TUHH

Hamburg University of Technology

DAAD- East European Partnership Exchange Program

student:

Roman Shafeyev

Hamburg 2011

Department of Computer Mathematics and Mathematical Modeling

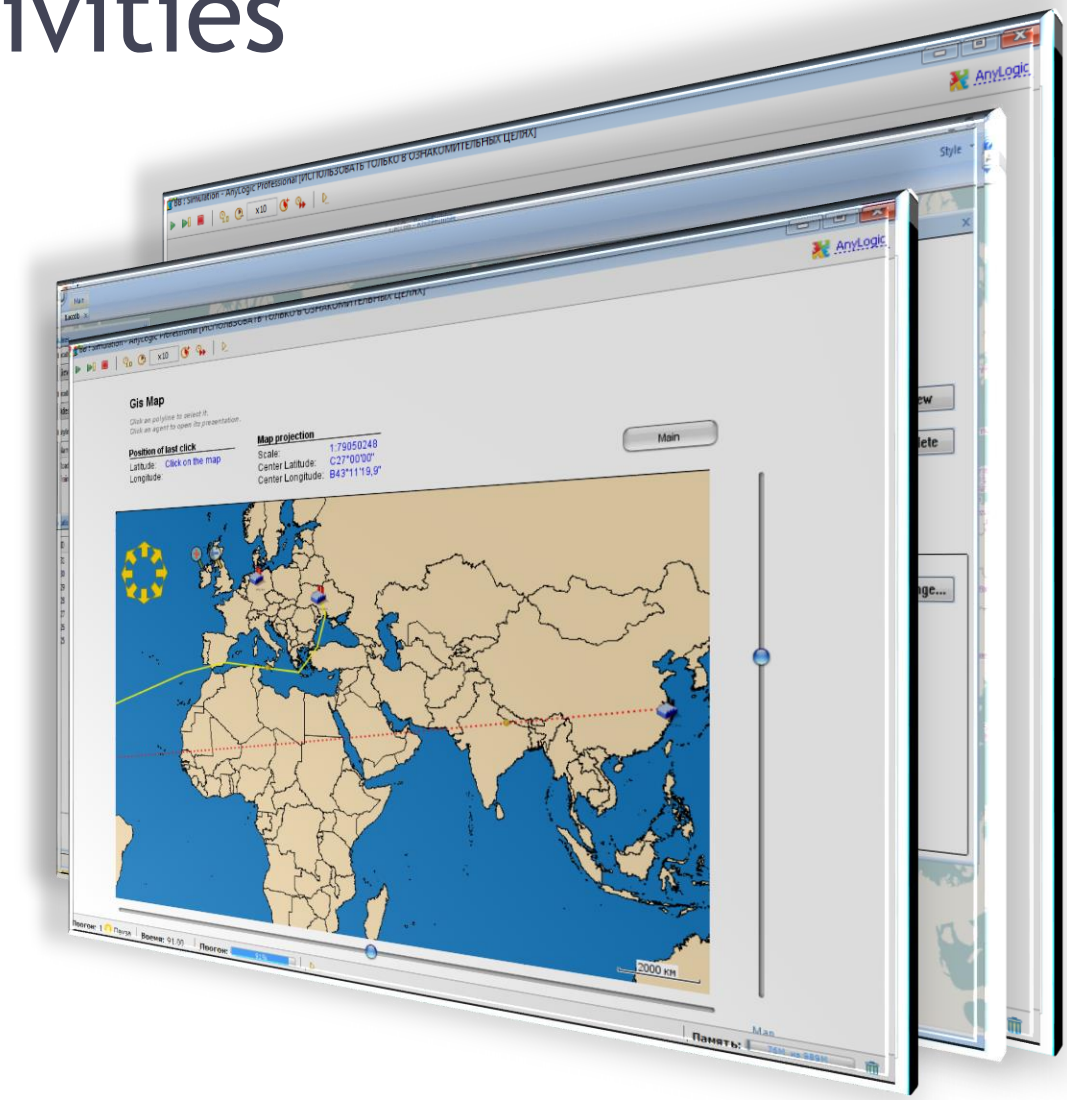
- **Prof. Leonid M. Lyubchyk is Present Head of the Department.** *Leonid M. Lyubchyk* was graduated from Kharkiv Polytechnic Institute in 1973. He earned Ph.D. degree from Institute of System Analysis, Moscow, Russia, in 1979 and Doctor Degree from the Kharkiv Polytechnic Institute in 1995**.**
- Actively developing directions**:**
  - Supply chain based on the methods of the modern theory of robust;
  - Control theory, Discrete optimization;
  - IT technologies,
- **The basic disciplines:**

Prof. Leonid M. Lyubchyk

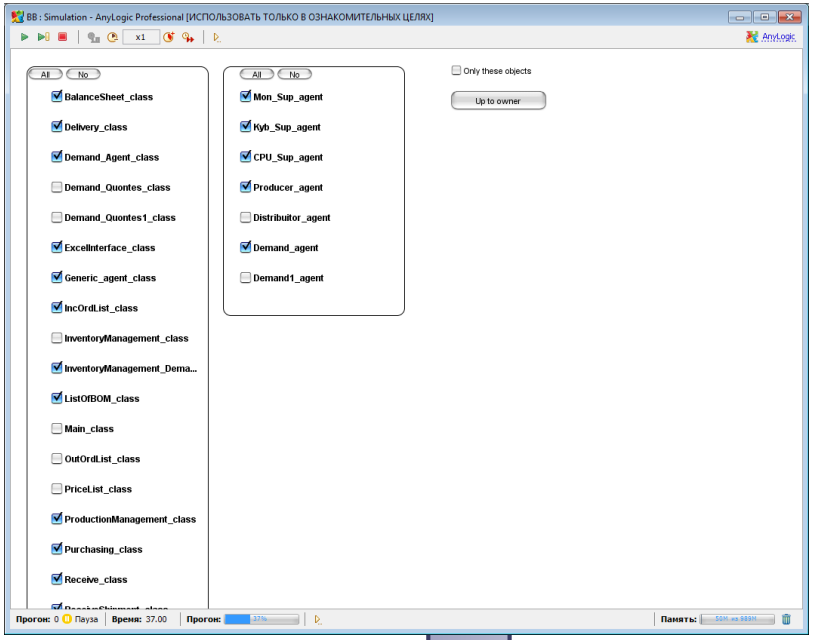
- Control theory, System and Methods of Decision-Making, Modeling of Economic and Social Processes;
- Programming, Databases, Neural Networks, Information Systems;
- Mathematical Economics, Financial Mathematics, Actuarial Mathematics.

