

# Information technology at the service of city management in Russia

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## Abstract

Today in Russia, the problems of effective urban development and urban infrastructure management are relevant. To solve these important tasks, information technologies are being introduced in municipalities, and therefore, the quality of work and productivity of city services are being improved, resource consumption is being reduced, and communication between city residents and local authorities is improving.

Moscow is a metropolis that has all the necessary information, intellectual and financial resources to successfully solve the important task of improving the efficiency of city management. Now in Moscow there are more than 16 thousand access points to the network in different segments: on the streets of the city center, where there are many tourist routes, in parks, libraries, museums, cinemas. By the number of access points to free Wi-Fi, Moscow has become one of the world leaders. A new task for the Government of the capital is to improve the quality of the network. For this, a single Wi-Fi operator has already been created, the task of which is to combine all segments created by different operators on a single digital platform. Thanks to this, users will no longer have to re-authorize, switching between access points.

The article talks about the problems and prospects of implementing information technology for managing various aspects of the life of a metropolis. The introduction and innovative use of information technology helps to improve the quality and efficiency of management, reduce administrative costs and improve the level and quality of life of the population.

**Keywords:** information technology, digitalization, smart city

## 1. The role of information technology in city management

By 2050, 67% of the world's population will live in cities. Already, many megacities of the world are overpopulated. Local authorities often do not cope with the collection of household waste, the supply of communal resources, and the provision of transportation services. To provide high-quality urban services to the population, Russian municipalities are increasingly introducing various information technologies (IT).

IT allows the city government to effectively interact with local communities and urban infrastructure, and find out what methods can improve the quality of life of citizens. The data obtained is processed and analyzed, and the collected information is the key to solving the problems of ineffective city management.

Many cities actively use these technologies to optimize infrastructures and services, make informed management decisions, stimulate the development of the economy and social sphere, expanding the range of public services. Modern information technologies significantly increase the quality of providing citizens with educational, medical and other social services.

In Russian cities, attempts are being made to introduce certain elements of the "smart city". So, some "smart services" in the field of traffic management, utilities, the formation of a unified urban information systems implemented in Moscow; large-scale projects for the implementation of "smart systems" in the field of security and rational management of urban utilities are being launched in St. Petersburg, Kazan and other cities. Implementation of "smart" technologies in Russian cities involved in major international IT companies such as IBM, Microsoft, Cisco and others.

Discussion platforms, forums discuss the issues of data collection and processing, the introduction of artificial intelligence, big data, various digital integrated solutions related to the management of megacities, ensuring the safety and comfort of residents.

The main document determining the strategic development in the field of digital technologies is the national program "Digital Economy of the Russian Federation", thanks to which the digital economy is actively developing in Russian cities.

Due to the rapid process of digital transformation of almost all important areas of the city's governance, citizens receive an equitable and reliable data transmission environment, that is, wireless Internet access in places of mass presence of people, for example, in multifunctional centers providing public and municipal services to the population.

The issues of using the technology of distributed registries in the public sector are being studied, which will completely eliminate the bureaucracy, many times accelerating the receipt by citizens of all types of public services. First of all, this concerns the sphere of property relations, for example, the conclusion of agreements on the lease of municipal property and its privatization. For example, in St. Petersburg, by 2024, it is planned to implement a complete digital profile of a citizen using a blockchain. (Popova, 2019). So far, the main problem is the lack of legal regulation of the use of cryptotechnologies, including in tax and accounting. The legislation in the field of public procurement also does not allow fully and with the necessary speed to work with innovations. Therefore, to achieve these goals, pilot projects are needed that will test new technologies. In our opinion, public-private partnership is promising in this area.

Consider the experience of implementing IT on the example of Moscow, which was included in the group of Russian cities with a very high development of online services in the field of e-government.

## **2. IT implementation in Moscow**

Since 2010, the Moscow government has been implementing a large-scale program to create a modern IT infrastructure. Last year, Moscow Electronic School entered the list of 100 major educational projects in the world. According to a study by PricewaterhouseCoopers (PWC), Moscow outstripped New York, London, and Tokyo by the number of free Wi-Fi points, becoming one of the three world leaders. (Melnik, 2019) More than 330 government services are already available to Muscovites in electronic form.

Moscow was recognized as one of the three cities in the world whose population is more than others with a fairly high level of development of digital services, according to a study by the British audit and consulting company EY, "Satisfaction rating of digital services in large cities of the world. In addition to the Russian capital, the three leaders included London and New Delhi. (Blinova, 2017) In total, as part of the study, the company analyzed the mood of users of digital services in 11 cities of the world, in each of which at least 300 active users of digital services were interviewed. The questions concerned the digitalization level in the field of transport, public utilities and public services, financial and technical services, as well as in the framework of information services and access to public Wi-Fi. In terms of satisfaction with the digitalization of services, Moscow went around New York, Hong Kong and Singapore.

According to the results of the study, the lowest rating among users of digital services in Moscow received financial services. In this case, the attitude was evaluated, as well as the level of development and use of such solutions as mobile applications of banks or insurance companies, mobile electronic wallets, etc. On the other hand, in Ottawa, Astana, Wellington, and other participating cities, the level of satisfaction with these services is even lower. As for the digitalization of transport, housing services, as well as such an option as public access to Wi-Fi, here Moscow also received fairly high marks. (Blinova, 2017)

In the capital of Russia, work continues on the digital strategy of Moscow, Smart City - 2030. It is proposed to use two indexes as important indicators of the strategy: quality of life and quality of the urban environment. They allow you to comprehensively assess the development in all areas of the Smart City - 2030 strategy (Human and Social Capital, Urban Environment, Digital Mobility, Urban Economics, Security and Ecology, Digital Government), as well as compare the quality of life in the capital and other cities of the country .

