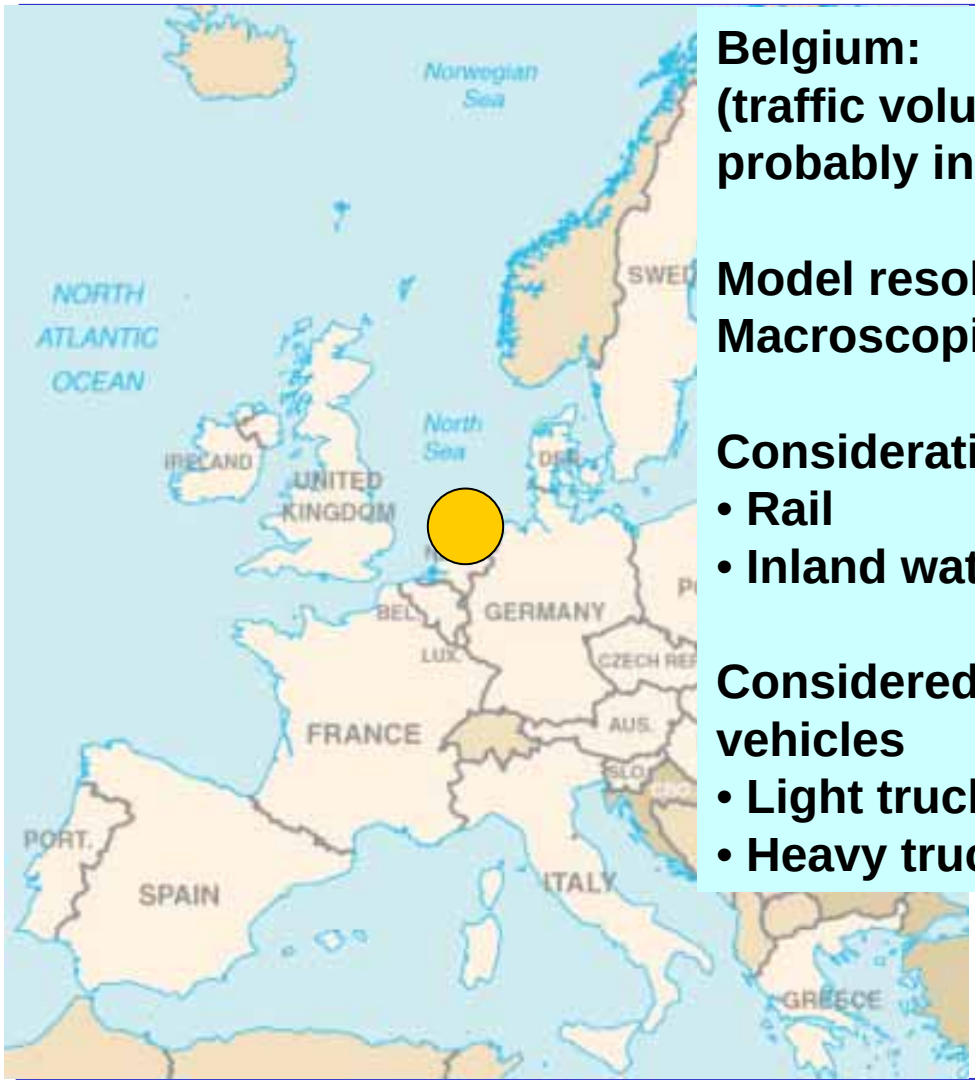
Netherlands:
Good trip; Delft University
Stadsbox-model; no more information

Germany:
VISEVA (WIVER approach included); PTV
AVeCoRU/SIATS/VeCIAT (econometric models); P.U.T.V.