Developed Activities

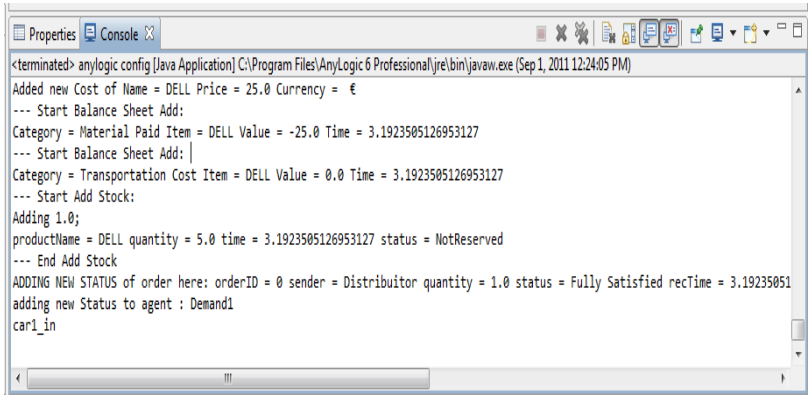
- Implement functionality to filter debug information;
- Develop a program to import and assemble open source data about real transport routes;
- Improve transport functionality using GIS data.



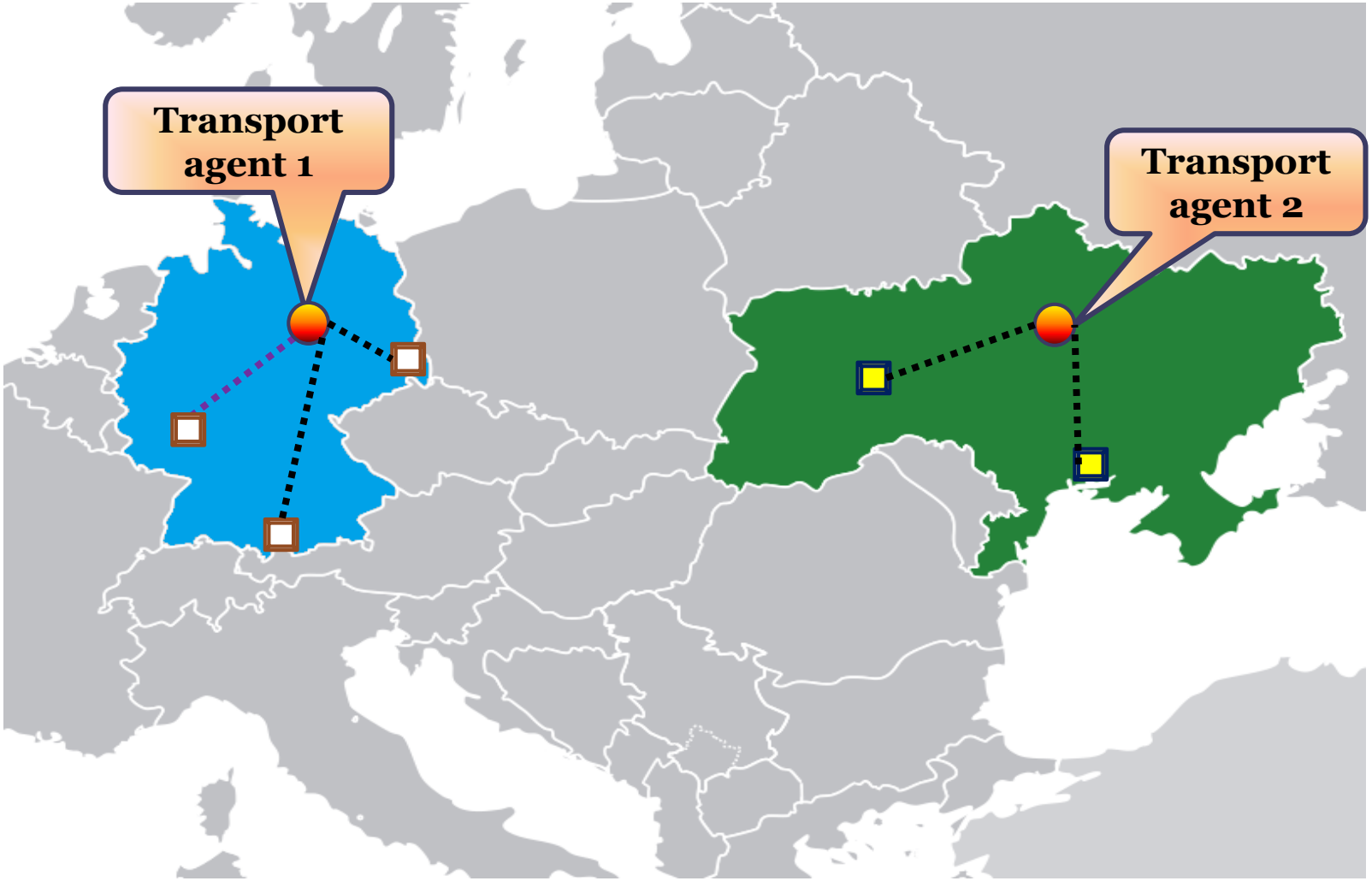
Developed Activities



- Manage output information to the console window for simulation testing;
- Filter data by objects of classes;
- Filtering data on the agents.



