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CREATION OF "THE CLEVER CITY» IN THE CONCEPT OF DIGITAL ECONOMY

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СОЗДАНИЕ «УМНОГО ГОРОДА» В КОНЦЕПЦИИ ЦИФРОВОЙ ЭКОНОМИКИ

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Summary. In article it is described creation problems of "a clever city». It is considered three base components of economic «digitalization». At culture formation «Clever city» questions of a professional training for clever economy rather actually.

Experts Frost and Sullivan predicted that by 2025 year clever cities will involve on the market more than \$2 bln. To 2050 year 80 % of the population of the developed and 60 % of developing countries will live in cities (in 2018 year, according to the United Nations, 55 % of inhabitants of a planet were townspeople). Making the forecast, analysts counted that clever cities will create huge possibilities for business, and the artificial intelligence, the personalized public health services, a robotics, the distributed manufacture of energy will help to spend effectively resources and to keep time of inhabitants of megacities. High hopes in this sense assign to Asian-Pacific region in general and China in particular, the North America catches up with the leader. Uzbekistan also has entered realization of a clever city, in particular in Tashkent and Nurafshon.

Аннотация. В статье описывается проблемы создания «умного города». Рассматривается три базовых составляющих экономической «цифровизации». При формировании культуры «Умного города» вопросы подготовки кадров для этой экономики весьма актуально. Эксперты Frost & Sullivan прогнозировали, что к 2025 г. умные города привлекут на рынок более \$2 трлн. К 2050 г. 80% населения развитых и 60% развивающихся стран будут жить в городах (в 2018 г., по данным ООН, горожанами были 55% жителей планеты). Составляя свой прогноз, аналитики рассчитывали, что умные города создадут огромные возможности для бизнеса, а искусственный интеллект, персонализированное здравоохранение, робототехника, распределенное производство энергии помогут эффективно расходовать ресурсы и сохранять время жителей мегаполисов. Большие надежды в этом смысле возлагают на Азиатско-Тихоокеанский регион вообще и Китай в частности, который догоняет лидера - Северная Америка. Узбекистан также вступил реализацию умного города, в частности в Ташкенте и Нурафшоне.

Keywords: digitalization, clever network systems, the pilotless transport, the personalized public health services, digital economy.

Ключевые слова: цифровизация, умные сетевые системы, беспилотный транспорт, персонализированное здравоохранение, цифровая экономика.

Problem of statement. Questions of the analysis and creation of the clever cities extremely actually for all countries. In the Republic of Uzbekistan workings out of creation of clever cities also are conducted. For

effective designing of clever cities it is necessary to analyze on creation, realizations and works clever cities in foreign countries.

With a view of realization of the problems defined by the Decree of the President of the Republic Uzbekistan from 1/22/2018 of year № UP-5308 «About the Government program on realization of strategy of actions in five priority directions of development of Republic of Uzbekistan in 2017-2021 years «Year of support of active business, innovative ideas and technologies», the Republic of Uzbekistan Cabinet confirmed the Concept «Clever city». The Concept purpose is the establishment of the basic directions of projects on creation of modern manufactures and engineering-communication infrastructures in regions by introduction of innovative technologies «Clever city», directed on increase of a standard of living and maintenance of satisfaction of economic, social, ecological and cultural requirements of present and future generation of the population of the Republic of Uzbekistan. The concept is aimed at improvement of living conditions of urban population and the given concept correlates with creation projects «Clever cities» ideologically coincide [1, p. 275].

Analysis of researches. With the proclaimed United Nations «Purposes of a sustainable development till 2030 year», the member countries of the United Nations of a state policy directed on realization on improvement of all aspects of life of the population. For maintenance of an innovative sustainable development of a city involving in work and maintenance of interaction of the government, private investors, architects, developers, the industrial suppliers, supplying organizations, professional associations and public organizations directly with inhabitants and local communities is necessary.

Process of digitalization will amplify in national economy and the role of transnational corporations in functioning of national and regional national economies will amplify.

