SEPARATE ASPECTS OF SMART CITIES SECURITY

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● *Abstract* — The development of smart cities is not without risk. Services that use digital data are completely dependent on the security and integrity of this data. That is why city planners and city administrations need to prepare for digital accidents in the same way as for natural disasters.In today's rapidly changing environment, information security is becoming a key element in the strategy for creating smart cities from the very beginning. When creating cities, there is always the task of protecting the critical infrastructure and the means of controlling it physically. Similarly, it is necessary to ensure the security of the digital infrastructure. The basic principles of constructing digital protection for a smart city include: device discovery and access control, ensuring data integrity, intelligent network segmentation and threat prevention.

● *Keywords* — *smart city; smart destinations; IoT, information security; smart grids; IT-technologies; management.*

PROBLEM STATEMENT

The "smart city" has many characteristics: system efficiency, economic attractiveness, developed infrastructure and others. But the main one is actually one. This is his safety.

According to Gartner, in 2018 in smart cities will be used 3.3 billion connected devices, and then this figure will increase in an avalanche. But the development of such cities is not without risk. Services that use digital data are completely dependent on the security and integrity of this data. That is why city planners and city administrations need to prepare for digital accidents in the same way as for natural disasters.

Experience suggests that when approaching the topic of security, it would be nice to understand the profile of the city, the risks and, based on this analysis, to develop a solution.

At the same time, security is understood in the broadest sense of the word - these are criminal situations, and road accidents, and environmental threats, and terrorism. Very often risks are underestimated - for example, if you look at how many people die each year under the wheels, it becomes clear that this threat is stronger than the terrorist one. It should be noted that it is very difficult to rank risks in the long term, sometimes even impossible. Plan a large sports event in a megapolis - and now the profile of its risks completely changes. This is a dynamic picture.

MAIN CONTENT

Russian cities play a key role in the national economy, but are increasingly faced with challenges that hamper their effective development. Such challenges, in particular, are:

● infrastructure gap and high level of depreciation of basic urban infrastructures;

● deficiency of budgetary resources both for solving problems of current functioning of cities,

and for the tasks of development;

● increasing the environmental pressure on cities;

● increasing the requirements for the quality of the urban environment and ensuring the safety of citizens;

● changing the requirements for the whole range of urban services and services on the part of the business, including under the pressure of digitalization of the economy and scaling of new technological solutions.
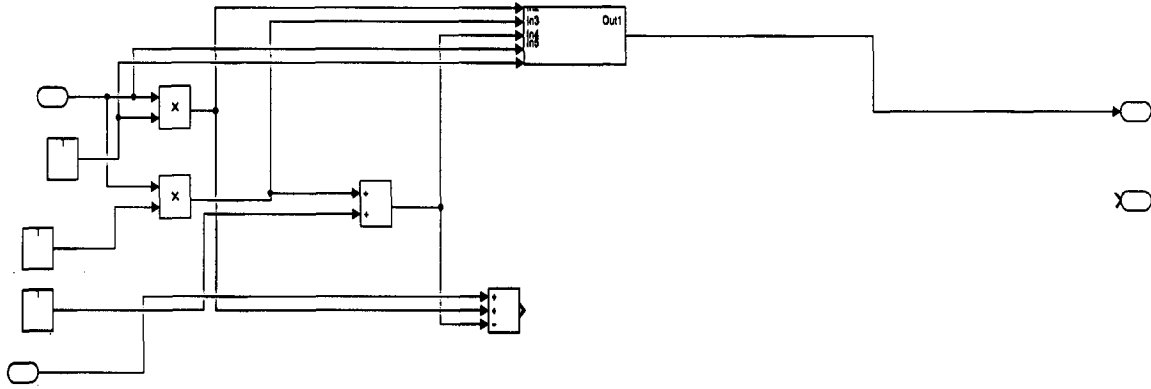
Fig. 1. Block diagram of the model of application of the concept of the Securing Smart Cities in the SimuLink environment

Smart city is characterized not so much by the set of applied high-tech solutions, as by how much these decisions contribute to overcoming the challenges that cities face at the current stage of development. That is why it seems important to start by identifying a kind of "problematic field" - the challenges facing Russia's cities today.