Transport logistics



Transport agents

Transport Agent 1

Transport Agent n

Train

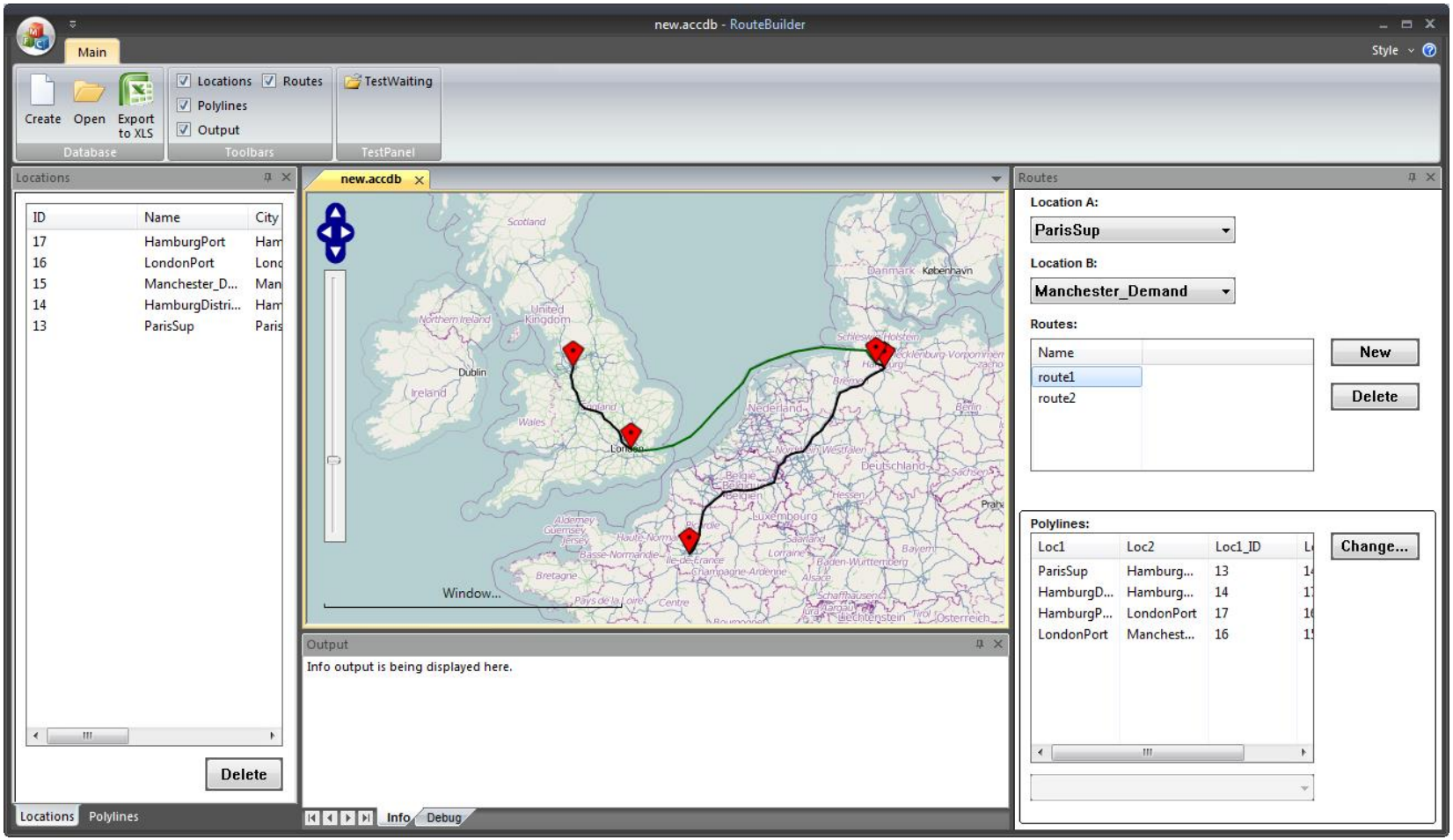
Truck

Type of the agent

Airplane

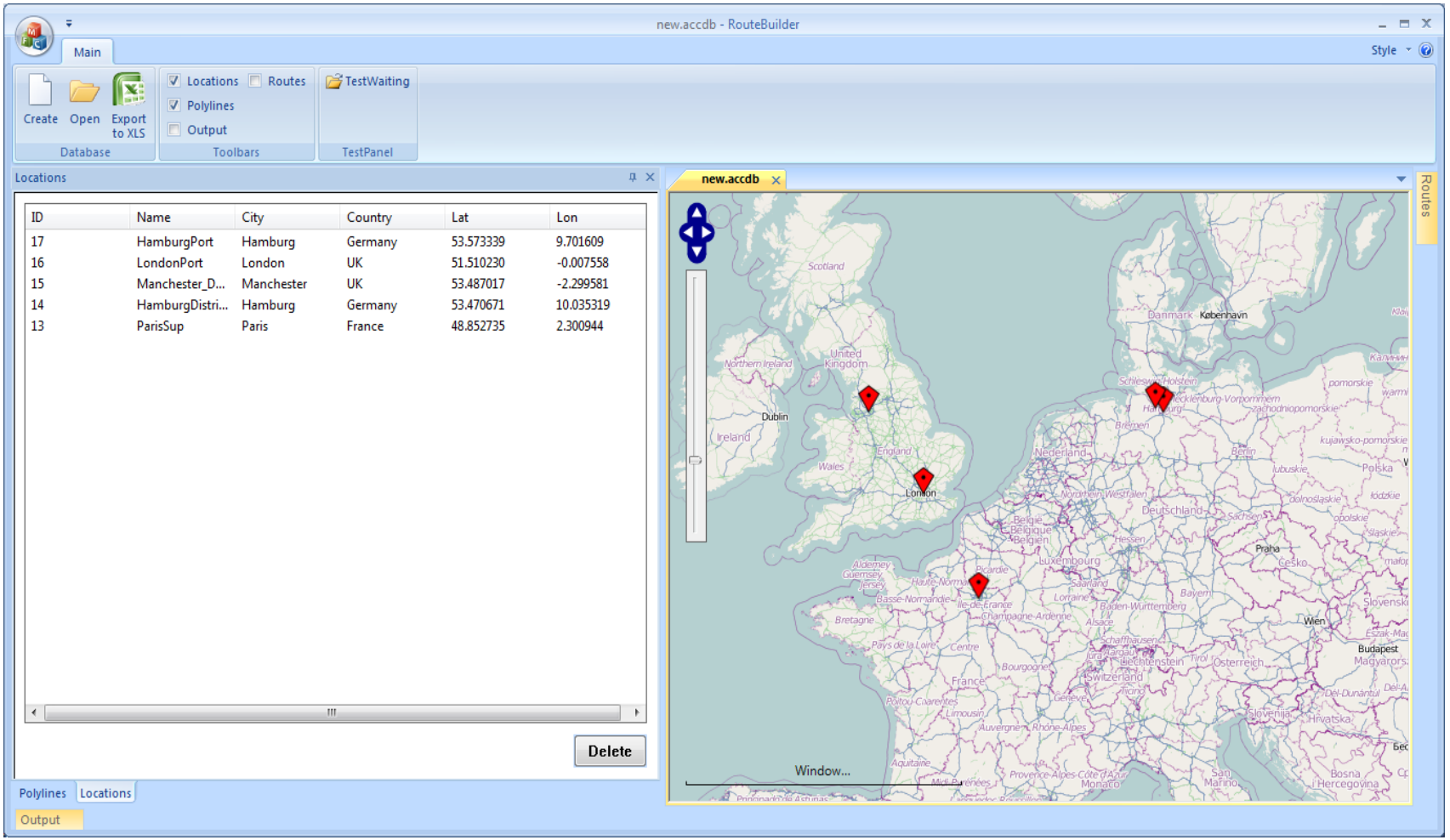
Ship

Development of the program for import open source routes and manually define polylines.

