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“"INTELLIGENT INTERSECTION" PROJECT FOR SAFE TRAVEL OF VEHICLES ON CITY STREETS (On the example of the city of Djizakh)

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Annotation
The article discusses innovative projects such as “smart intersection”, “smart pedestrian”, “smart traffic light”, “safe city”, implemented to ensure the safety of road users in developed countries. Also, the reasons for the rapid development of communication systems based on information technology in developed countries, their safe lifestyle and the many opportunities for ensuring road safety were evaluated and compared.

Keywords: innovation, information technology, intelligent transport system, smart intersection, smart pedestrian, smart traffic light, safe city.

The sharp increase in the number of cars around the world creates many conveniences for humanity, but also creates dangerous situations. According to the World Health Organization, about 1.35 million people die and 20-50 million are injured every year as a result of traffic accidents on highways and city streets. people are injured, about 2 thousand of them are killed on the highways of Uzbekistan, and about 8 thousand are injured [6].

Today, the number of cars in our country is more than 3.5 million, and exhaust gases from cars pollute the environment, have a very negative effect on people's health, and cause various diseases.

The vehicle, one of the most advanced inventions of the 20th century, the internal combustion engine, is the dream of many millions of people, the source of man's pleasure and, finally, the object of his power. Vehicles are a device that meets the socio-economic needs of a person. Businesses of developed countries cannot imagine their activities without vehicles. Today, more than 88% of all goods and more than 98% of passengers are transported by road in Uzbekistan. The operational condition of highways and city streets is important for the transportation of vehicles from one

destination to another.

It is impossible to imagine the sustainable development of cities without a well-equipped road and street network. However, the street network of many of the world's major cities does not match the level of automobileization. The economic meaning of the activity of transport flows is determined by the implementation of passenger and cargo transportation with minimal costs to meet the needs of industrial structures and city residents. Therefore, cities have solved and continue to solve economic traffic flow problems. The increasing automobileization of cities and the lack of road networks also create other problems, such as the need to ensure environmental safety from traffic flows.

Fundamental changes are taking place in the socio-economic and political life of New Uzbekistan. As a result of the huge reforms being carried out, positive actions in the transport sector, like in all sectors, are bearing fruit. The field is constantly moving towards innovative changes and scientific updates [1,2].

Today we live in the age of modern information and information technologies. It should be emphasized that there is no field left where information technology has not penetrated. There are only a handful of countries that have not caused change in even a small area.

Figure 1. Overpasses and modern intersections to be implemented in the near future. "Safe city" project.

The countries of the whole world have gone through technological periods of development, and by now, the world does not want to lag behind the development stage of the century. Because technical and technological progress does not stop at one place. For this reason, developed countries are making full use of their capabilities and scientific ingenuity, and are trying to carry out scientific and innovative innovations in every field to the extent of surpassing human ingenuity. In fact, the demand of the time also demands this.

We must admit that there is no country where innovative technologies have not penetrated or covered all spheres of the national economy, starting from the socio-economic sphere. In solving the global problem of the peoples of the world, digital technologies and intelligent transport systems, the construction of highways in accordance with the needs of the times, and the construction of innovative smart intersections, which are increasingly appearing in large cities, contribute to the development of countries and human development.

In order to widely implement modern techniques and technologies, such as the model view of Figure 1, in our republic in accordance with the needs of the times, the "smart intersection", "smart pedestrian", "smart traffic light" introduced in this research work to ensure the safety of road users in developed countries , innovative projects such as "safe city" were studied. Also, the rate of development of the information technology communication system in developed countries, their safe ways to the life of the population, and their many opportunities to ensure traffic safety were evaluated and compared. Below, we will learn about the installation of "smart traffic lights" and its effective impact on society using the example of world countries.