The digital segment of economy becomes actual owing to the occurred qualitative changes in national economy. New technologies and platforms will allow management of the enterprises and physical persons to reduce of transaction interaction costs in the increasing scales and to carry out closer contact to managing objects and the state structures [2, p.45]. The economy based on network services is as a result formed. The concept of «digitalization» testifies to a new stage of perfection of production management of the goods and services and the manufacture on the basis of "through" application modern IT, beginning from the Internet of things and finishing technologies of the electronic government. The base reason of expansion of a digital segment of economy is growth of transaction sector which in the developed countries makes over 70 % of national gross national product. To this sector carry: the government, consulting and information service, the finance, wholesale and retail trade, and also granting of various municipal, personal and social services to the population. The more diversification degree in economy, the main volume of the unique data circulates in the country. Therefore the digital economy most effectively functions in the markets with a considerable quantity of participants and high level of penetration of ICT-services.

First of all it concerns "Internet dependent" branches (transport, trade, logistics etc.) in which the e-segment share makes roughly about 10 % of gross national product, over 4 % of employment, and these indicators have an obvious tendency to growth. In technological aspect the digital economy is defined by four trends: mobile technologies, business analytics, cloudy calculations and social media; in the global plan - social networks, such as Facebook, YouTube, Twitter, LinkedIn, Instagram and so forth. At the same time for effective return of investments into national digital economy and reception from it dividends it is necessary to develop not only the ICT-INFRASTRUCTURE in a context of global networks, but also «analogue additions»: a favorable business climate, the powerful human capital, appropriate management. At culture formation of «Clever city» questions of a professional training for clever economy rather actually. Feature of realization of projects on introduction of systems of the clever city realized in the USA, the European Union, and South East Asia is that in their realization the leading part was carried out by the specialized companies [3, p. 34]. At the present moment it is possible to establish that fact that the global market (integration) of systems of type «Clever city» any more only has developed, but also is divided between the limited number of global corporations. Technological realization of such projects is impossible without participation of the company-integrator by which the key role is taken away. Distinctive feature of the global companies this role of players of the market of system «Clever city» [4, p.17.]. The system integrator is functional element of global corporation, in which structure are companies-developers and manufacturers of all means who are supposed to be introduced. Actually the companies-integrators support those contract designs which make a basis of diverse systems and subsystems of a clever city. It is obvious that such combination of the company-integrator with suppliers of decisions represents the most powerful competitive advantage in the global market. Today in big cities people use the mobile appendices.

Formats of the relation of citizens with the state change also. According to poll spent by company IPSOS by request of agency Booz Allen Hamilton in February, 2018 year, 78 % of the Americans searching for the information from state structures, received it through sites of federal departments, 24 % - by mail, 21 % - on an e-mail and 18 % - a call by phone. When they have asked, as they would prefer to receive the information, almost half (48 %) have answered that by means of an online chat, 30 % - by means of phone and 16 % - by e-mail [5, p.73].

At transition to economy of new technological way the human capital which concentrates in cities, starts to play an important role. It is necessary to provide in cities quality of life not worse, than in the developed countries and creation of a clever city means not only management efficiency increase by city resources, but also as a whole occurrence of better conditions for life. The city infrastructure becomes cleverer, services constantly develop and it is necessary to raise technological level of comfort of townspeople.

Experts Frost and Sullivan predicted that by 2025 year clever cities will involve on the market more than \$2 bln. and to 2050 year, - 80 % of the population of the developed and 60 % of developing countries will live in cities (in 2018 year, according to the United Nations, 55 % of inhabitants of a planet were townspeople). Making the forecast, analysts counted that clever cities will create huge possibilities for business, and the artificial intelligence, the personalized public health services, a robotics, the distributed manufacture of energy will help to spend effectively resources and to keep time of inhabitants of megacities. High hopes in this sense assign to Asian-Pacific region in general and China in particular, the North America catches up with the leader.