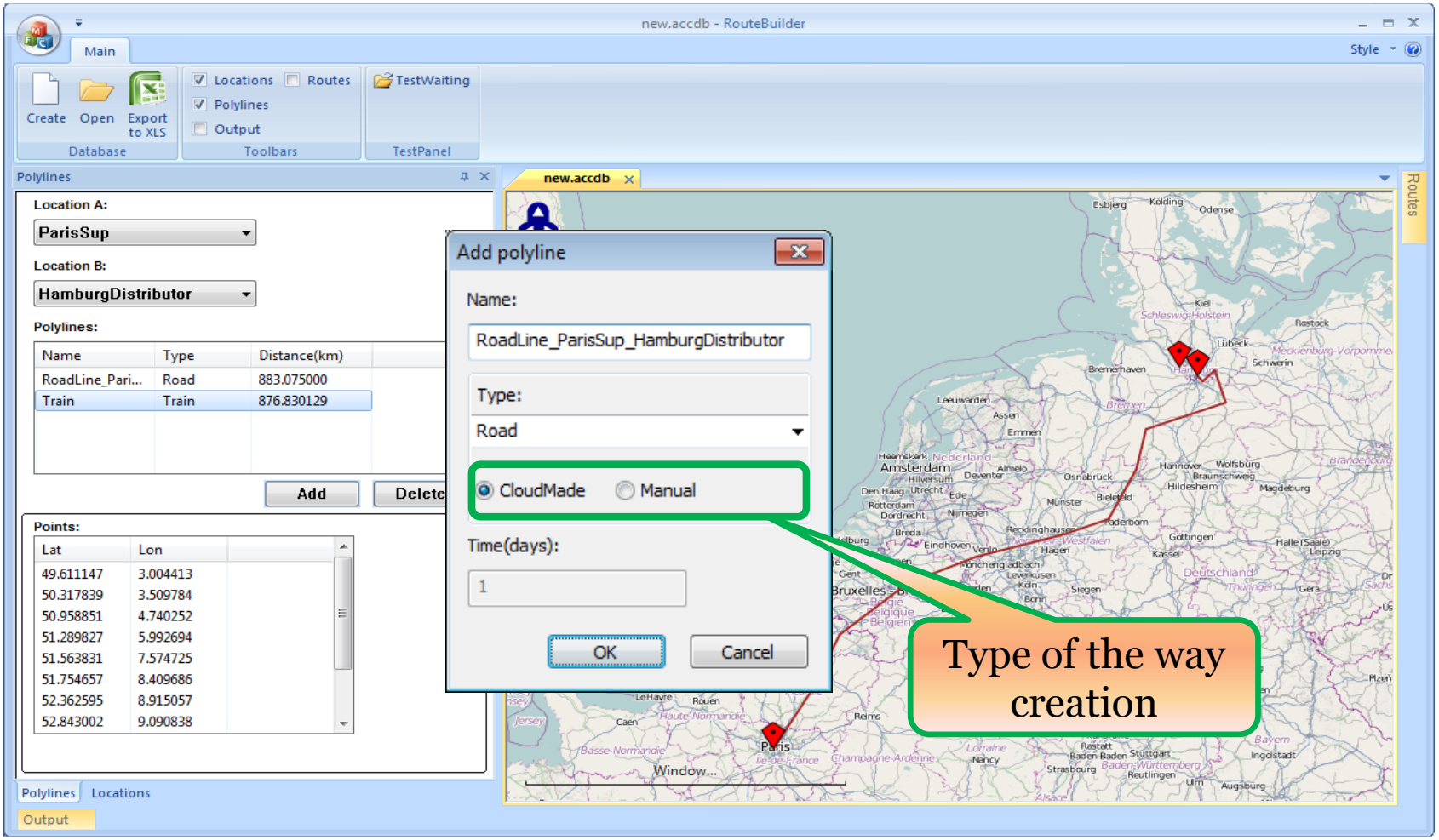


The main window of our program

RouteBuilder program. Step 1: Add locations

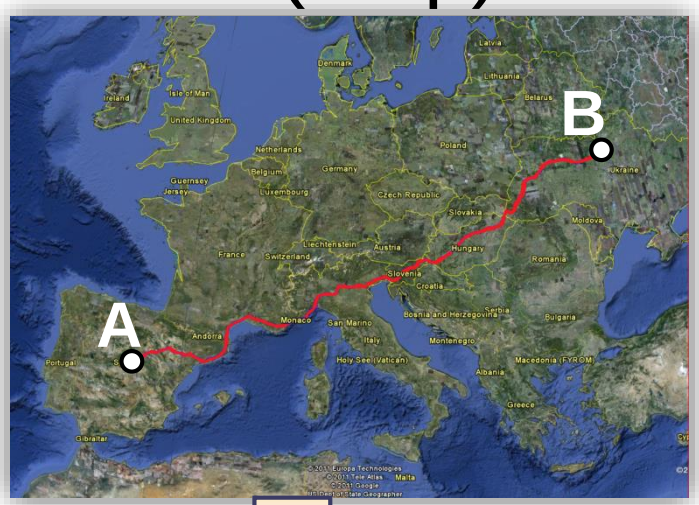


RouteBuilder program. Step 2: Add ways

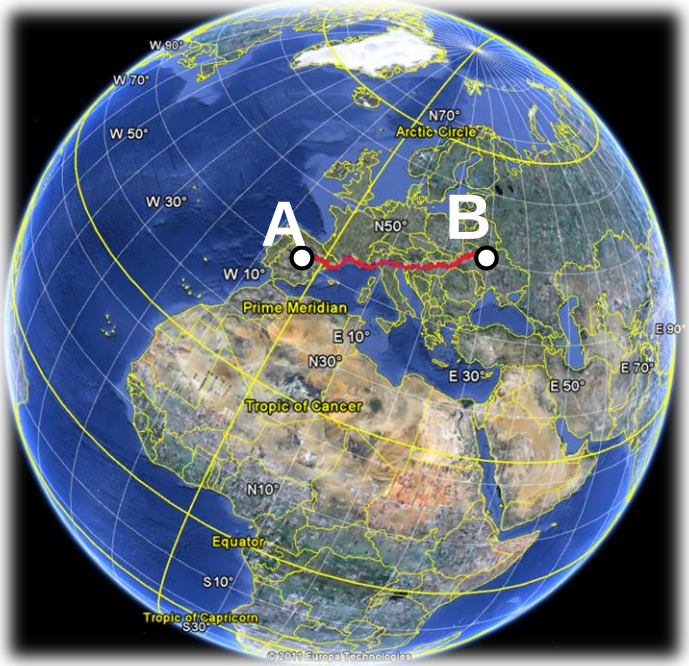


The calculating distance algorithm between two geo-locations

2D(Map)

