

DEVELOPMENT OF LIEPAJA CITY MACROSCOPIC MODEL FOR DECISION MAKING

Problem definition

The project was executed according to SIA "imink" order. The project is a part of the work on changing the transport infrastructure of Liepaja city. These changes are wide and should cause big transport flow redistribution over the transport network and involve the following ones:

- * Karosta bridge over Karosta channel reconstruction (Karostas tilts)
- * Alternate street creation for Brivibas street from Riga side
- * New bridge construction over railway between Jaunliepaja and Ziemeļu district of Liepaja city
- * Using Ganību and Zirņu streets as the streets with one way movement

The analysis of effectiveness and practicability of such changes, which demand big investments, is the main goal of the project.

Usually such tasks are being solved using modeling on macroscopic level. The main tasks of the project are:

- * Development of Liepaja city macroscopic model, which shows state of the system in 2007
- * Calibration of the developed model
- * Experiments planning and execution
- * Analysis of the results and decision making about the influence of planned changes on the transport flow redistribution over the transport network

Proceeding

As a realization instrument a specialized modeling package VISUM 9.5 family PTV Vision has been selected. Using data about the current state of the system, macroscopic model was developed and calibrated with the expert's help.

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Numerical characteristics of the realized model are as follows:

- * 8 internal zones, 3 external zones
- * 51 nodes, which represent crossroads in model
- * 142 links, which represent different types of roads in model
- * 2 OD matrices (2007, 2018)
- * 56 Connectors, which connect zones with the transport network

According to plans 4 scenarios of the city transport infrastructure changes were defined.

They are:

The first scenario: Base scenario

Contains elements which will be constructed till 2018

- Reconstruction of the bridge Karosta (Karostas tilts)
- Alternate street creation for Brivibas street from Riga side

The second scenario

Includes the elements of the base scenario plus new bridge construction over railroad

The third scenario

Includes the elements of the base scenario plus uses Ganību street and Zirņu street as the streets with the one-way movement.

The fourth scenario

Includes the base scenario and the following changes:

- * New bridge construction over railway
- * Using Ganību street and Zirņu street as the streets with the one-way movement
- * For each scenario the constructed model was updated according to the scenario description.

Results

Research results are mainly presented as the volume of the traffic flow and volume capacity ratio for each link per each scenario. Using these measurements the effectiveness and practicability of different scenarios were estimated and conclusions were drawn. Also loading of full transport network was estimated and presented in the picture. The green link capacity volume ratio is equal to or smaller than 80%, yellow - is equal to or smaller than 120% and red - greater than 120 %.

