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CURRENT PROBLEMS OF SMART CITIES DEVELOPMENT AND DIGITAL TECHNOLOGIES IMPLEMENTATION IN HOUSING AND COMMUNAL SERVICES

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ABSTRACT
The article discusses the main areas of introduction of digital technologies in the framework of the development of "smart cities" in the Republic of Uzbekistan. Conducted studies substantiate the effectiveness of reforms in the housing and utilities sector of Uzbekistan in accordance with the sectoral government programs and the need to comprehensively solve existing problems for the further successful development of smart cities.

KEYWORDS: housing and communal services, urban economy, "smart city", city economy, communal infrastructure.

INTRODUCTION

In the age of information technology, the development and management of urban farms are widely popularized through the construction of «smart» and «intelligent» buildings to improve the quality of the environment, save construction materials and save energy. Recently, the category of «smart city» has become widespread, which includes a large number of components for creating a smart environment: energy and water supply, management of public utilities in the housing sector, provision of urban infrastructure facilities, etc.

The categories of «smart homes» have been known for a long time, but systems to ensure a comfortable life for residents and quickly respond to changing needs using built-in control devices have recently appeared. For the first time, the concept of «intelligent building» originated in the United States in the early 1980s, sparking widespread public interest and spontaneous development.[2].

Thomas Hartman, a well-known expert in the field of smart technologies, highlights important technological aspects that are characteristic of «smart home» [3].

According to the definition of the ECE and the International telecommunication Union, a smart sustainable city is an innovative city that uses ICTs and other tools to improve the quality of life, efficiency of urban activities and services, as well as competitiveness, while ensuring that they meet the needs of present and future generations, taking into account economic, social, environmental and cultural aspects. [4].

LITERATURE REVIEW

The Central aspects of the experience of the development of "smart cities" and the introduction of digital technologies in housing and communal services are presented in the works Tabunshchikov Yu. A., M. Brodach, N. In. Shilkin Energy efficient buildings, Press center Ministry for development of information technologies and communications of the Republic of Uzbekistan «The introduction of digital technologies in housing and utilities will become the basis for providing quality services».

MATERIALS AND METHODS

The methodological basis for the research was the scientific works of domestic scientists-economists, devoted to the problems of housing and communal services, materials of international, all-Uzbek and regional scientific and practical conferences, publications in the periodical press. The following methods were used in the study: monographic, abstract-logical, computational-constructive, economic-statistical, observations, comparisons.

RESULTS AND DISCUSSION

A «smart city» is an agglomeration where every resident is given access to all services in the form that best suits their needs. Creating smart cities means a process by which urban centers become more resilient,

inclusive, secure, resilient to climate change and able to respond more quickly to emerging development challenges. At the same time, «smart cities» are characterized by successful experience in attracting foreign direct investment and global sources that have become open in social and economic terms to the rest of the world [4].

According to analysts, the growth of the world's urban population will reach 5 billion people by 2030, which means that the need for «smart cities» is growing. Thus, the annual growth of the urban population in the world over the past decade, which has changed from 35% to 50%, alarms the Uzbek city housing and utilities services and obliges the involvement of effective high technologies in their work.

In Uzbekistan, the housing and utilities sector is still subsidized and operates through the implementation of state reforms in this area. Over the years of independence, the Republic has implemented a number of reforms to develop the housing and utilities sector: in accordance with Resolution № 48 of the Cabinet of Ministers of the Republic of Uzbekistan dated January 18, 2019, «The Concept of implementing Smart city technologies in the Republic of Uzbekistan and the plan of practical measures for implementing the Concept of implementing Smart city technologies in the Republic of Uzbekistan in 2019-2021» were approved, as well as Resolutions of the President of the Republic of Uzbekistan №RP-2922 24.04.2017 «About measures for further improvement of the system of maintenance and operation of multi-apartment housing stock for the period 2017-2021». The implemented programs are implemented at the expense of the state budget, their effectiveness reflects the state policy in the country, and, ultimately, contributes to meeting the demand of the population and business entities.