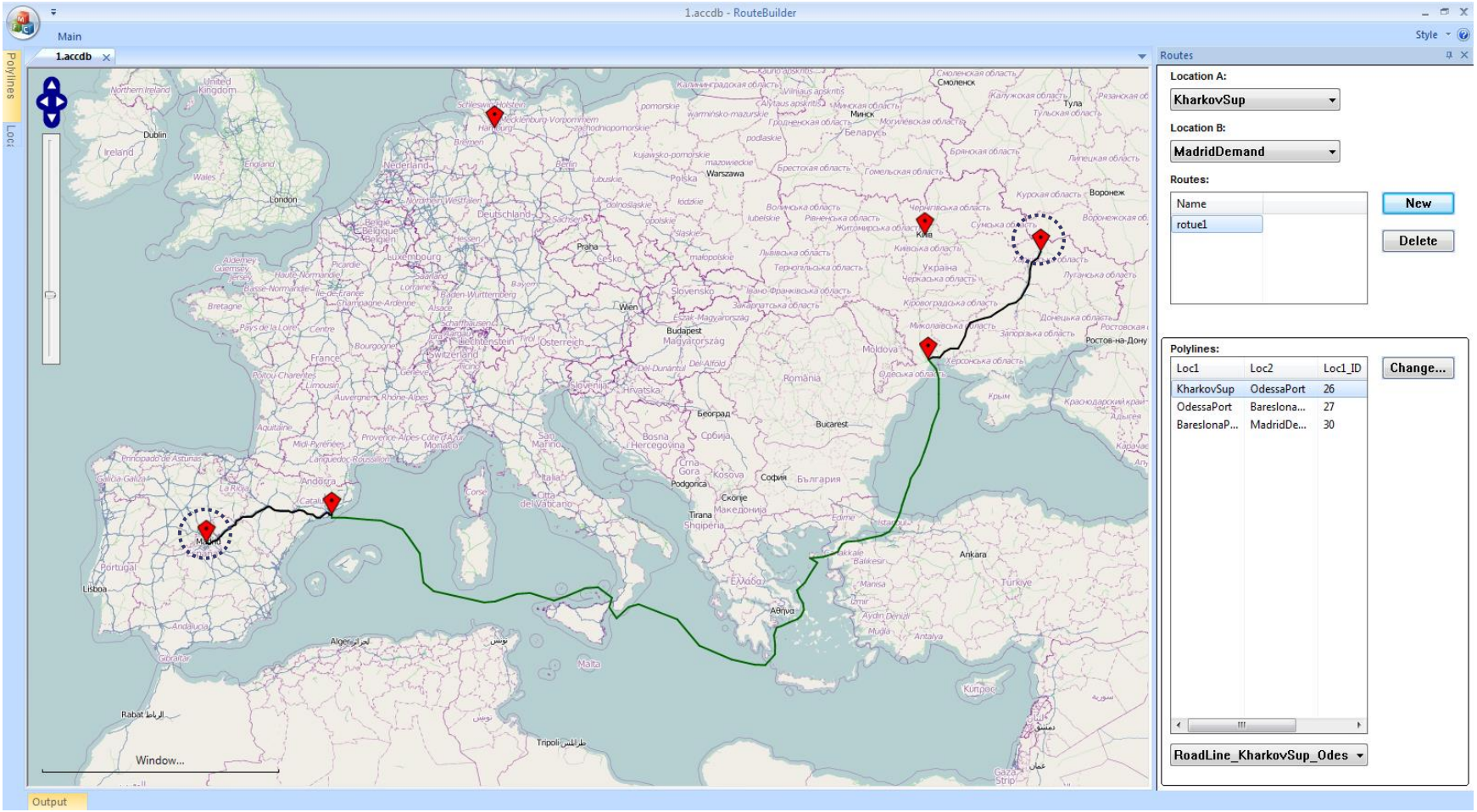


3D(Earth spheroid)

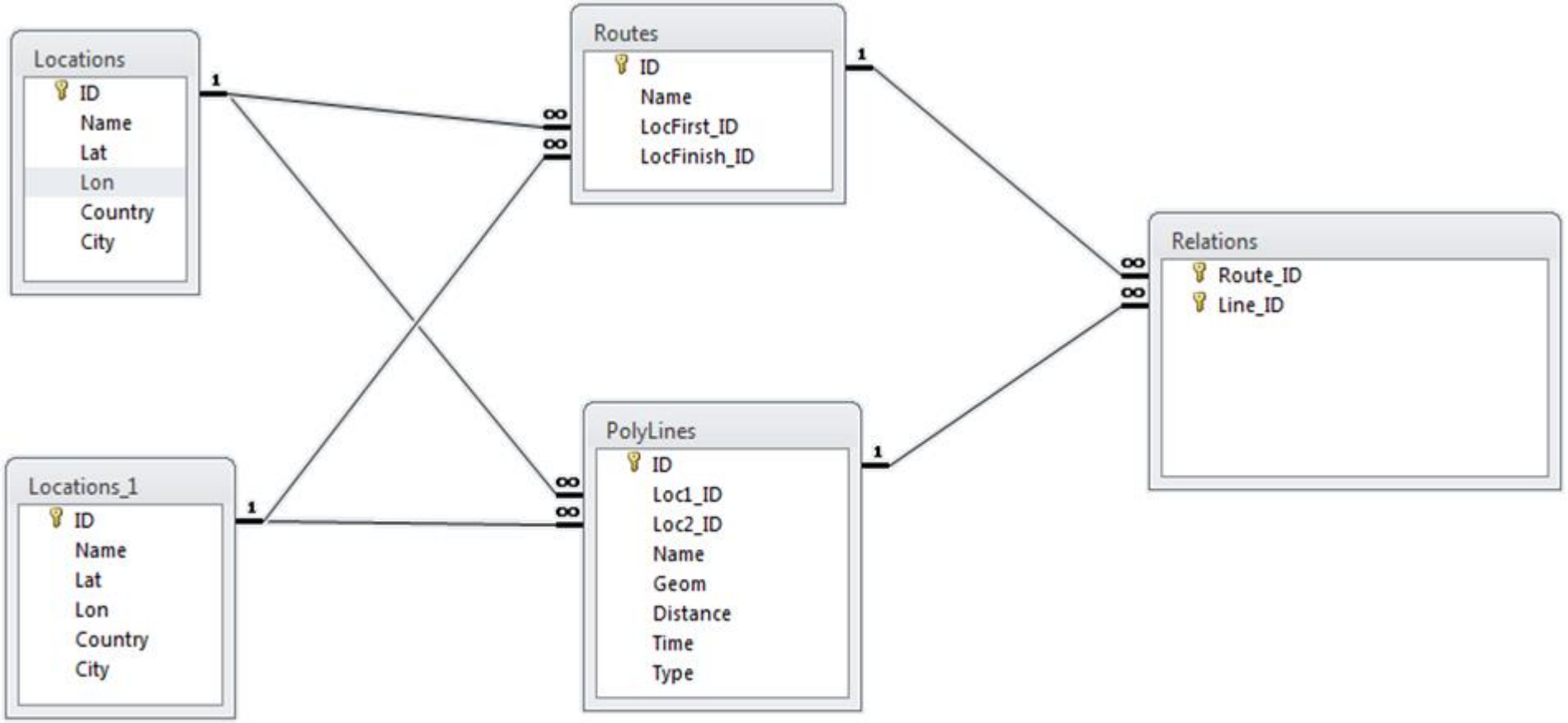


Using of Vincenty's iterative method to calculate the distance between two points on the surface of a spheroid.

