International Journal of Education, Social Science & Humanities.
Finland Academic Research Science Publishers
ISSN: 2945-4492 (online) | (SJIF) = 7.502 Impact factor
Volume-11| Issue-6| 2023 Published: |22-06-2023|

MODELING AND EVALUATION OF INTERSECTIONS IN TERMEZ USING MODERN SOFTWARE

https://doi.org/10.5281/zenodo.8052433

t.f.f.d., dots. **Djiyanbayev Sirojiddin Valiyevich**
JizPI
sdjiyanbaev@bk.ru,
Suyunov Oltibek Do'stmurodovich
TerDU o'qituvchi
oltibekjon@gmail.com
Djalilov Bekzod Jo'raqulovich
TerDU magistrant
bekzoddjalilov5@gmail.com

Annotation

This scientific paper examined the capabilities of the PTV Vissim software package, one of the modern applications of transport flow modeling. Using the PTV Vissim micromodelling software package, stages of development of the intersection model in Termez have been seen. The relevance of the application of computer modeling methods for the analysis and assessment of the effectiveness of the organization of the road network is based. A simulation model of intersections was developed and its effectiveness assessed.

Keywords

PTV Vissim, traffic modeling, traffic, traffic flows, traffic problems.

The number of moving vehicles is also increasing significantly due to the increase in the population year after year. Naturally, an increase in the number of vehicles creates large traffic jams on roads, especially at intersections. In such cases, problems with the construction of new bridges and overpasses, the improvement of the phase of road signs and sphetophores and the movement of vehicles at the expense of other activities will find their solution. The city of Termez has a large traffic I.Due to the density of traffic at intersections on streets and intersections such as Karimov, Alisher Navoi, at-Termiziy, Ibn Sina, as well as the abundance of pedestrians, large traffic jams have formed, and problems with traffic jams do not find a solution. In this case, the correct solution to this problem should be given in a timely manner and appropriate measures should be carried out.

International Journal of Education, Social Science & Humanities.
Finland Academic Research Science Publishers
ISSN: 2945-4492 (online) | (SJIF) = 7.502 Impact factor
Volume-11| Issue-6| 2023 Published: |22-06-2023|

It is known that a sharp increase in the number of vehicles in the city leads to an increase in traffic jams and time spent on commuting. Affected by traffic congestion, it has a huge impact on the way passengers or cargo being transported spend a lot of time on their way to their destination, along with the increase in transportation costs, an increase in fuel consumption and pollution of the city's air.

In practice, when determining the transfer capacity of a street or intersection, the speed of the vehicle, not the grip, the time spent is the main measure. This determines the level of service of city streets. It is difficult to describe some measures of effectiveness when assessing the quality of a regulated intersection, i.e., it will depend on many aspects of the experience of pedestrians or drivers crossing the intersection. For this reason, the widely used average grips, the length of traffic jams and the average number of car stops. These indicators are the most commonly used key indicators at regulated intersections, as these indicators are taken directly by the driver. The level of Service (LOS) is widely used when evaluating intersections.

To meet demand, the adequacy of cross-conductor capacitance depends on the degree of transport flow saturation (V/C ratio), i.e. the ratio of the current transport transfer capacitance to the calculated capacitance. This is due to the fact that if the V/C ratio is usually below 0.85, there is sufficient capacity, i.e. no catch and delays are expected in vehicles, when the V/c ratio approaches 1.0, the traffic flow can become unstable, delay and traffic situations are observed, when the V/C ratio is above 1.0, the demand exceeds the capacity.

There are many software tools available to troubleshoot and solve problems like this. Popular computer programs include PTV VISSIM, PARAMICS, and AIMSUN, which are used to generate traffic State models at the micro level.

The PTV Vissim program is part of the PTV Vision ® software package, and this program was developed in Germany. This software package is used in most countries in the US and Europe and has thousands of users worldwide [1]

According to [2], [3] PTV Vissim has shown high efficiency in solving the problems of simulation modeling of street and road networks, as well as evaluating complex projects in the field of road management.

The capabilities of the PTV Vissim program allow you to do the following::

- ✓ Analysis of the carrying capacity of the road depending on the type of intersection;
- ✓ Analysis of the bandwidth of circular intersections, taking into account the nearest transport nodes of the moment;

International Journal of Education, Social Science & Humanities.
Finland Academic Research Science Publishers
ISSN: 2945-4492 (online) | (SJIF) = 7.502 Impact factor
Volume-11| Issue-6| 2023 Published: |22-06-2023|

- ✓ Rating the "Green Wave" for traffic lights installed on the streets of the city.
- ✓ Analysis of the bandwidth and flow regulation of complex stops, taking into account the movement of trams and buses;
- ✓ Modeling the flow of traffic flow at different levels.
- ✓ Modeling pedestrian traffic on city streets and highways;
- ✓ Studying the interaction of Transport and pedestrian flow and modeling together.

In addition, the program allows you to determine the time of movement of the route, the length of the queue, the noise level and the emission of harmful substances, as well as determine the states of stopping.