Research PwC «Megacity of the Future» (for it have studied 10 megacities, shows that people in big cities for last five years began to give much more time to entertainments and rest. On the average each inhabitant of the largest cities of a planet has a rest 184 minutes in day, and for last five years this indicator has grown for 53 minutes, i.e. almost on an hour. Townspeople spend released time behind leisure in clubs and theatres and walking in parks, analysts PwC specify. Muscovites on the average get out in parks more often inhabitants of other world capitals (135 minutes against 83).

The modern park influences not only health and mood of townsmen, but also on its economy. Analysts of company SOOFA have counted up that each dollar enclosed in building of public parks in the USA, brings \$20 of a direct and indirect economic gain - from tourism and growth of cost of real estate before management of storm waters and unity of a society. That such effect became a reality, the approach is necessary clever, including from the point of view of use of technologies. «Parks should master new technologies, an infrastructure, experience and approaches. New technologies, including cartographical geo information systems and touch networks, allow conducting marketing researches, to study the user experience much more deeply. Not to lag behind young generation, parks should rethink ways of attraction and deduction of users», - is told in research SOOFA. To one of factors of attraction of visitors in parks can become popular WiFi. The simple technological decision directly influences development of the human capital, researchers from University of Melbourne in 2013 year under their data have come to a conclusion, networks WiFi are in demand and work effectively only as addition to social and entertaining spaces. Victoria's National gallery has faced a problem of unpopularity of wireless networks in Melbourne, for example. Public ignored free WiFi simply because it could not use comfortably: The museum is surrounded by a concrete platform without the shaded places. But in this Australian city public networks are popular on a city square and in space near the central library because the purposes of the people who have come to these places, mean network use. They study, check statistics of a football match (when look game on the screen in city center), tourists communicate with relatives from other countries. Visitors of public places with free WiFi

as a whole communicate with each other more, exchange experience and are more involved in city life. Experts of American agency Project for Public Spaces (was engaged in transformation Times Square to New York and a number of other loud projects) consider that one of factors of success of public space of «Instagramization» (which including forms attachment of townspeople to a concrete place). That is why the communication quality on a platform with a considerable quantity of visitors has great value. Clever public parks are of part of the steady and social approach of a city to planning and design of parks. They play an important role in strategy of public space which define, the city »will be how much comfortable, - Robert Right, the professor of University of Toronto, on a symposium« the Future of clever cities »in Mumbai in May, 2017 declared.

In Uzbekistan German experience on sanitation of apartment houses is studied. The department of development of building of the Ministry of innovative development of Republic Uzbekistan studies a question of realisation of the pilot project of sanitation of an existing multiroom apartment house of a city of Tashkent within the limits of the project

PRO HOUSE (Germany). In Uzbekistan approximately 98 % of apartment houses belong to proprietors. The high share of the apartments which are in a private property, is a consequence of the extensive privatisation which have been carried out in the early nineties after disintegration of the Soviet union. For strengthening of key structures and for increase of power efficiency of an apartment house in Kazakhstan and Uzbekistan, the Initiative «Housing and communal services in the Eastern Europe» in 2016 initiated project PRO HOUSE on professional management of real estate in Kazakhstan and Uzbekistan. Sanitation is a complex carrying out of actions taking into account technical, economic and social factors of an apartment house, for the purpose of restoration of an initial technical condition or achievement of modern standards of new building in relation to separate constructive elements, and also prolongations of term of operation of the house. Sanitation leads to long-term economy of energy, resources and reduction of losses, and also to increase of market cost of real estate. As a rule, sanitation spend without eviction of tenants. Today new federal lands of Germany have the big professional knowledge in the field of optimum preservation of buildings and city development of areas of panel building which also can be applicable and in Uzbekistan. In foreign countries as in Germany, 70 % of apartment houses have been modernised. Modernisation cost in 3-7 times more low, than cost of new building at comparable indicators of quality. For strengthening of key structures and for increase of power efficiency of an apartment house in Kazakhstan and Uzbekistan, the Initiative «Housing and communal services in the Eastern Europe» in 2016 initiated project PRO HOUSE on professional management of real estate in Kazakhstan and Uzbekistan. In the near future the problem of low power efficiency becomes a headache for tenants of panel houses when they should pay serious money under accounts for heating. By

results of a seminar carrying out of the international conference in April of current year with representatives the initiative «Housing and communal services in the Eastern Europe» concerning sanitation of existing apartment houses in Tashkent is planned.