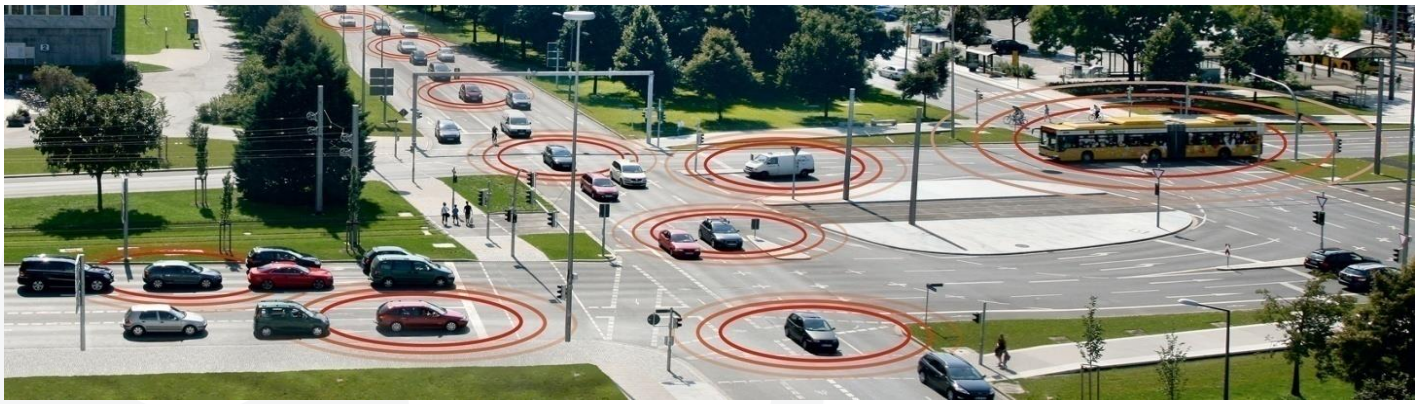

Figure 2. Lane introduced to public transport in developed countries (green wave).

In the German state, when special cars approach an intersection, the device automatically signals to turn green. Public transport software works during rush hours. According to a representative of the Hamburg Transport Authority, these smart traffic lights are programmed to optimize the movement of traffic flows [11].

A solution for increasing the safety of automated traffic control system functions at complex intersections by equipping vehicles with information technologies is proposed. The so-called Smart Intersection captures complex traffic situations within a local dynamic object map, unlocking the potential of stationary environment perception. It overcomes the visual shadows and limited sensory horizons of the vehicle's own sensors by sharing information between the infrastructure and the vehicle.

These advantages are used to record and transmit the current status of non-networked road users, e.g. It will be implemented as part of the cooperative plans to transition from traditional traffic to networked automated traffic. In addition, the detection and positioning of vulnerable road users such as cyclists or pedestrians is of great benefit in terms of traffic safety.

Due to the shared responsibility between car manufacturers, infrastructure operators, communication service controllers and other actors, there is a need for data traffic records that can be used in court. The risk of manipulation is covered by the integrity of data transmission and security mechanisms of collaborative systems.

Smart intersection project together with the institutes. The Fraunhofer Cluster of Cognitive Internet Technologies (CCIT) requires core technologies developed jointly with the Institute (AISEC, HHI, IIS and IVI). As a leading institute for transport and infrastructure systems, Fraunhofer IVI introduced various technologies to the demonstrators on their site. These demonstrators have developed innovative solutions for automated control of complex intersections.

In Moscow, the number of "smart intersections" increased from 100 to 500 by June 2020. Such examples are reflected in many developed countries.

Figure 3. A modern intersection introduced on the streets of the capital. (Independence - the crossroads of the Great Silk Road).

At this point, on the initiative of the first President of the Republic of Uzbekistan, decisions and instructions were developed on the transformation, organization and effective use of 120 intersections with different strategies and locations into new modern intersections with high technical capabilities in the city of Tashkent. As a result of these works, on March 15, 2017, 120 modern intersections with a central control panel installed throughout the city of Tashkent began operating (Fig. 3). The intersections introduced in the capital have become in line with the requirements of the times and have the capabilities to compete with the developed countries listed above.

The advantages of the introduced modern intersections are monitoring public order safety at intersections through a central control panel, remote control of traffic lights, and 15 types of traffic light modes (phases) installed in the software, continuously changing automatically, as well as violations (i.e. A clear example of this is the fact that pedestrians have convenient and effective opportunities to cross the road.

Figure 4. Central control panel in the city of Jizzakh (U. Torakulov street 24, Jizzakh city).

At this point, it should be said that today in the city of Jizzakh, apart from the opportunities listed above, we are witnessing that no other important changes and updates have been observed in this field for two years. That is, no modern additional intersections have been built on a city scale.

According to the statistics of 2021, there are more than 200 intersections in the city of Jizzakh, where SIEMENS traffic lights imported from Serbia have been installed. They were established in cooperation with AGT and Vlatacom, and now the intersections continue to operate. Picture 4 shows the state of the central control panel, which was re-equipped in 2020 and equipped with the latest modern devices.

But the introduced modern intersections still have a heavy traffic load, and there are enough deficiencies in the regulation of traffic. Traffic congestion is increasing from year to year. Speaking of the remaining 480 intersections under the control of the Tashkent city government, more than 280 of them have very low traffic speed.

We can observe that in the last 10 years, the number of cars in the city has increased from 150,000 to 216,325, that is, more than twice, and the population and vehicles have increased. Currently, 1 mln. in Jizzakh. More than 100,000 people live there. Traffic of more than 600,000 motor vehicles in the capital area during one day causes enough traffic.

Traffic jams are observed mainly at the intersection in the "Blue market" area of Jizzakh city and around the Orom market. The reasons for this are still unclear. In this

regard, although Jizzakh city administration is working to widen the streets that cause traffic jams, as well as to divert cars and open new traffic roads, the problem of traffic jams has not decreased yet.

For example, according to statistics, motor vehicle drivers spend 30-35 minutes on an average distance of 10 km from the city center to the suburbs (along Sh. Rashidov street) from 8:00 to 9:00. At this time, it can be observed that more than 1,742 cars pass through the intersection of Sh.Rashidov - U.Torakulov streets alone.