Sequential solved tasks using the PTV Vissim program in the development of the model of the main variant of the intersection:

1. Road modeling taking into account the geometric parameters of the intersection.

2. Determination of the intensity and composition of traffic flows on incoming plots, distribution of traffic flow by roads and transport routes, as well as determination of the speed of movement of each type of vehicle.

3. To establish pedestrian crossings, to determine the intensity and directions of pedestrian traffic.

4. Entering the parameters of traffic light control in accordance with the schedule of activating traffic lights and the phase transition scheme.

5. Consideration of conflict zones with the determination of traffic priorities in accordance with traffic rules.

6. Testing a model to test its adequacy.

7. Troubleshooting errors caused by improving the model.

8. Formation of a list of results from the parameters necessary for analysis.

We will create a model of the intersection of Alisher Navoi and Uzbekistan streets in Termez using the PTV Vissim program. Since this intersection is regulated, we must study the following preliminary data of the intersection before modeling it.

- ➢ technical characteristics and schemes of the intersection of the clock;
- ➢ features of the types of vehicles moving from the intersection of the clock;
- ➢ the composition of the traffic flow in a row;
- ➢ hour motion intensity;
- ➢ distribution of vehicles in knots;

International Journal of Education, Social Science & Humanities.
Finland Academic Research Science Publishers
ISSN: 2945-4492 (online) | (SJIF) = 7.502 Impact factor
Volume-11| Issue-6| 2023 Published: |22-06-2023|

- correct placement of traffic lights at intersections, their parameters and mode of operation;
- information about general use and traffic traffic of the commuter rail;

The studies were carried out by the method of monitoring the traffic flow at the intersection. The results obtained were analyzed. At the initial stage of the study, the condition of the traffic flow on both sides of the street was studied during the Monday of the week, when the traffic flow is high. The study and observations were carried out mainly for times when the peak and traffic flow of the day were considered to be abundant. In this case, the opposite sides of the road are observed and taken into account separately.

To determine the traffic flow at the intersection, the number of cars passed through the cross-section of the road for 1 hour was determined. To do this, we determine by observing the traffic flow at different times of the day.

Entering the collected data into this program and creating a cross-sectional model involves several stages:

1. It consists of loading a high-quality image of the simulated plot of the road network, modeling the road network, entering the parameters of the road (number of floors width, etc.) and connecting them with each other (Figure 1 a).

2. Entering quantitative data (traffic flow) on traffic through the intersection, dividing the traffic flow by roads and traffic directions (Figure 1 B).

3. Regulation of priority transition rules using the" Conflict Areas " functional module of the PTV Vissim program, (Figure 1 C).

4. Entering the operating modes of the traffic light through the "Signal Control" menu and attaching to the modeled intersection (Figure 1 D).

International Journal of Education, Social Science & Humanities.
Finland Academic Research Science Publishers
ISSN: 2945-4492 (online) | (SJIF) = 7.502 Impact factor
Volume-11| Issue-6| 2023 Published: |22-06-2023|

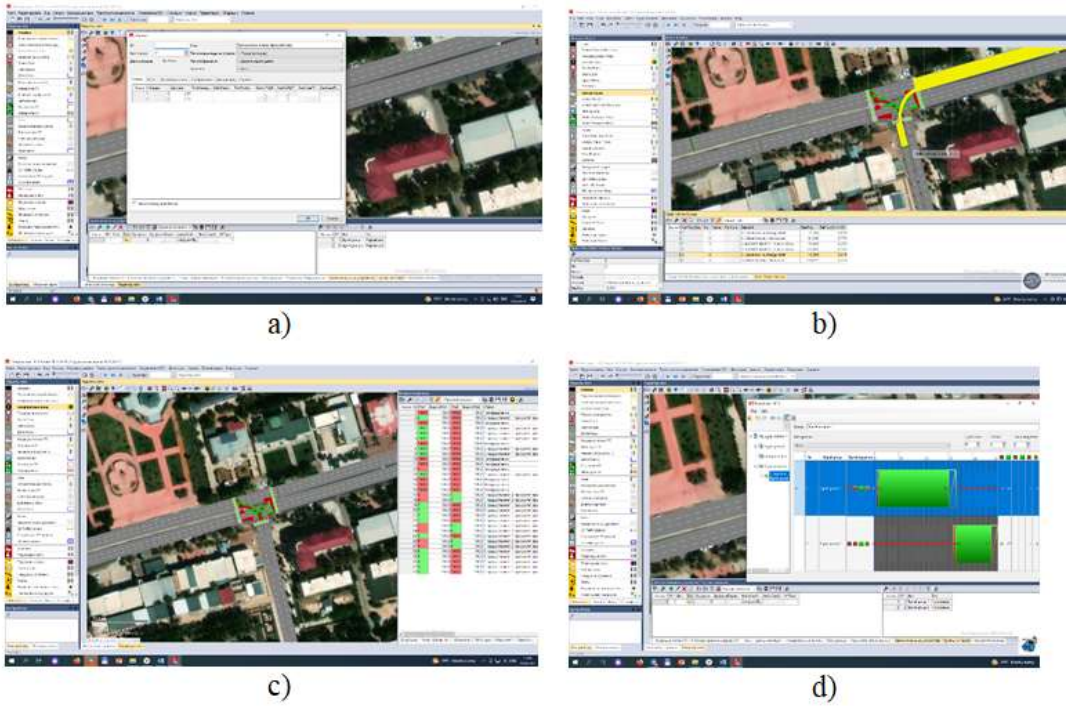

Figure 1. Creating a model of the intersection and introducing traffic flow into the program