The basic material. «A clever city» - the concept of integration of several information and communication technologies (ИКТ) and the Internet of things (IoT decisions) for management of city property; city actives include, in particular, local departments of information systems, schools libraries, transport, hospitals power stations, water supply and waste management systems law enforcement bodies and other public services. The creation purpose of "a clever city» is improvement of quality of life by means of technology of city computer science for efficiency increase service and satisfaction of needs of residents. ICT decrease in expenses and consumption of resources, communication improvements between city dwellers and the state are used for improvement of quality, productivity and interactivity urban services. [2] technology application «a clever city» develops for the purpose of management improvement by city streams and fast reaction to challenges. [3]. Therefore «the clever city» is more prepared for the decision of problems, than at the simple "operational" relation with the citizens. Uzbekistan in the aspiration to correspond to the modern world standards has decided not to lag behind and also plans to create «a clever city» Nurafshon that in transfer from the Uzbek means Shining. The city will settle down in territory of 246.2 hectares. The project has been planned in February of last year, and will be carried out in some stages. At the first stage it is planned to construct city administration, residence **хокима** and its assistants, regional and office buildings, habitation for employees, the sports complex, accessible habitation, hospital. At the second stage the winter garden, park, a conference hall, library, a concert hall, gallery, the trading house, business offices, a museum, a building of traditional culture will be erected. At final stages will construct apartment houses, schools, shopping center, elite trading small town, hotel, a hypermarket, commercial, trading and residential buildings, fire station and branch of internal affairs. The capital and Nurafshon will be united by a high-speed automobile line. The intellectual transport system will allow to trace streams of cars on all city, to watch quality of roads, to optimise transport movement, displaying road situations on street panels and smart phones [6]. Townspeople can operate work of traffic lights depending on congestion of roads, to trace a place and a public transport arrival time at stops, and also approximate time for the spent road. The electronic militia - at any call on the panel of "electronic militia» on a card is instantly displayed a site calling, and on the monitor of the person on duty the window for registration of the message, its subsequent processing and acceptance of operative measures opens. The system will co-operate with service of electronic militia, and also with other extreme services: first aid, firemen, **газовики** and power. For them the Uniform command or situational center will be used. This system will give the chance not to disregard the uniform

reference, actively to counteract ill-intentioned calls. Electronic formation is much more functional, than standard «remote training». It will allow pupils, to students and other pupils to listen to lectures, without leaving the house. Modern technologies in an education sphere consist of a set of innovative decisions which reflect the basic tendencies of development of technologies of adaptive and mobile training. Educational online platforms and the mass open online courses, the advanced technologies of visualization and the remote access, the added and virtual reality enter into them and others. These technologies will allow to create the personalized educational programs, and also to scale the most necessary knowledge, to visualize and detail training process. Thus educational process becomes much more effective. The electronic public health services will allow all medical institutions to work under uniform standards. This system automates all processes of medical services to the population information support. Inhabitants will have electronic medical card of the patient, electronic recipes, prophylactic medical examination, the account of pregnant women etc. In addition to the aforesaid electronic public health services will include uniform base of patients by means of which possibility for doctors is created at the population reference in medical institution, in particular specialized, operatively to familiarize with the anamnesis, the pictures made earlier, spent treatment. The system of a videoconference with effect of presence will help experts to consider with details MPT and рентгенографии and to perform operation under a remote management of the highly skilled surgeon. Clever housing and communal services will allow to supervise works of buildings, will supply with automatic coordination of work of systems of heating and air-conditioning, system of intensity of street and access illumination depending on time of days, system of the account of power resources, effective service of garbage tanks. Development of "clever" city transport system, occurrence of new transport services and types of transport, monitoring systems and traffic control, various appendices for calculation of an optimum way improves a transport situation and raises mobility, and also reduces time for overcoming of distances. Introduction of technological decisions in Nurafshone «clever transport» provides areas: the automated control system of traffic and monitoring of parameters of transport streams, including monitoring of traffic conditions in a mode of real time; software for management of public transport; the automated system of informing of participants of traffic about road conditions and situations, about public transport train diagrams; safety system on public transport; introduction of the technologies providing information transfer: Actuation mechanisms and standard communication facilities 5G, networks of the broadband Internet and other elements which provide data transmission to a place of their accumulation and storage; introduction of city platforms of the Internet of things for «a clever city»; technology «Clever parking», defining a site and remoteness of empty seats for a parking; systems of electronic payments for using