In cities of the Republic of Uzbekistan, where more than 50% of the population lives, the development of housing and utilities is carried out in accordance with the state regional policy on territorial and spatial development of the country and is aimed at the formation of single-industry towns and agglomerations. Thus, in Uzbekistan, there are four macroregions based on similar economic, natural, and socio-demographic characteristics - Northern, Central-Eastern, southern, and Western, and hub cities-Tashkent and regional centers. Agglomerations are created on their basis and priority economic specializations are defined for each agglomeration.

The coordinated development of agglomerations infrastructure in the country will ensure integrated transport and infocommunication systems, modernization of housing and utilities with the use of new technological solutions. Therefore, to improve the efficiency of urban housing services, the concept of «Smart city» is being implemented in the emerging agglomerations.

As part of the implementation of Smart City in the sphere of housing and communal services, it is proposed to focus on achieving the following goals: improving the quality of public services, improving the urban environment for comfortable living of the population, preventing accidents on utility networks by organizations that serve an apartment building.

Table 1 shows the initiatives provided by the Smart City system, their characteristics and purpose.

Table 1. Initiatives provided by the system «Smart City»

№	Name of the initiative	Characteristics of the initiative
1.	Automatic transmission of meter readings	It is intended for taking readings for utility services in order to make commercial payments with the supplier and consumers.
2.	Smart street lighting	A modern concept that involves the use of specialized lights that are controlled by intelligent platforms when lighting city streets.
3.	Automated control system of technological processes	A multi-level information and measurement centralized system designed for monitoring and controlling technological processes and equipment at industrial facilities.
4.	Weather sensor system	Monitoring, control and forecasting of hydrometeorological variables using mesoscale modeling, as well as calculating the distribution of stormwater runoff across various drainage basins.
5.	E-KCK	A single information resource in the field of housing and communal services, consisting of an open part where publicly available information is posted, and a closed part where personal accounts of citizens, authorities and participants in the housing and utilities market are used.
6.	Intelligent water network	It is an integrated set of products, solutions and systems that allow utilities to remotely and continuously monitor and diagnose problems, prioritize and

		manage maintenance issues, and use data to optimize all aspects of the water distribution network.
7.	The system of drainage of melt and atmospheric water	Provides a step-by-step, managed approach to collecting information about sewage treatment and drainage.
8.	Climate control	The climate control system ensures the rational use of heat energy and creates comfortable conditions for living and working.
9.	Home management platform	The platform is intended for renting common-house property sites in multi-core buildings to obtain financial benefits for the owners of premises.
10.	Snow load sensor	The system sends a warning when it is time to remove snow from the roof for safety reasons.
11.	Fire protection system	The automatic fire protection system is able to independently detect a fire, warn of its occurrence, start the extinguishing process and help people in the evacuation process.
12.	Smart security system	Automated complex for protection of various objects of property from criminal processes or phenomena.
13.	Smart Elevator	The innovative development remembers data about passenger traffic during the day, keeps under control and analyzes the state of the lift by logical and high-quality electronic judgment.
14.	Smart yard	Designed to encourage modern children who lead a sedentary lifestyle, spend more time on the street and play with their peers in a variety of mobile and healthy games.
Source: compiled by the author		

CONCLUSION

In General, the Smart City system, in which the existing resources of city services are used in the best possible way and ensure maximum security of urban life.

In the foreign experience, as well as in the CIS countries, for example, Kazakhstan successfully implements the brand «Smart Astana», created within the framework of the «road map» of the «Astana – smart city» project with the key goal of assisting the authorities in implementing innovations that could bring concomitant results throughout the country and contribute to economic diversification. The road map of the Smart Astana concept is based on optimizing the combination of 6 characteristics that make up the «smart city», «smart economy», «smart management», «smart life», «smart mobility», «smart people» and «smart environment». The result of all characteristics of smart cities will be achieved by improving the quality of life, improvement of housing and communal services, updating utilities and improving security in cities.

For further successful development of «smart cities» in Uzbekistan in the short and medium term, it is necessary to solve the following problems:

- ✓ improve coordination of efforts at the national and municipal levels of innovation policy;
- ✓ increased transparency of the legal framework and protection of privacy; activation of urban residents;
- ✓ participation in national and international knowledge sharing networks;
- ✓ «smart adjustment» in the construction of new infrastructure facilities through public-private partnership mechanisms.

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