Italy:
CityGoods

Spain:
Seville University Model

Identified UGM Models – Planet



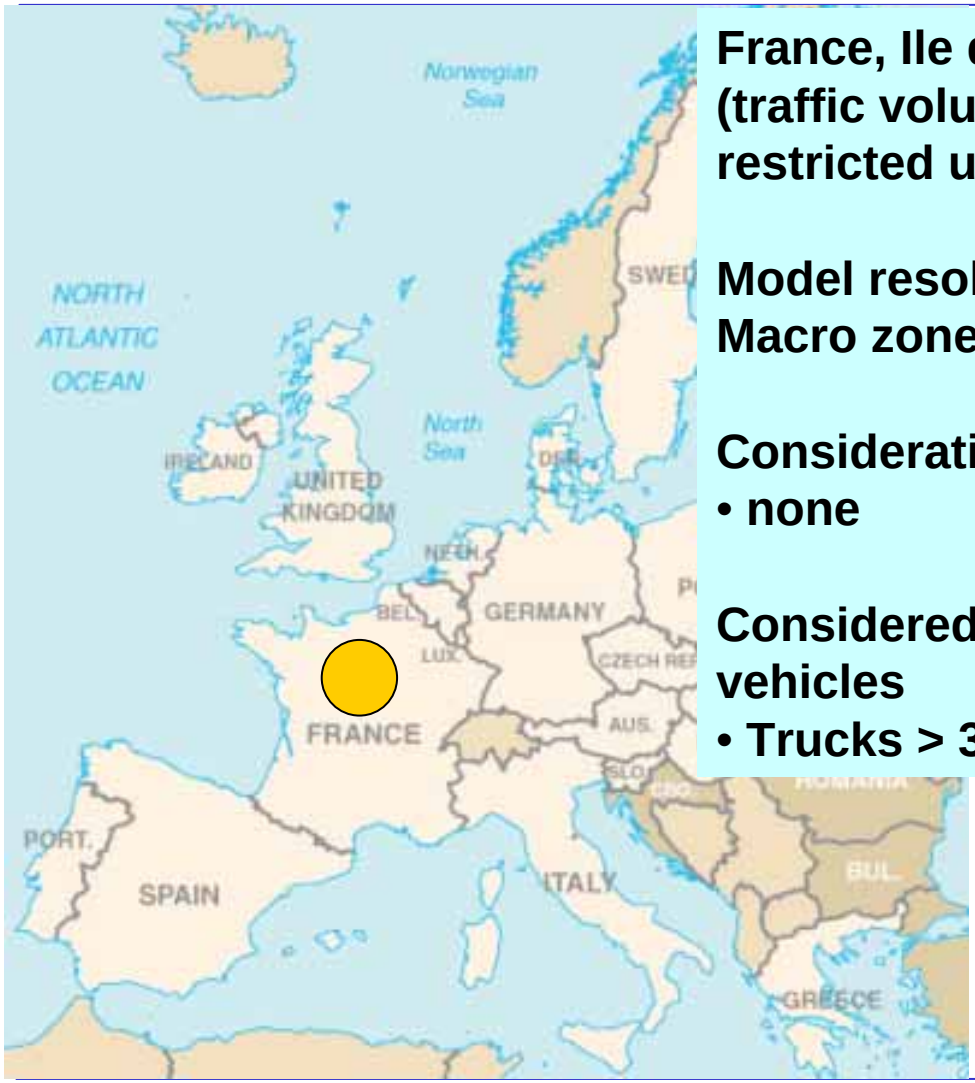
Belgium:
(traffic volume per zone – demand model)
probably inhouse model

Model resolution
Macroscopic (Town, region)

Consideration of other transport modes
- **Rail**
- **Inland waterway**

Considered types of urban/regional goods vehicles
- **Light trucks**
- **Heavy trucks**

Identified UGM Models – MODUS



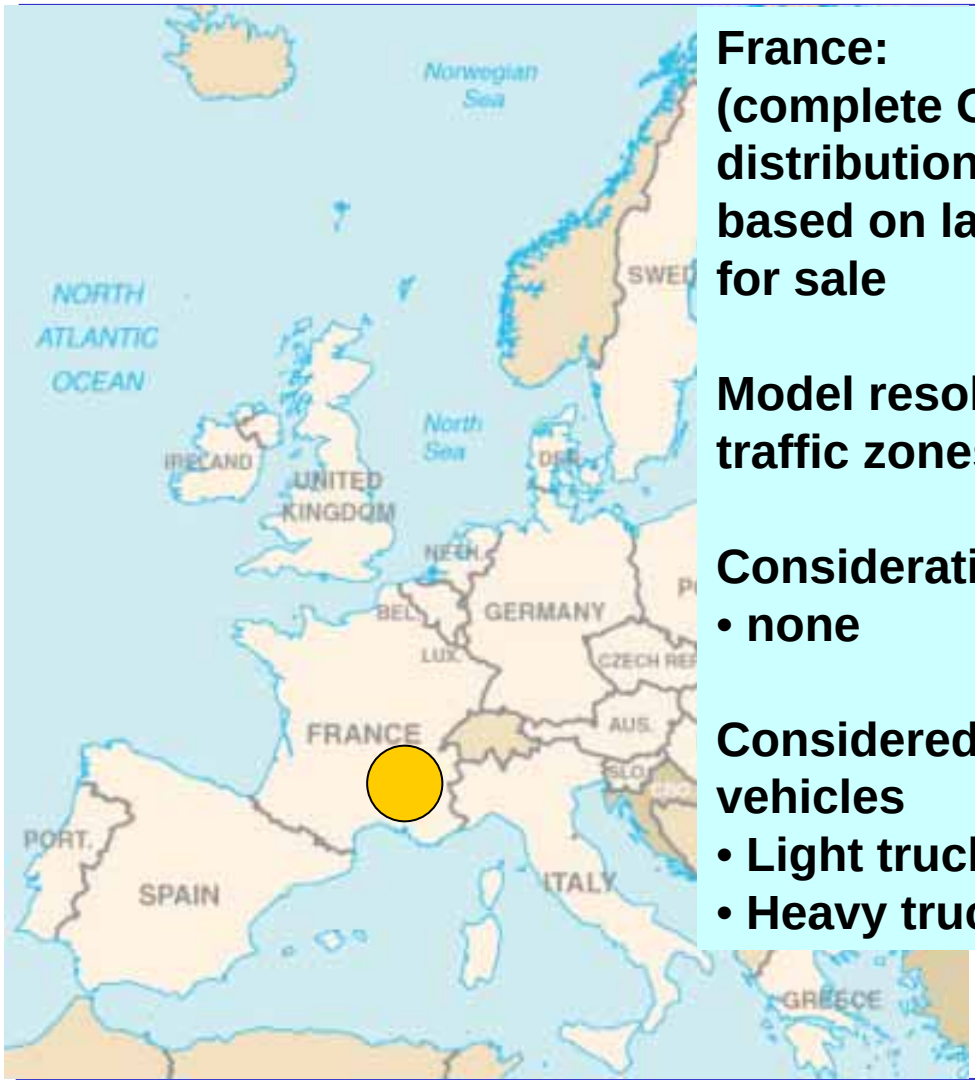
France, Ile de France:
(traffic volume per zone – demand model)
restricted user group