As a result, a microscopic simulation model of the intersection was created, reflecting the current state of motion. After modeling through the general parameters of the intersection, we can determine the current state indicators of the charraha through the "Evaluation" menu of the program. The results obtained through the cross-sectional computer model are shown in Table 1.

Table 1.

The results of the current computer model of the intersection of the streets of Termez city Alisher Navoi and Uzbekistan

№	Pointers	Current status
1	Intersection service level (LOS)	C
2	Fuel consumption was (l)	12,559
3	CO exhaust gases (gramm)	933,079
4	Azot (Nitrogen) oksidi NOx (gramm)	252,087
5	Organic compounds VOC (gramm)	323,074

As can be seen from the table, the service level of the intersection is currently Class C. Emissions from the atmosphere through vehicles, carbon monoxide (CO) is 933,079 garams, nitrous oxide (NOx) is 252,087 grams, volatile organic components (VOC) is 323,074 grams and fuel consumption is 12,559 L. The results were

obtained thanks to the computer model of the intersection, developed using the simulation program PTV Vissim.

Improving the reliability and efficiency of the urban commuter transport service is carried out in the assessment of the cost of the basis, reducing the amount of time spent on road traffic. The calculation is carried out at the place of implementation of measures at the expense of reducing the time spent on vehicles, road users and pedestrians in many places.

Road traffic spending on the route is seen as the time (retention) spent by pedestrians, passengers and motor vehicles at the intersection during the day, month or year, achieved at the expense of reducing costs associated with the time spent on waiting. Intersections are carried out with the correct and effective organization of traffic and pedestrian traffic if unregulated or regulated.

Losses from atmospheric air pollution are due to reduction and improvement of psychophysiological working conditions of drivers.

REFERENCES:

1. Швецов В.Л. Андреева Е. А. Управление транспортной модели на основе компьютерной модели PTV Vision // - 2016 - Санкт-Петербург.

2. Спирин И.В. Перевозки пассажиров городским транспортом: Справочное пособие. // — М.: ИКЦ «Академкнига», 2014. — 413 с.

3. Suyunov, O., & Sherboyev, A. (2022). Ptv vissim dasturi yordamida avtomobil yo ‘llari va shahar ko ‘chalarining harakat oqimini modellashtirish. *Eurasian Journal of Academic Research*, *2*(13), 261-266.

3. Kuziev, A. U., & Suyunov, O. D. (2023). THE PROBLEM OF DELIVERY OF COTTON RAW FLOWS THROUGH MINIMUM COST TRANSPORTATION. *International Bulletin of Applied Science and Technology*, *3*(4), 328-332.

4. Urokovich, K. A., & Dostmurodovich, S. O. (2022). Issuing the Plan for the Development of the Automobile Road Network. *International Journal of Inclusive and Sustainable Education*, *1*(5), 195-201.

5. Djiyanbaev, S. V., & Suyunov, O. D. S. (2022, September). SHAHAR JAMOAT TRANSPORTINING YO ‘LOVCHILAR OQIMINI TALON USULI VA GEO TRACKER DASTURI ORQALI O ‘RGANISH. In *INTERNATIONAL CONFERENCE DEDICATED TO THE ROLE AND IMPORTANCE OF INNOVATIVE EDUCATION IN THE 21ST CENTURY* (Vol. 1, No. 1, pp. 51-56).

6. Samatov, R., & Abdurazakova, D. (2023). KO 'P QAVATLI AVTOTURARGOHLARDA INTELLEKTUAL TIZIMLARNI QO 'LLASH ORQALI SAMARADORLIGINI OSHIRISH. *Евразийский журнал академических исследований*, *3*(4 Part 3), 118-121.

7. Suyunov, O., & Oqnazarov, J. (2023). AVTOMOBIL TRANSPORTIDA TASHISH JARAYONINI MONITORING QILISH UCHUN SUN'IY YO 'LDOSH TIZIMLARI. *Академические исследования в современной науке*, *2*(6), 45-49.

8. Suyunov, O., & Oqnazarov, J. (2023). YUK TASHISHDA GLONASS/GPS TIZIMLARINI JORIY ETISH SAMARADORLIGINI BAHOLASH. *Евразийский журнал академических исследований*, *3*(2 Part 3), 120-124.