ANALYSIS OF THE DEVELOPMENT OF INTELLIGENT TRANSPORT SYSTEMS IN THE LARGEST CITIES IN BULGARIA

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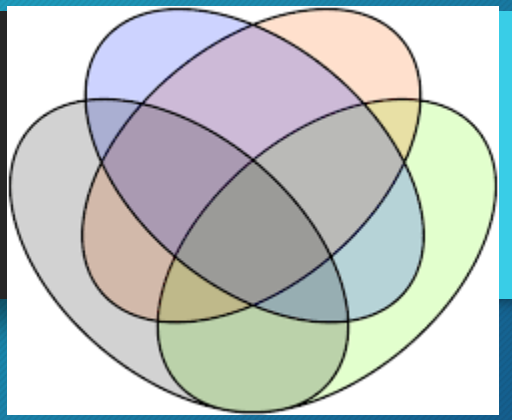
Main productions

In this paper, we analyze the development of intelligent transport systems in the largest cities in Bulgaria. The focus is on the possibility to implement new information technologies and smart solutions to improve the urban environment. In this direction, a brief analysis of smart proposals or features of regional development in the context of information technology development is presented. Solutions and visions are proposed to take into account the particularities of the urban development of urban systems. The necessity of the practical application of information technologies in the development of territorial systems is also highlighted. Intelligent transport systems are characterized and the opportunities they provide for increasing the quality of transport service and improving the lives of the population, especially in urban settings. Intelligent systems use a mechanism to analyze their environment, as a result of which, they initiate actions to achieve predefined goals.

INTRODUCTION

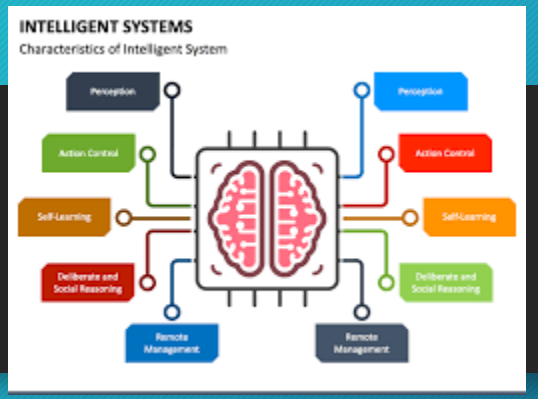
- Smart governance is increasing its importance and influence in the development of modern cities.
- At the same time, the time factor in urban governance is becoming increasingly significant. In this regard, concepts for 15, 10 and 5-minute cities have even been developed in recent years
- Driving innovation means introducing intelligent management systems into regional development. This implies imposing the model of integrating information and communication technologies, finding the applicability of intelligent management platforms in the development of municipal transport systems.
- Intelligent Transport Systems (ITS) are not only the technology of the future, but they show the development pattern of a given locality

THEORETICAL FRAMEWORK ANALYSIS

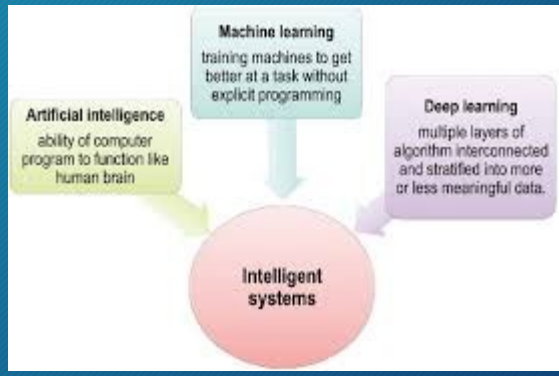


Intelligent Transport Systems (ITS) are a real upgrade on existing regional transport systems. They are built on information and communication technologies that can be managed and enabled to develop and optimize the transport network. In practice, the implementation of intelligent systems are the next step in the evolution of the transport system at national, European and international level in the countries of the European Union.

