Smart technologies in the

city of Kežmarok

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The article is focused on a project in the city of Kežmarok, the main task of which is the introduction of smart solutions for municipalities with the idea of simplifying and increasing the quality and safety of life in the city for residents, saving the city's costs, fulfilling the obligations of the smart green city concept, which Kežmarok had developed for its needs in 2017.

In today's busy times, smart solutions are a great helper for municipalities for their provision of data and services that help the development of the city and region.

In this article, we will provide information that will help readers get closer to the project and better understand its purpose.

The municipality is currently facing significant changes associated with the effort to ensure sustainable growth based on a low-carbon economy. Intelligent or "smart" technologies create a huge number of opportunities for self-government to develop and deal with environmental, economic, and social changes.

Growing urbanization at the global and European level is increasingly associated with the expansion of smart cities, because it is in this environment that most citizens and production entities will focus their economic, social, and personal interests. The current state of technological progress offers extensive possibilities for the development of urban infrastructure and the construction of smart cities, but the city will become intelligent only if it raises the standard of living of all its citizens. A smart city uses information and communication technologies to improve its functionality, long-term sustainability and increase the standard of living of citizens.

To create a smart city, it is important to collect, share and analyse data on its functioning, so that solutions can then be implemented that will contribute to improvement and long-term sustainability in important areas such as urban mobility, energy, waste. management, telecommunications, healthcare, social services, education, culture, community development, climate change mitigation, public safety and more.

The use and introduction of smart solutions in the city of Kežmarok is nothing new, but the "Smart technologies in the city of Kežmarok" project is a huge step forward towards fulfilling the vision of smart cities, which we are fully trying to fulfil. It is not easy to choose the areas in which the city wants to develop because there are many of them, but in the end 5 areas were included in the project:

SMART MANAGEMENT OF PUBLIC LIGHTING

Smart management of public lighting allows you to easily set the level of lighting intensity and remotely diagnose it for the entire city, for defined groups of luminaires or for each luminaire separately. Public lighting can be fully controlled from the control centre. The system provides all the necessary data for efficient operation and thus reducing costs for the city.

PEDESTRIAN CROSSINGS

The proposed intelligent pedestrian crossings collect data on pedestrian movements in the pedestrian crossing area. In the case of the presence of a pedestrian in the area of the pedestrian crossing, the resulting higher safety of the passing pedestrian and at the same time a system of warning the driver that there is a pedestrian at the crossing. The

evaluated data on the movement of pedestrians at the crossings are sent to the open API interface for further work with the data. The installation of intelligent pedestrian crossings is the main visibility of pedestrians and the resulting safety of pedestrians when crossing the road. The installation reduces the probability of a possible danger to the life of the pedestrian, because from the lighting of the passage.

PARKING SYSTEM

The proposed parking system envisages the collection of data from cameras that are connected to the local camera system. The data is analysed and stored in a local database. The advantage of real-time supervision of individual payments directly in the field. The city has 24 hours. Immediate overview of parking fees and parking utilization and the city has the option of checking recidivism, checking the resident or visitor of the city, checking the payment method used and the potential agenda for resolving the violation. Thanks to the installed cameras, the city can manage the vehicle registration number. The public administration information system will inform about the amount of free parking spaces at individual locations.

CCTV SYSTEM

The proposed smart camera systems evaluate alarm situations in the proposed area and alert the operator of the surveillance system only to alarm situations, thus enabling them to respond to, document and resolve violations. The introduction of a smart camera system will be primarily beneficial to improve the functioning of the city police, the situation. The big advantage of smart cameras over outdated analogue cameras is the quality and distribution of the image. The intelligent camera system can ensure the detailed implementation of offenses or other criminal activity. The installation of an intelligent camera system is also preventive. The potential perpetrator will refrain from criminal acts, the camera system will also result in an increase in the safety of citizens and visitors to the city.

SMART MUNICIPAL WASTE MANAGEMENT

The basic source of data for the system will be the existing agenda system of self-government, containing all relevant data on payers for municipal waste. Data from this system with unique identifiers. The proposed smart solution is an advantage for the city or municipal company, which in this way can very effectively monitor statistics. It is planned to implement a new method of municipal waste collection based on unambiguous identification of waste generators. Equipping waste containers

(including bags) with unique identification elements via RFID chips, QR codes or a combination thereof. Equipping publicly accessible containers with an electronic locking system, preventing the dumping of waste by unauthorized persons. Equipping waste collection vehicles with an automatic waste container identification system. Implementation of an information system for processing statistics with waste collection and its connection with relevant existing implementation systems of the city. Implementation of a mobile application for citizens that communicate with citizens and make payments for municipal waste.

With the successful implementation of more than 560 IoT and smart solutions and devices, the city of Kežmarok will have a unified system of providing and obtaining information that serves to improve life in the city, increase safety, provide better services and protect the environment.

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