Model resolution
Macro zones around Paris and cordon

Consideration of other transport modes
- **none**

Considered types of urban/regional goods vehicles
- **Trucks > 3,5 tons**

Identified UGM Models – FRETURB



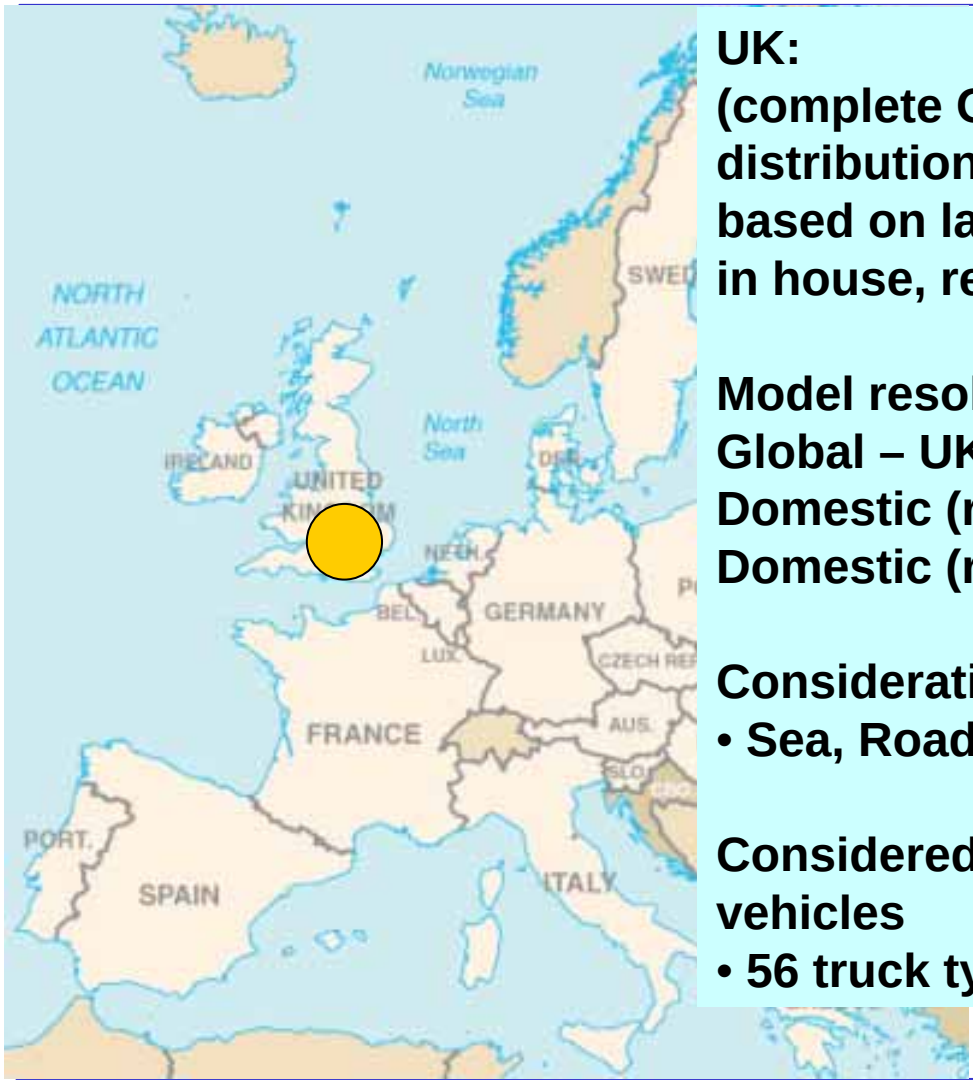
France:
(complete O/D matrix – distribution model, based on large UGM surveys for sale

Model resolution
traffic zones

Consideration of other transport modes
- **none**

Considered types of urban/regional goods vehicles
- **Light trucks**
- **Heavy trucks**