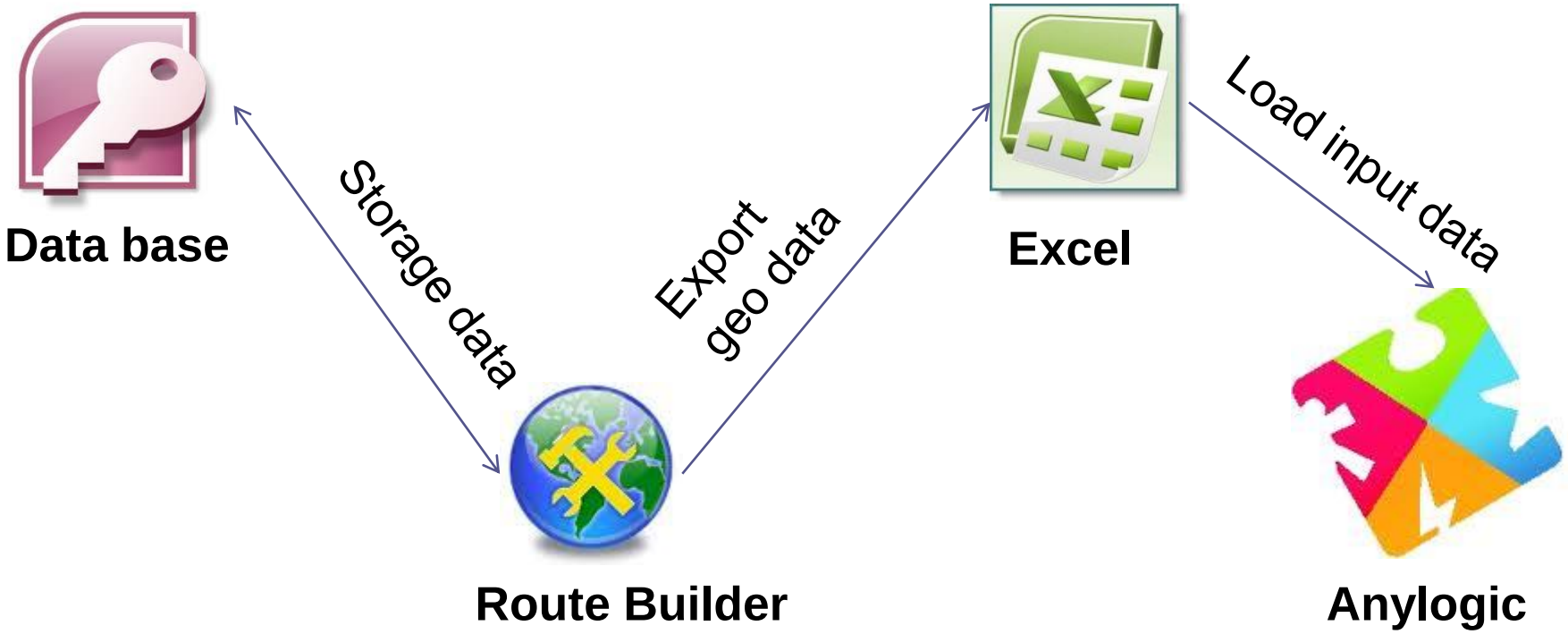
RouteBuilder program. Step 3: Assemble routes