transport and roads; continuous monitoring of a situation at realization of passenger transportations. Clever formation for Uzbekistan is the innovative technologies including a set of technological decisions in the form of educational online platforms and mass open online courses, the advanced technologies of visualization and the remote access, added with a virtual reality, and others. Introduction of technological decisions «Clever formation» means: educational systems on the basis of artificial intelligence with possibility of testing of the trained; System of intellectual recognition of the person; remote formation and electronic training; electronic magazines on all educational levels; systems of integration online- and of lain-techniques; technologies of adaptive and mobile training. The clever medicine is the centralized system in which the full cycle of information support of rendering of medical services to the population is automated. Introduction of technological decisions «Clever medicine in Uzbekistan means: uniform platforms of the biomedical given patients; conducting network medical cards; remote diagnostics. Systems of remote monitoring of a state of health of the person on the basis of the medical Internet of things and mobile appendices; virtual prophylactic medical examination; virtual hospital service; electronic recipes; medical aid in-home with telemetry and wireless communication use; scientifically-demonstrative medicine (with application of devices on the basis of artificial intelligence and technical innovations in telecommunication sphere); fee on the basis of results of treatment (the quantity of visits to the doctor, and the reached result is paid not); Introduction of technologies of artificial intelligence for the analysis of the medical data, forecasting of disease, a course of course of disease and recover; the integrated medical aid stations (with GPS and mobile platforms), allowing to trace stocks of medicines in a mode of real time. The clever power system in Uzbekistan - is steady, economically effective and reliable power system in which manufacture, the infrastructure and energy consumption are integrated and are co-ordinated by means of service, consumers and stimulation of technologies. Transition to use «clever power («clever distributed networks», "clever control and measuring systems» [6]. And power effective technologies ("clever lamps", "clever illumination») will lead to economy of the consumed electric power, decrease in losses from breaks in its giving, to decrease in breakdown susceptibility and capital expenses for the equipment, and also to improvement of quality and reliability of electric systems. Introduction of technological decisions Clever power system means the system of data gathering and operative dispatching management; a control system of emergency switching-off; a control system of mutual relations with the client; geo information system; independent sensor controls for pressure monitoring; digital platforms of the Internet of the things, providing integration of devices of different type, gathering and a predictive analytics of the data; hybrid batteries, superconducting stores, lityum accumulators of new generation; Clever measurement systems, the analysis of consumer