Identified UGM Models – GB Freight Model



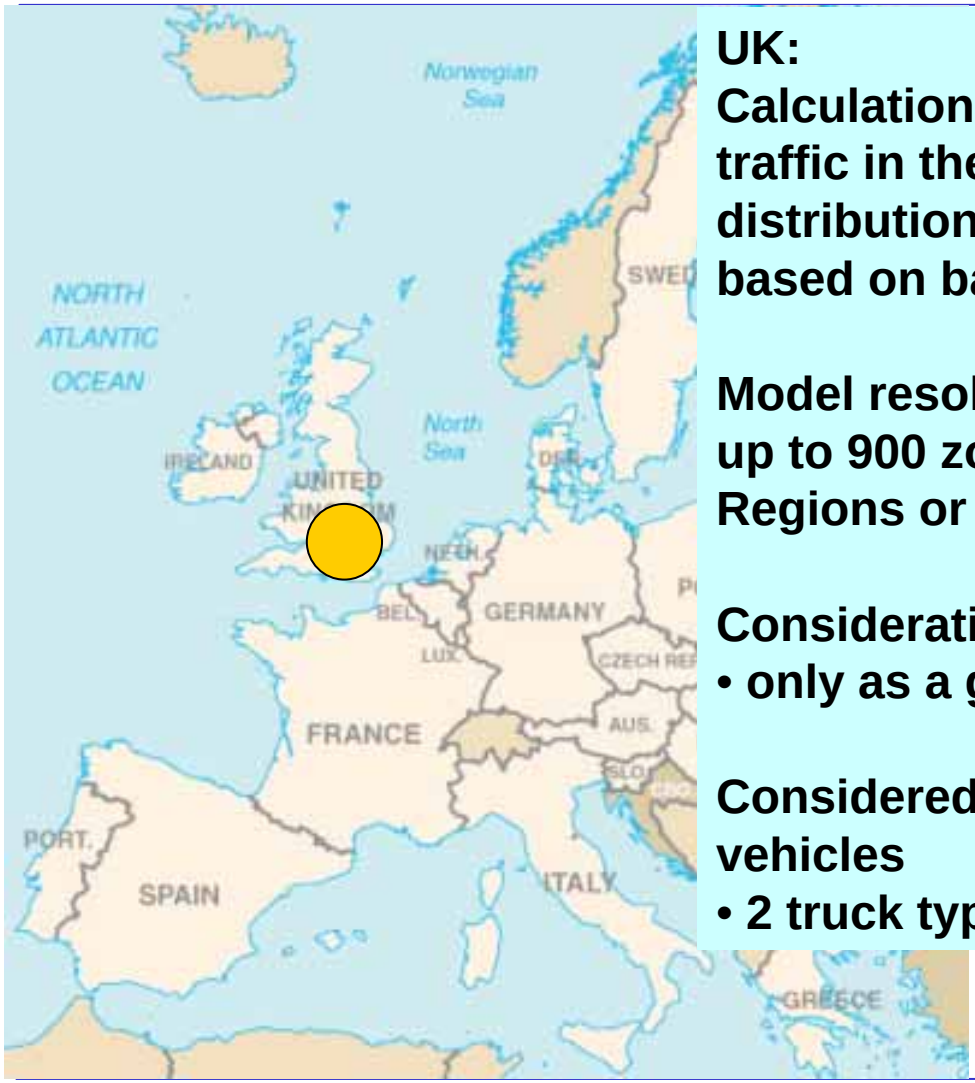
UK:
(complete O/D matrix – distribution model,
based on large UGM surveys
in house, restricted user group

Model resolution
Global – UK to 150 European zones
Domestic (rail, road) – county zones
Domestic (road) – 2,700 ZIP zones

Consideration of other transport modes
- **Sea, Road, partly Rail**

Considered types of urban/regional goods vehicles
- **56 truck types**

Identified UGM Models – PRISM



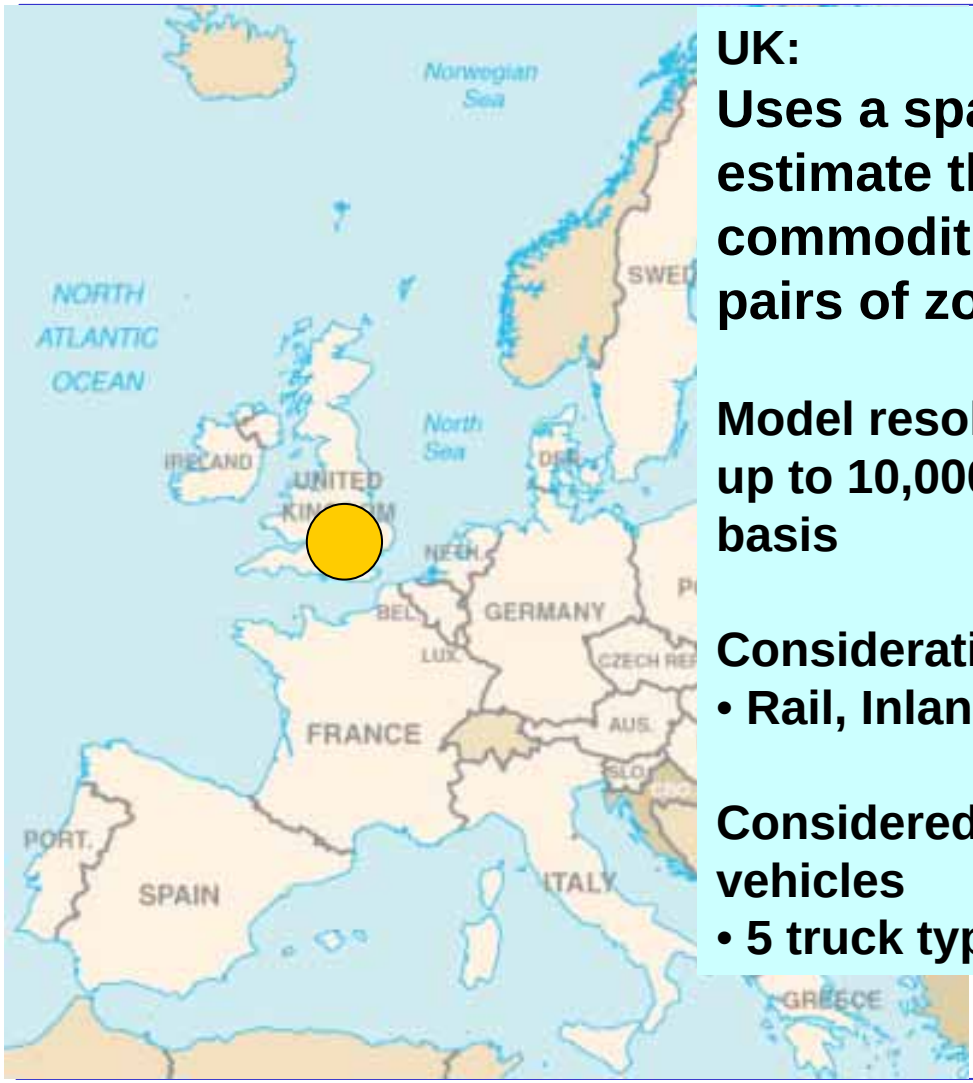
UK:
Calculation of impacts on goods traffic in the future – distribution model, based on basis year O/D matirx