REFERENCES

1. Decision of the President of the Republic of Uzbekistan dated August 29, 2017 No. PQ-3245 "On measures to further improve the project management system in the field of information and communication technologies" (in 2019-2023, the "Safe City" project will be gradually introduced in all regions of the republic about).
2. Decree of the President of the Republic of Uzbekistan dated October 29, 2020 No. PF-6097 "On approval of the concept of development of science until 2030".
3. Chairman of the Information and Communication Technologies Committee of the Legislative Chamber of the Oliy Majlis of the Republic of Uzbekistan I. Abdullaev. "Development of information technology is a priority". - "Khalk Sozi" newspaper, February 11, 2015.
4. WHO, Global status report on road safety 2018, доступен: https://www.who.int/violence injury prevention/road safety status/2018/en.
5. Жиззах шаҳар ИИБ ЙҲХБ матбуот хизмати маълумотлари.
6. MINNESOTA транспорт департаменти обод йўллар нашри.
7. https://aussiedlerbote.de/2017/12/gamburg-samyi-umnyi-gorod-germanii/
8. https://www.tadviser.ru/index.php
9. https://tass.ru/obschestvo/7686449
10. BBC NEWS, 2017 йил, 6 март. information@boschungamerica.com маълумотлари.
11. https://www.cit.fraunhofer.de/en/research-center/iot-comms/SmartIntersection.html
12. Азизов К. Х., Абдурахмонов Р. А. ПУТИ ОБЕСПЕЧЕНИЯ БЕЗОПАСНОСТИ ДОРОЖНОГО ДВИЖЕНИЯ В КРУПНЫХ ГОРОДАХ РЕСПУБЛИКИ УЗБЕКИСТАН //The edition is included into Russian Science Citation Index. – 2015. – С. 70.
13. Abdurakhmanov R. DETERMINATION OF TRAFFIC CONGESTION AND DELAY OF TRAFFIC FLOW AT CONTROLLED INTERSECTIONS //The American Journal of Engineering and Technology. – 2022. – Т. 4. – №. 10. – С. 4-11.
14. Abduraxmanov R. Innovatsiya va ta ‘lim tizimining uzviyligi //Zamonaviy

innovatsion tadqiqotlarning dolzarb muammolari va rivojlanish tendensiyalari: yechimlar va istiqbollar. – 2022. – Т. 1. – №. 1. – С. 51-53.
15. Ko'chimov A., Mokhichekhra B. Historical Comparison of the Foreign Investment Climate in Small Business and Entrepreneurship in Jizzakh Region in 1991-2000 //Vital Annex: International Journal of Novel Research in Advanced Sciences. – 2022. – Т. 1. – №. 5. – С. 120-123.
16. Азизов К. Х., Абдурахмонов Р. А. Методика оценок условий движения автобусов на улицах города Ташкента.«Организация и безопасность дорожного движения в крупных городах» //Сборник докладов девятой международной конференции Санкт-Петербург. – 2010. – С. 23-24.
17. Abduraxmanov R., Azizov Q. Maxsus fanlarni o‗ qitishning asosiy tamoyillari //Zamonaviy innovatsion tadqiqotlarning dolzarb muammolari va rivojlanish tendensiyalari: yechimlar va istiqbollar. – 2022. – Т. 1. – №. 1. – С. 49-51.
18. Qosimova D., Ko'chimov A. Fundamentals of Investment Environment in the Process of Digital Transformation of the Economy //Vital Annex: International Journal of Novel Research in Advanced Sciences. – 2022. – Т. 1. – №. 5. – С. 55-59.
19. Мирзабеков М. С. Особенности режима и безопасности движения на горных автомобильных дорогах Узбекистана //Молодой ученый. – 2016. – №. 7-2. – С. 64-67.
20. Мирзабеков М. С. Оценки безопасности дорожного движения на горных автомобильных дорог //The XII International Science Conference «Current issues, achievements and prospects of Science and education. – 2021. – С. 261.
21. Мирзабеков М. С. Повышение активной безопасностимобильных машин с применением вакуумных насосов //The XII International Science Conference «Current issues, achievements and prospects of Science and education. – 2021. – С. 257.
22. Мирзабеков М. С. Способы анализа существующих методов оценки безопасности автомобильного дорожного движения в условиях узбекистана //Логистический аудит транспорта и цепей поставок. – 2020. – С. 156-166.
23. Мирзабеков М. С. Способы анализа существующих методов оценки безопасности автомобильного дорожного движения в условиях узбекистана //Логистический аудит транспорта и цепей поставок. – 2020. – С. 156-166.
24. Мирзабеков М. С. Повышение активной безопасностимобильных машин с применением вакуумных насосов //The XII International Science Conference «Current issues, achievements and prospects of Science and education. – 2021. – С. 257.