Intelligent systems

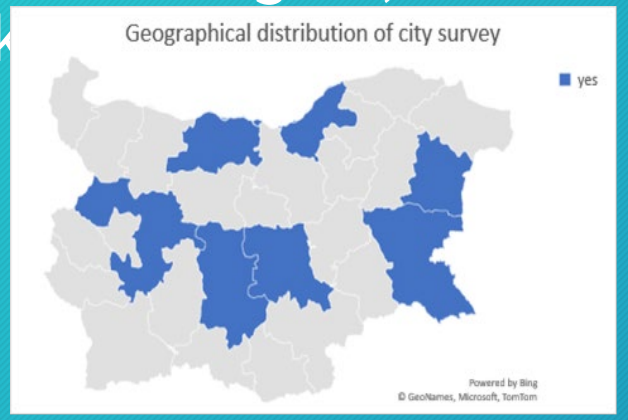


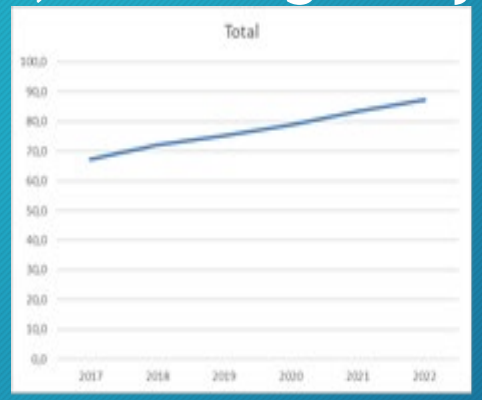
- In practice, intelligent systems help to provide reliable automation of vehicle management, as well as to inform users of transport services
- As an end result, spatial monitoring of traffic as well as the behavior of public service users is achieved in populated areas, mainly through video surveillance.
- Another effect is the derivation of results on the environmental impact of motor vehicles and their technological level
- This conceptual approach is introduced by Garcia-Ortiz as well as by Amin and Wootton, who derive the enforcement of intelligent transportation systems model in cities
- The first best practices to introduced in New Jersey and Pennsylvania

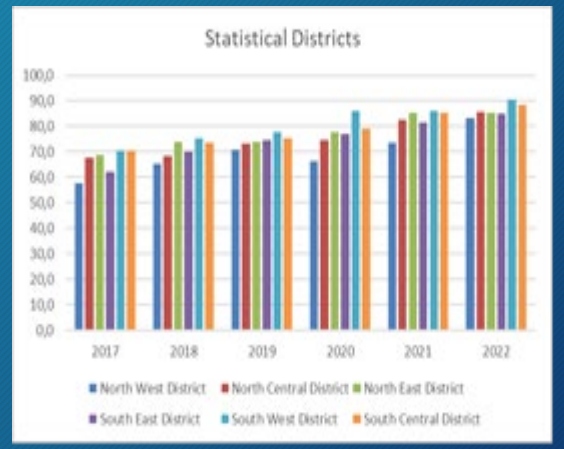


ANALYSIS OF THE CITY INTELLIGENT TRANSPORT SYSTEMS ADOPTION IN THE BIGGEST BULGARIAN CITIES

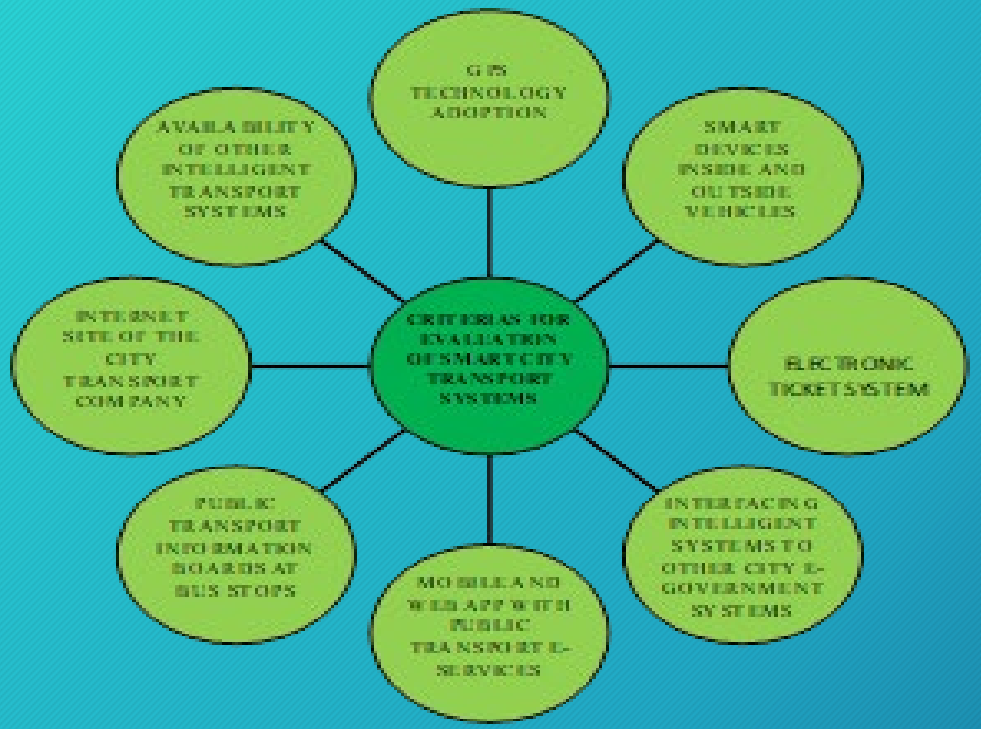
- The largest Bulgarian cities can be grouped by population into three groups. The first group includes the capital of Bulgaria (the city of Sofia) The second group – is Varna and Plovdiv cities with over 300 thousand people and with a gravity zone of about 55-60 kilometers. The third group contains the cities of Burgas, Ruse, Stara Zagora, and Pleven, their gravity zone is about 30-35 k