Model resolution
up to 900 zones
Regions or component tows

Consideration of other transport modes
- **only as a generator point**

Considered types of urban/regional goods vehicles
- **2 truck types (LGV and HGV)**

Identified UGM Models – EUNET/MEPLAN



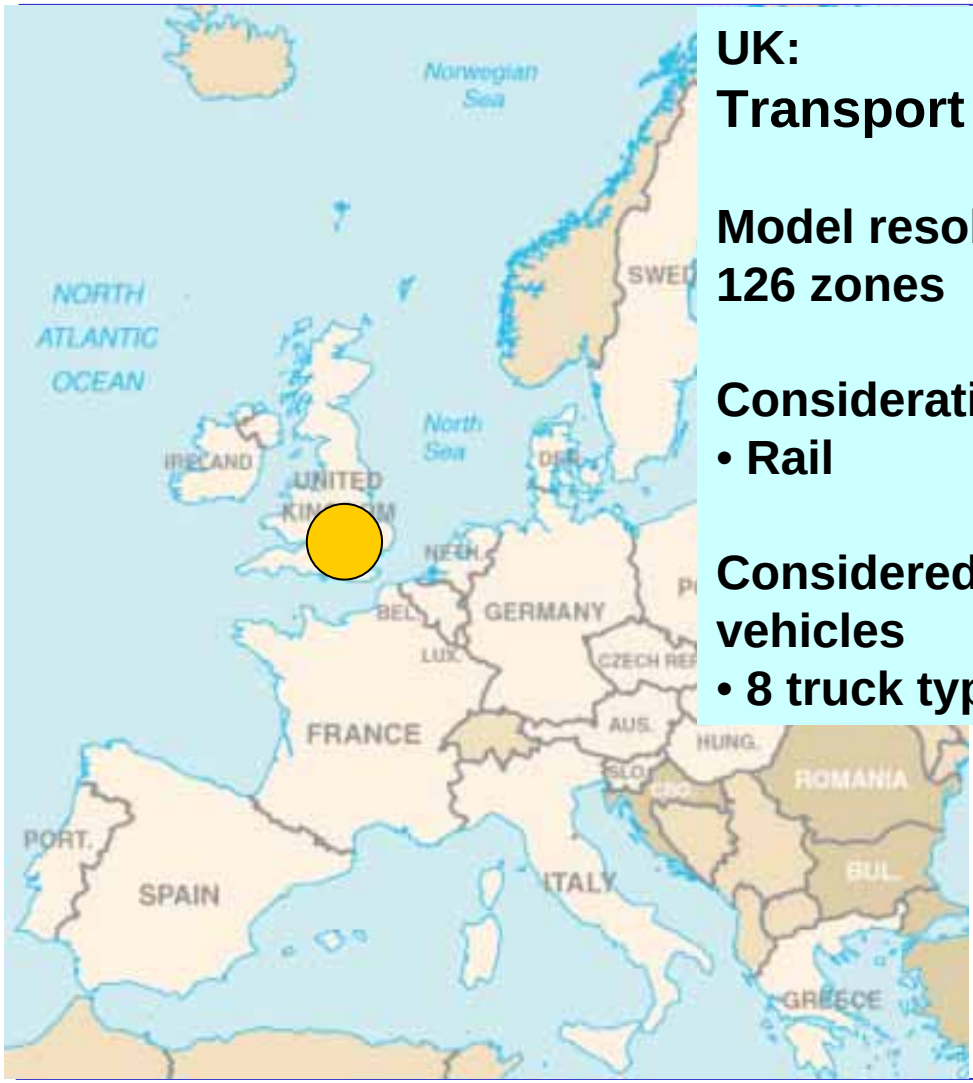
UK:
Uses a spatial input output model to estimate the monetary value of commodities to be transported between pairs of zones