We must immediately understand that, despite the fact that all cities have different risk profiles, the main task is to create a situational center that is adequate to the place, tasks and goals.

Visually, the situation center looks always the same - it's a large room, hung with screens on which information is displayed. From a technological point of view, this is important! - to create this center is not so difficult task. After determining the security profile of the city, you develop technological solutions.

You need to make decisions quickly, taking into account the situation in each individual period of time, while broadcasting the solution simultaneously to a large number of interconnected subsystems. The key question is how much information is displayed on these screens and how relevant it is, how many people make decisions and how professional they are in their business. The main difficulty is precisely that this body responsible for safety should be created in accordance with local specifics, so that the created general regulations begin to operate.

Figure 1 shows a block diagram of the model of application of the Securing Smart Cities in the SimuLink environment.

In today's rapidly changing environment, information security is becoming a key element in the strategy for creating smart cities from the very beginning. When creating cities, there is always the task of protecting the critical infrastructure and the means of controlling it physically. Similarly, it is necessary to ensure the security of the digital infrastructure.

The basic principles of constructing digital protection for a smart city include: device discovery and access control, ensuring data integrity, intelligent network segmentation and threat prevention.

Basic technological solutions in the field of smart security for modern cities are central control stations, digital surveillance systems, predictive detection technologies, as well as systems that provide a coordinated response to situations involving a breach of security, etc. From fixing damage or offenses, security complexes increasingly moving to analytics in real time and predictive analytics. With the support of statistical models and smart device data, they are able to calculate the likelihood of accidents at work or committing crimes in a particular place and time.

In addition to direct effects (increasing the speed of responding to incidents, increasing the detection of crimes, reducing their number, etc.), the introduction of smart security technologies also improves the business climate and the overall socio-economic situation in the city.

Smart cities includes a whole set of components - these are environmental monitoring systems; and transport load monitoring and monitoring systems that allow to reduce the level of hydrocarbons; and solutions in the field of intelligent waste management (sensors for controlling the level of debris, solutions for smart sorting and recycling, smart connected garbage trucks); and smart wastewater treatment systems; and solutions in the field of renewable energy.

From the point of view of efficiency, such solutions contribute to the improvement of the quality of the environment (air, soil, water), the transition to a more rational model for waste management.

Reducing the negative impact on the environment is due to several factors: a more informed attitude to it and to the measures taken to reduce the negative impact (for example, the Paris Agreement under the UN Framework Convention on Climate Change), the gradual increase in the share of RES in

the city's energy balance, the introduction of energy-efficient technologies , The introduction of smart sorting and garbage processing, traffic control systems and smart transport technologies.

For example, the launch in San Francisco of the SFPark initiative, which forms the price of urban parking, depending on the level of demand at a particular time, led not only to a decrease in the average cost of a parking space and to greater availability of parking spaces, but also to reduce greenhouse gas emissions by 30%. As part of the implementation of the smart city strategy in Vienna (Smart Wien Strategy), it is planned that by 2020, through a more efficient waste management system, it will be possible to reduce harmful emissions into the atmosphere by 270,000 tons in CO_2 equivalent.

Combining databases of various departments, increasing the number of security systems increases the detection of crime and reduces vulnerabilities. The introduction of emergency response systems in conjunction with other solutions increases resistance to anthropogenic and natural disasters (acts of terrorism, fires, floods).

Thus, on the initiative of the Minister of Social Protection of the Brazilian State of Alagoas in the capital of the region - Maceio - an advanced video surveillance system was launched, designed to increase the effectiveness of combating crime, and to reduce the number of accidents. As a result, security services were able to improve the response to criminal situations in the city. In addition, due to the high quality of video and photographic materials, they can be used directly as evidence when conducting investigations. According to expert estimates, the use of predictive techniques in law enforcement can lead to a reduction in the city's costs of law enforcement by 8% of the city police budget.

CONCLUSIONS

Work on safety is possible only in the mode of prevention, rather than extinguishing fires. By and large, the effectiveness of situational centers is a matter of three priorities: proper regulations (it is necessary to "code" the risks and agree on the rules of already existing services), and also build up prevention and response systems. Here we are just coming to the question of infrastructure - to it, there are various kinds of technological "tricks" that are used in situational centers.

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