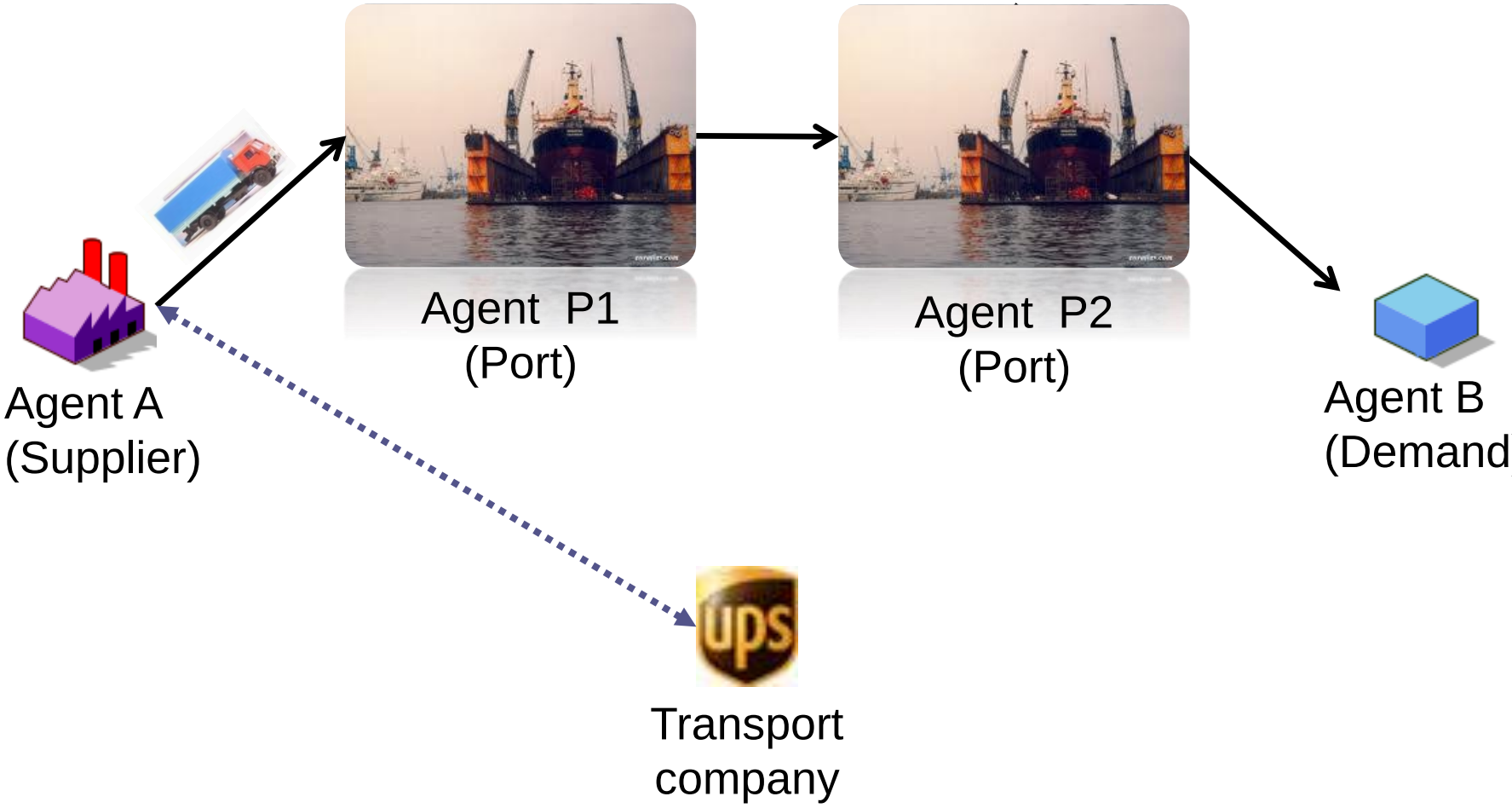
Database structure



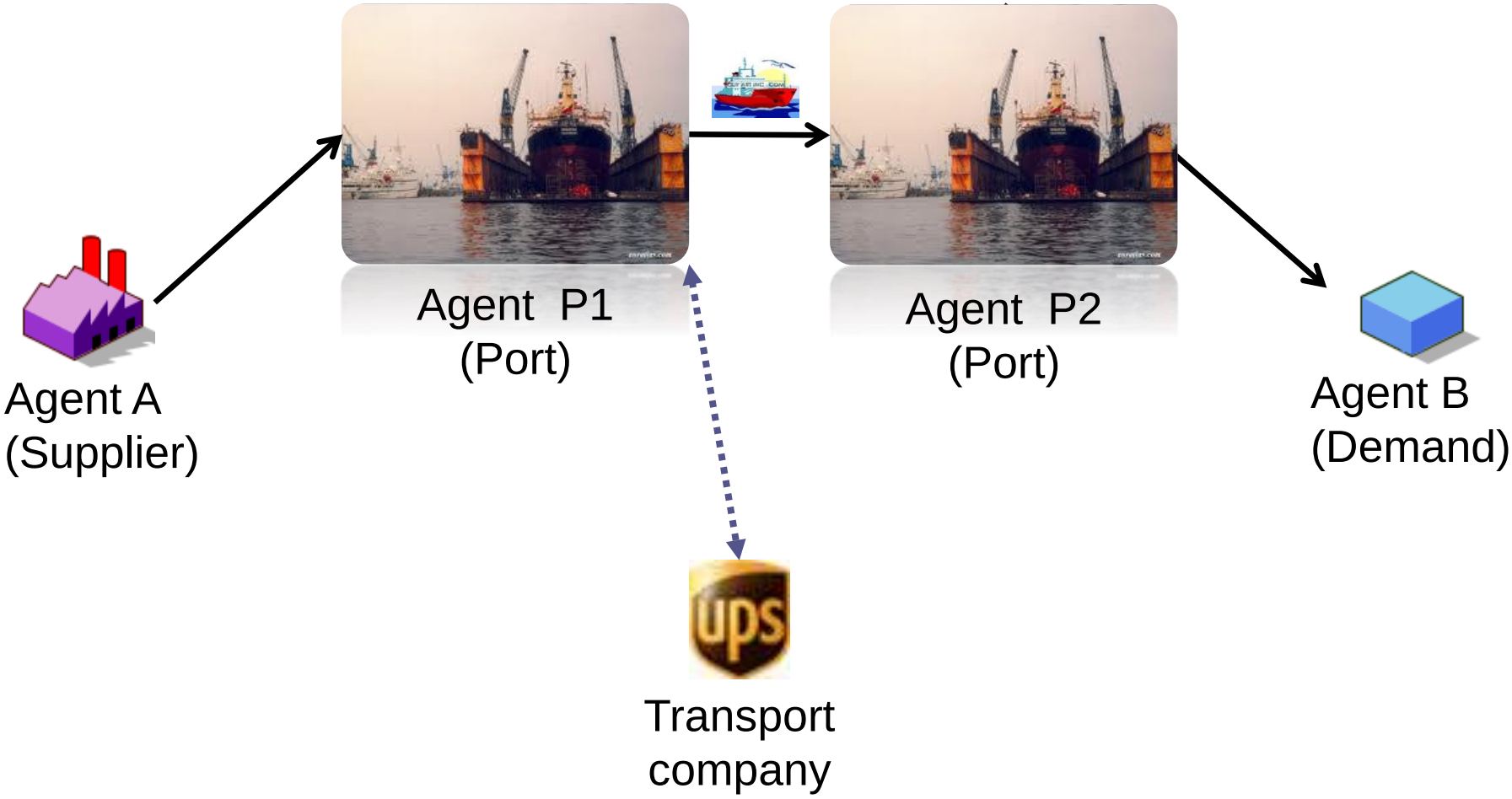
Input data for simulation



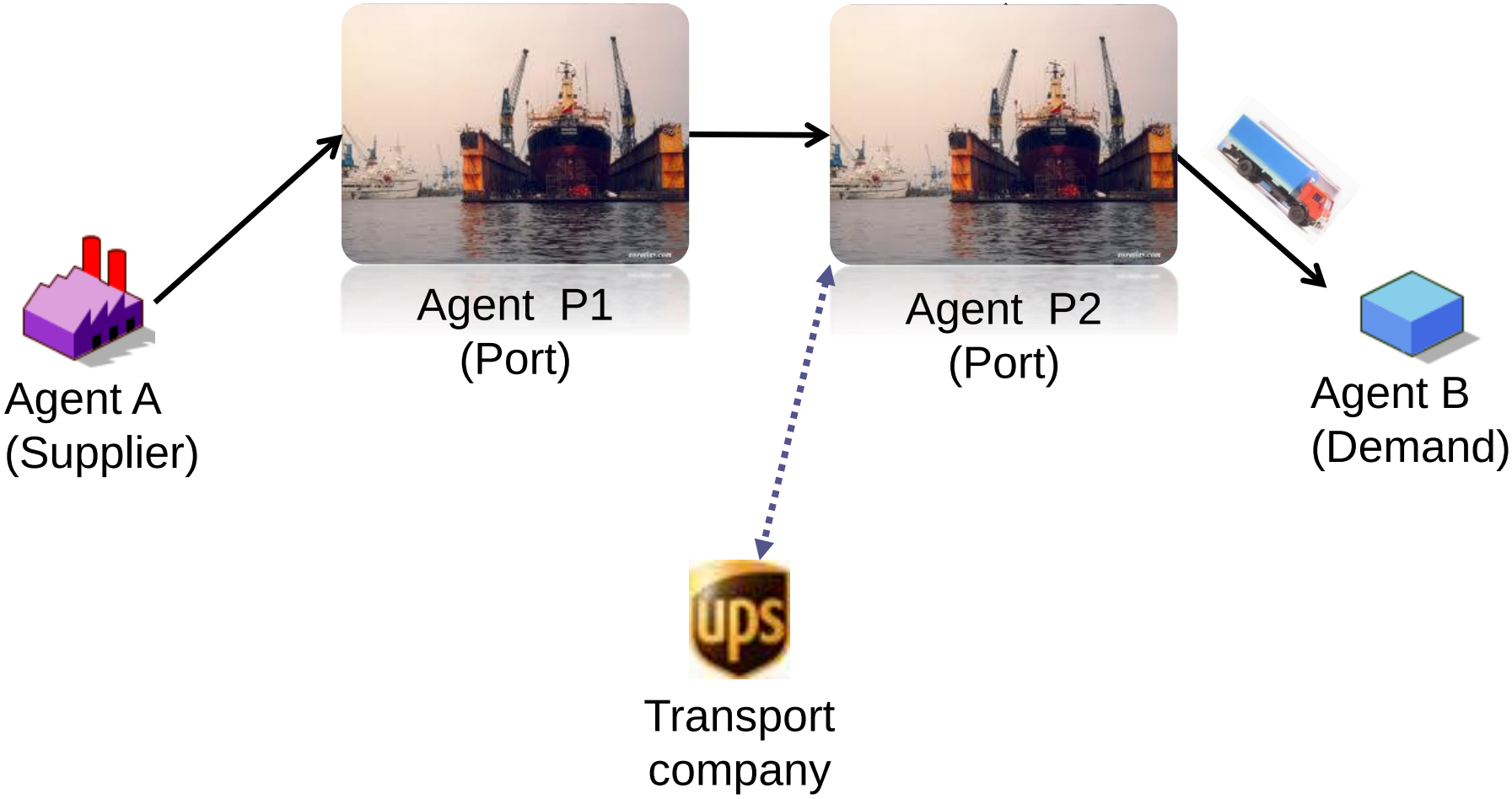
Messages between agents for transportation of products



Messages between agents for transportation of products



Messages between agents for transportation of products



GIS Map

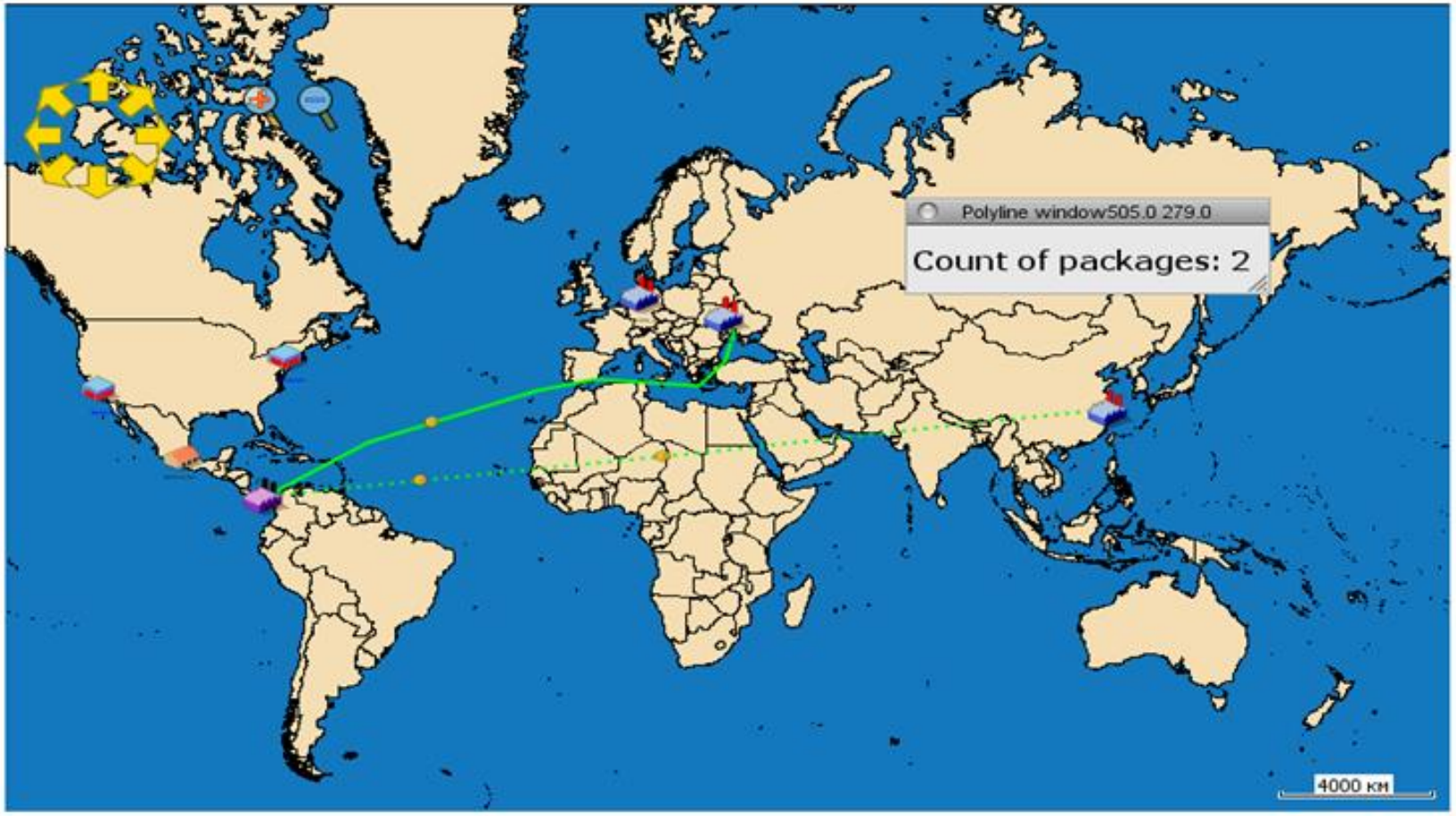
Position of last click

Latitude: Ю29°17'44,8"
Longitude: В15°05'36,7"

Map projection

Scale: 1:158100496
Center Latitude: С31°00'00"
Center Longitude: В28°00'00"

Main



Map Panning

Lessons learnt

- Attended Hamburg International Conference of Logistics;
- Development agent-based platform;
- Anylogic;
- Complexity theory.

My plans for the future

- I plan to get a master's degree and attend graduate school;
- Improve and trying to practical use developed information system for dispatching management by motor transport.
- To develop the project in the sphere of forecasting of traffic`s highways for construction shortest routes taking into account traffic jams.


Thank you
for your attention!