Criteria for evaluation of city intelligent transport system



In this direction, it is possible that the foundation of smart systems will be implemented within the leading 7 cities, but its natural extension should be based on a methodological framework. This implies that the introduction of intelligent transport systems in public urban transport can be done by introducing criteria for evaluating its optimal functioning and efficiency

the results of the author's analysis of the cities according to the proposed criteria

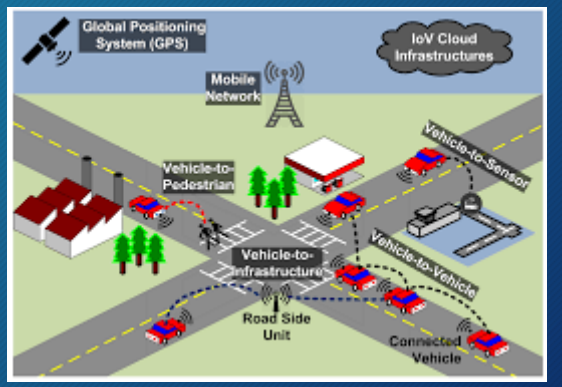
criteria for assessment / cities	Sofia	Plovdiv	Varna	Burgas	Ruse	Stara Zagora	Pleven
GPS systems application	yes	yes	yes	yes	yes	yes	yes
Internet site of transport company	yes	yes	yes	yes	yes	yes	yes
Information screens of city transport at the bus stops	yes	yes	yes	yes	yes	no	yes
Mobile and internet app for city transport e-services	yes	no	no	yes	no	yes	yes
Smart equipment on board of the buses	yes	yes	yes	yes	yes	yes	yes
Electronic ticket system	yes	no	no	yes	yes	yes	yes
Integration between intelligent transport systems with other systems for city eGovernment	yes	no	no	yes	yes	no	no

NEW TRENDS IN TRANSPORT AND PUBLIC TRANSPORT MANAGEMENT

- In recent years, there has been a strong move towards the implementation and development of intelligent transport systems, especially in the larger cities of Bulgaria. However, this policy is not targeted and programmatic, it is the result of advances mainly with mobile phones and their accompanying technologies - Bluetooth, GPS, GPRS, 2G, 3G, and others. In transport, the first new opportunities are around ticketing and payment, timetable display, driver routing assistance, mapping, tracking; ever faster and cheaper wireless data, and imaging to assist movement

Development of a concept for creation of a test ground for intelligent transport systems

- Determination of the approximate set of ITS technologies for testing at the ITS test ground.
- Identification of tasks to be solved when creating an ITS test ground.
- Development of possible options for creation of the ITS test grounds and selection of the best option.
- Detailed study of the best option for creation of the ITS test ground.
- Formation of a list of legal acts that need to be adjusted and extended for implementation of the concept.
- Identification and assessment of effects of creation of the ITS test ground.
- Development of an action plan for implementation of the concept.



CONCLUSION

In the Bulgarian context, we can assume that the level of development of transport systems is contrasting. The model of functioning of their transport systems emerges as the main problem. While in Sofia resources are being freed up for the development of the metro, Plovdiv is still looking for the possibility to build an S-bus /fast tram/. It is twice as energy efficient as bus transport uses environmentally clean fuel - electricity, and has 4 times more transport capacity. In the other cities of Varna, Stara Zagora, Burgas, Ruse, and Pleven the measures are not effective enough because they require optimization of the existing bus lines as well as the introduction of new connection points for the connecting suburban lines.

At the end of the exhibition

The development of intelligent transport systems in the biggest cities in Bulgaria is still ahead!

Thank you for your attention! It was our pleasure to bring you the current issue!