Model resolution
up to 10,000 zones, depends on used statistical basis

Consideration of other transport modes
- **Rail, Inland waterway, Shipping**

Considered types of urban/regional goods vehicles
- **5 truck types**

Identified UGM Models – LEFT/LEeds Freight Transport model



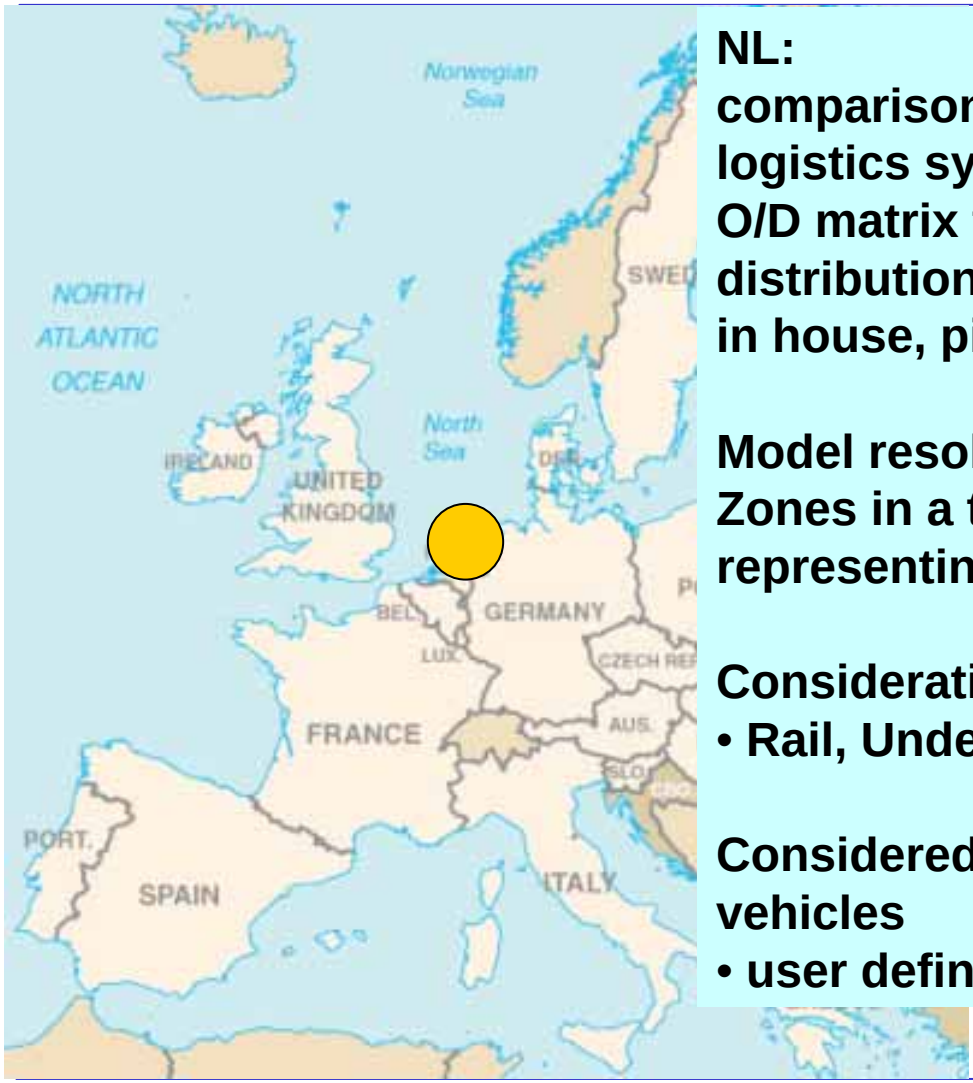
UK:
Transport shift model for regions

Model resolution
126 zones

Consideration of other transport modes
- **Rail**

Considered types of urban/regional goods vehicles
- **8 truck types**

Identified UGM Models – Goodtrip



NL:
comparison of alternative logistics systems
O/D matrix for commodity groups distribution model,
in house, pilot model, currently not in use

