

City TRAffic - a tool for city traffic analysis and prediction

Planning of traffic flows in a city is aimed at improving the existing traffic regime and its easier adjustment to the conditions expected in the future. The traffic planning methodology, developed by the experts of the Institute of Transportation - CIP, involves the processing of a large quantity of data collected by the field measurements (by polling, on the streets and in the public transportation) and as a result gives an objective model of the individual and public transportation. This model can then be used to predict and optimize traffic loads for a given future period.

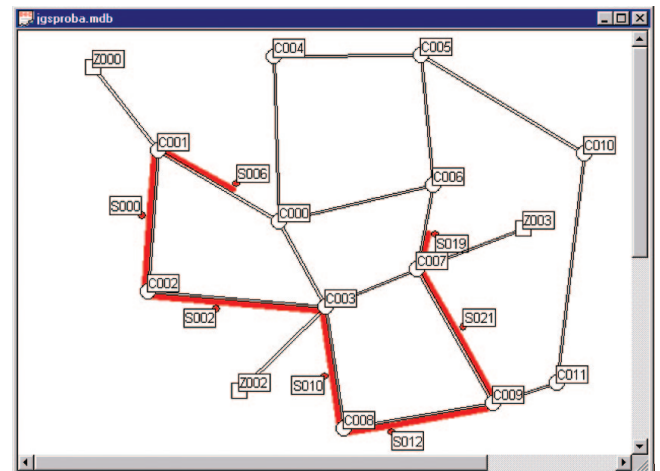
Features

Each city can be divided into zones described by the number of inhabitants, number of office premises and many other parameters. Based on polling and field measurements, it is possible to determine the number of travelings from zone to zone within a determined time period. Using the data about the street network, the optimal route between each two zones can be found. Having these data, the load of each track of the street network can be evaluated. The parameters of the model are tuned until the evaluated loads become the same as the observed ones. The tuned model can then be used to predict the track loads for the predicted number of inhabitants, working places, etc., and to change the street network to enable the normal traffic flow. The system models individual and public traffic. It includes a graphical user interface which enables a graphical definition, and representation of street network with the corresponding track loads and marked critical paths, but also a graphical user interface for the retrieval of data from the database.

CITRA consists of two independent applications:

- **CITRA Matrix** is used to collect and process the data acquired via polling. There are four types of questionnaires, for households, for passengers, for outer cordon, and for public transportation. Based on the data obtained by questionnaires, it is possible to determine the transfer matrixes for each time interval.

They contain the number of travels between each two city zones. The projected transfer matrixes can be obtained using the existing transfer matrixes and the projected number of inhabitants and working places for each city zone.



Optimal path finding for the public transportation

- **CITRA Graphix** is used to define the model parameters, i.e., the parameters of the street network, of the public transportation, of the city zones, but also to graphically represent the street loads and the load of the public transportation based on the data obtained by the **CITRA Matrix**. The model should be calibrated so that it corresponds to the observed traffic loads. When the model is calibrated, **CITRA Graphix** can be used to represent and optimize the predicted traffic loads.

Technical information

CITRA is implemented using MS Visual C++ and MS Access. It runs in the MS Windows NT, 2000 and XP environment.

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