activity; new analytical settlement and payment services (with development of corresponding financial technologies); intellectual systems of the account of consumption of power resources. Clever water supply and water removal in Uzbekistan this management of water supply on the basis of the online hydraulic models, the automated water fences, water removals and the automated detection of leaks by integration of systems of distribution, safety and control, management of storm streams and system of the prevention of flooding. Introduction of technological decisions in area provides Clever water supply and water removal: uniform information system by introduction of geographical information system; system of the account of consumers and volumes of the rendered services of water supply and water removal; systems of electronic versions of route charts of water and sewer networks; systems of water supply and water removal by installation in networks of electronic gauges and pressure regulators; systems of automation of work - the central dispatching services and monitoring conducting in a mode online; systems of switching-off of water supply in case of leaking detection; Systems of overlapping of cranes of heating of all house in case of an emergency; systems of switching-off of pumps of pumping of water of water supply in case of failure detection; control systems of a water level in memory system by management of work of pumps and cranes; introduction of technologies of water supply with an establishment of a nozzle for cranes and touch the mixer. Clever housing and communal services are steady and economically effective system of housing and communal services in which maintenance and consumption of municipal resources and services by the intellectual account, monitoring and control and is co-ordinated through the service considering also interests of consumers and development of technologies. Clever housing and communal services provides: automation of process of removal of indications of counters with their subsequent transfer to corresponding instances; information transfer systems on devices of the user about a condition of power supply of the house; systems of special services and private offices for control over quality of utilities; information systems, introduction of smart-counters (clever devices of the account) for data exchange maintenance between consumers of municipal resources and their suppliers; systems of monitoring of payments; control systems of an infrastructure; Systems of revealing of assignments of power resources and their prevention; systems and methods of increase of power efficiency; systems of decrease in level of an expenditure of water, depreciation of water supply by application of water saving up technologies; open platforms of consumer services.«Clever building» are innovative technologies in the field of the building, the including organizational, prospecting, design, construction and starting-up and adjustment works connected with creation, change or an object pulling down. Clever building mean the system of monitoring and an operational administration at building; systems of simplification of process of building and reduction of terms of erection of objects;

standards of building of modern and effective habitation; new building materials; system of the design documentation for building; application of price-work and by the job - bonus systems of payment; visual modeling of processes of building; control systems of a warehouse. The clever house »is the intellectual control system, allowing uniting all communications in the house in one, operated the artificial intelligence which is programmed and adjusted proceeding from requirements and wishes of the master of the house. Clever house in Uzbekistan means the security and fire alarm system; the access monitoring system; control of emergencies (leak of water, gas, failure in the electric system); management of internal and street illumination; power consumption control, restriction of peak loadings and distribution of loadings on power line phases; management of sources of reserve power supplies with application of devices of power savings; remote monitoring and management of all systems of the house through the Internet; information transfer about work of system of water supply of the house on smart-devices of the user through the GSM-module; Intellectual touch systems of monitoring of the expense of heat, management of air-conditioning, optimization of distribution of heat; remote control by processes of designing of building objects in a mode of real time. Clever urban district it is innovative decisions and the systems directed on working out and entering of corresponding offers in public authorities on places on actual problems, exciting the population. Introduction of technological decisions« Clever urban district in Uzbekistan means: the debugged functioning of system of interaction of townsmen and representatives of executive power, an information openness of city administration; activity of citizens in management of a city; an urgency of the documentation of strategic planning of a city; high attendance of official sites of city administration; the electronic identification card with combination of means of payment; a wide spectrum of application and use of high technologies, a high-speed network the Internet; access to Wi-Fi, presence and quality of municipal mobile appendices; systems of payment of local taxes and tax collections; Use of gauges and modern methods of the notification of citizens for giving of references and complaints. Clever urban district this introduction of high technologies of clever city in an existing infrastructure with a view of

improvement of quality of life, comfort and safety maintenance, and also optimization of expenses of a city and inhabitants. Clever urban district in Uzbekistan means: the debugged work of Internet services for a call and taxi payment; possibility of monitoring of the road traffic in a mode online; presence of a network of filling stations for electro mobiles; service on granting of services cashier; activity and quantity of users of a network the Internet; application of electronic cards of pupils; availability of the data about a labor market; participation of the public in elimination of consequences of unapproved emission of garbage.

Conclusions. Within the limits of the project the set of modernizations is planned still. Creation of clever city is planned to finish by 2025. Summing up, it is necessary to notice that Uzbekistan aspires to become every year to more modern, caring of convenience and safety of citizens. The clever city becomes one more acknowledgement in it multistage long process.

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