Model resolution
Zones in a town plus connector zones representing access routes

Consideration of other transport modes
- **Rail, Underground transport**

Considered types of urban/regional goods vehicles
- **user defined**

Identified UGM Models – VISEVA

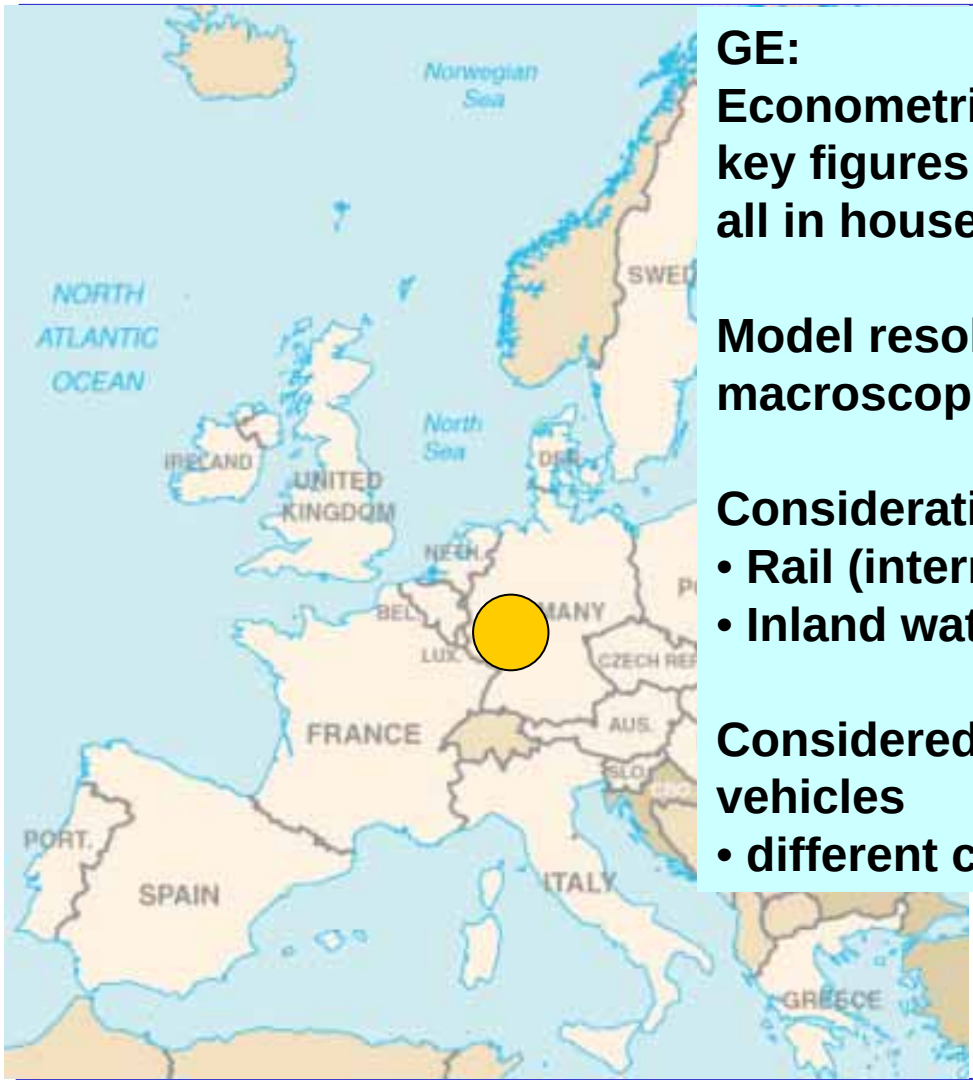
GE:
Complete O/D matrix divided by industry branches and truck types distribution model,
for sale

Model resolution
up to 1,000 zones

Consideration of other transport modes
- **large transhipment points as interfaces to other transport modes**

Considered types of urban/regional goods vehicles
- **Light trucks**
- **Middle trucks**
- **Heavy trucks**

Identified UGM Models – AVeCoRU/SIATS/VeCIAT



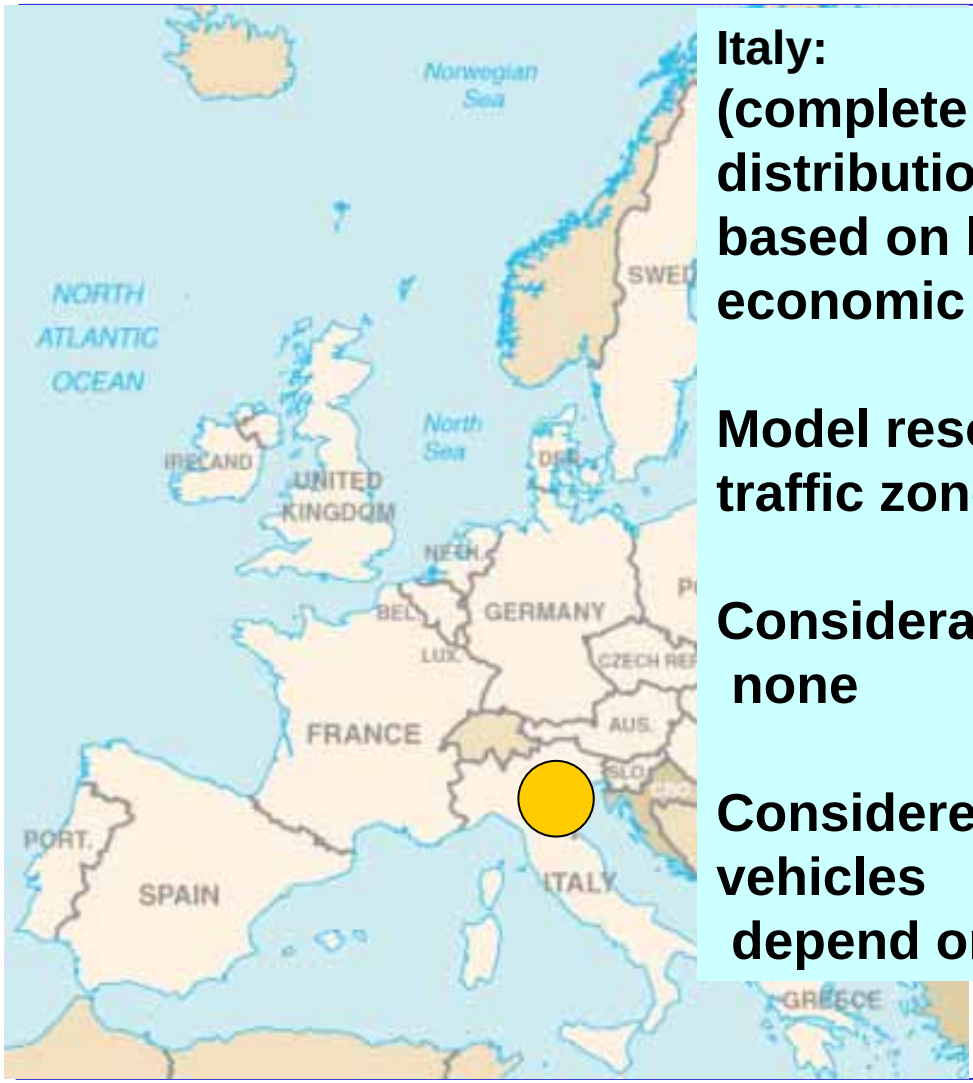
GE:
Econometric Models to compute key figures without spatial distribution
all in house models