In general, "Smart City - 2030" is a high-level strategic document that is being developed by the Moscow Department of Information Technologies with the involvement of experts, the business community and citizens. The document defines the goals, objectives and

directions of further development of Moscow as an innovative smart city of the future. (Moscow - Smart City, 2019)

A unique ecosystem is being created in Moscow - a set of digital services, services and capabilities, platforms for business interaction with the city, consumers and partners, the key element of which is a personal account on the official portal of the mayor mos.ru. With its help, entrepreneurs can receive 90 public services and services, more than half of them exclusively in electronic form. In the near future, the personal account of legal entities will be updated, it will become much more convenient and functional. The portal mos.ru will combine all the digital opportunities that the city currently offers to business, including services for small businesses, the capabilities of the portal of suppliers and many others. (Melnik, 2019)

### **3. Problems and prospects of IT implementation in Moscow**

The introduction of modern technology requires a major infrastructure upgrade. One of the key projects is the creation of a 3D map of Moscow. In the future, this technology can be used to build routes for unmanned vehicles or aircraft. For urban planning and city management, it is almost indispensable. For example, it is possible to select a specific point on the map and get all the information about this territory: about accomplishment, urban development, underground utilities, documentation. This function helps the city government to quickly make management decisions and monitor the execution of orders. In the future, all projects implemented in Moscow will initially be “embedded” in a 3D city, where they will evaluate their impact on citizens. It will be possible to calculate the load of the building on the existing infrastructure of the city and, for example, evaluate how much it fits into the architecture of the quarter.

A large volume of electronic services also involves a large number of cyber threats: the more services and information systems become in the city, the more acute the question of ensuring the security of the information that is processed in them. Fail-safe data processing centers (DPC) of the Moscow Government are used to counter attacks. A security system has been built for data centers that allows protecting the information systems located in them.

The largest project is the implementation of the 5G communication standard. Until the end of this year, four pilot segments will be operational on Tverskaya Street, Vorobyovy Gory, VDNH, as well as in Gorky and Skolkovo parks. These will be permanent pilot zones where citizens will be able to get acquainted with the opportunities that 5G will give the city, the introduction of which will give impetus to the development of distance medicine, the Internet of Things, unmanned vehicles and other technologies. (Melnik, 2019)

Projects in the field of artificial intelligence (AI) are planned in the capital. Moscow becomes precisely a “data driven city”, that is, a data driven city. Every second, metropolitan IT services accumulate a huge amount of data that is important for operational management

decisions. Already now they are used in an intelligent transport system: it can regulate the phases of traffic lights depending on traffic intensity and even launch a “green wave” for public transport.

In the field of artificial intelligence, 15 areas have been identified in which projects using AI are implemented. For example, the virtual operator of the Citywide Contact Center is able to search for an evacuated car, report the readiness of documents to the MFC, or, for example, tell the date of disconnection of hot water. The robot already processes about 40% of calls received on hotlines. (Melnik, 2019)

Any project of a “smart city” accumulates a huge amount of information about citizens, which is considered personal. Or maybe not all personal information needs protection, maybe it is more expedient to divide personal data according to the degree of their “secrecy”? Let's say the first degree is the most general information about a citizen, which includes the last name, first name, patronymic, registration address, home phone number. Such information, including TIN, should be open, because we need to know who lives next to us, whether he pays tax, etc. ... At the same time, sensitive personal information containing biometrics, medical history, cash flow accounts, of course, need special protection. If we divide personal information by degrees, we will sharply reduce the costs of its protection, and we can reuse the data itself, without requiring coordination and any efforts of collectors each time. In our opinion, data collected in the interests of the state should be reusable, and their openness will help ensure this is most simple.

It should be noted that the current regulatory framework in the part of Law 152-ФЗ “On Personal Data” does not provide for any opportunities and clear mechanisms for using the identification of citizens’ PD, which, in our opinion, is a serious omission. Unfinished laws and their slow adoption are a big problem in the digital economy. The laws of the digital economy themselves are not enough, of the 30 planned for the current year, only two bills were passed. (Popova, 2019)

An important task is the development of super services. It is necessary to ensure seamless and harmonious integration of existing services both in capitals and at the federal level. A citizen should not understand which regional service and which federal service, and why it is impossible to get them all on one portal. The user should not enter the same information about himself on different resources - on the contrary, with his consent, the information should be available on the portal or in the application that he is used to using.

Another important area in the field of IT is import substitution. It is necessary to use Russian software and open source technologies for the development of urban services. It is important that the transition to other software is seamless and that users have no problems.

## Conclusions

Today, the key task of the municipalities of the Russian Federation is the creation of a single IT platform, which should become the basis for the development of smart cities. In the future, technological solutions will begin to develop more actively, not only at the expense of budget funds, but also as a result of targeted investments by businesses and citizens. Co-financing through the municipal-private partnership method has enormous prospects for the city. There is also an educational perspective in this - the townspeople will begin to relate to city projects in a different way. It is convenient to monitor future ownership rights to the objects of the "smart city", taking into account the deposits of citizens on the principles of blockchain.

The most important factor in the effective solution of these problems will be people, because the training and retraining of personnel for digital transformation is not only the advanced training of municipal servants and workers, this is a change in the consciousness of every citizen, and an increase in his digital literacy.

And, of course, it is necessary to predict all the consequences for the city and the local community of large-scale digital projects, this requires a dialogue between all subjects of the digital economy: government, business, educational organizations, and foreign colleagues. This is how understanding is developed, what needs to be done in the first place, and what resources are available for this.

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