Model resolution
macroscopic (town level)

Consideration of other transport modes
- **Rail (intermodal transport)**
- **Inland waterway**

Considered types of urban/regional goods vehicles
- **different classifications**

Identified UGM Models – CityGoods



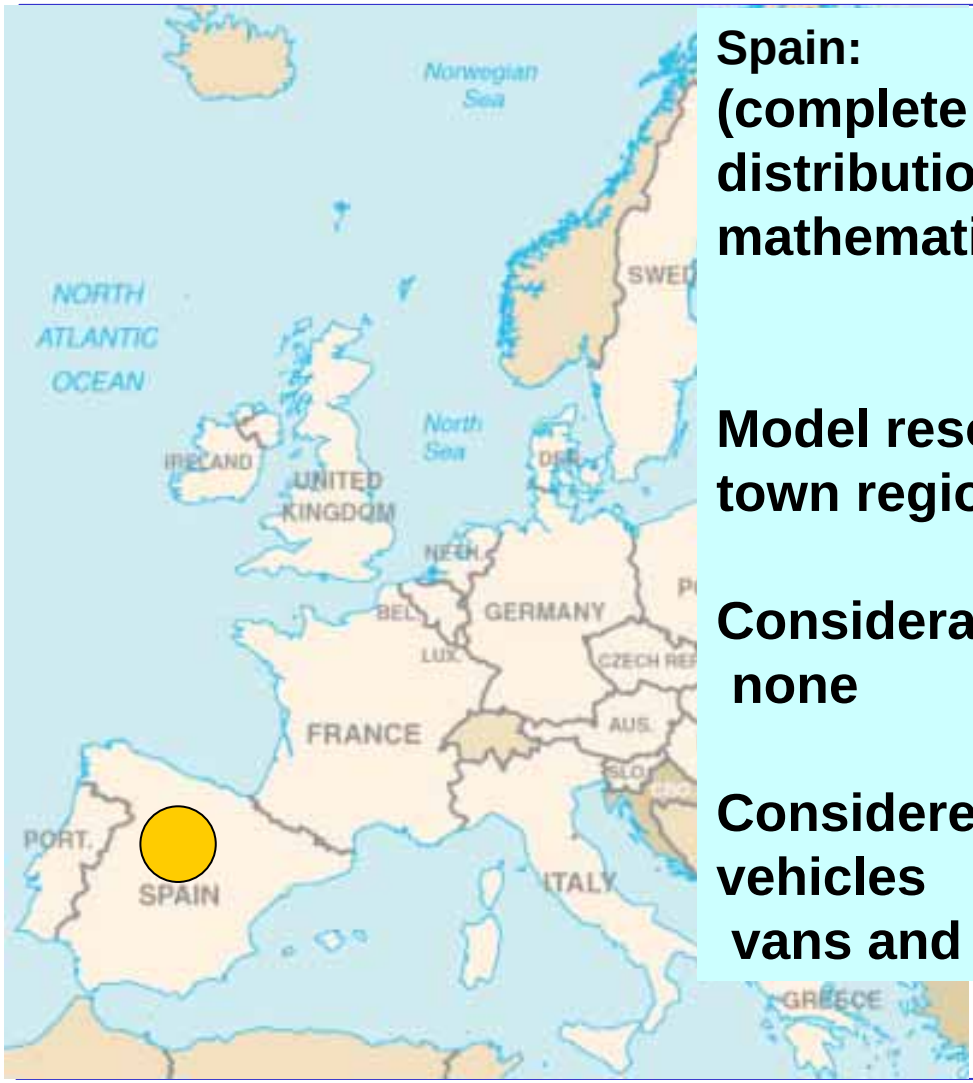
Italy:
(complete O/D matrix – distribution model,
based on large NACE classification of economic activities

Model resolution
traffic zones/blocks

Consideration of other transport modes
none

Considered types of urban/regional goods vehicles
depend on used surveys

Identified UGM Models – Seville University Model



Spain:
(complete O/D matrix – distribution model for peak hours, mathematical entropy model

Model resolution
town regions

Consideration of other transport modes
none

Considered types of urban/regional goods vehicles
vans and trucks

Organisation of work, next steps

- Systematisation of the survey
- Additional desk research (did we miss one important model?)
- Elaboration of an overview report