



SMART CITIES: THE COMBINATION OF TECHNOLOGY AND ARCHITECTURE

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Abstract: the 21st century is a century of urbanization and technological progress that seeks to make cities more accessible, safe and environmentally sustainable. The Smart city concept is aimed at optimizing urban management using information technology, efficient use of resources and improving the quality of life of the population. The concept is based on IoT (Internet of Things), artificial intelligence, large-scale data analysis, and automated systems.

Keyword: information, smart, City, intellect, concept, building, innovation, urbanization, resource.

Basic principles of Smart cities

1. Management – urban infrastructure based on information technology is analyzed in real time and efficiency is increased.
2. Energy efficiency is the reduction of carbon emissions through the use of alternative energy sources.
3. Environmental Protection-air quality monitoring, waste recycling and expansion of green areas.
4. Intelligent Transportation Systems-Automated Traffic Management and environmentally friendly vehicles.
5. Water and waste management – improvement of water supply and waste recycling systems using Smart sensors.
6. Digital services-the management of urban services through electronic platforms and the creation of accessible opportunities for the population.
7. Security systems are surveillance and emergency detection systems based on artificial intelligence.
8. Population participation-interaction with citizens through digital technologies and ensuring their active participation in the process of Urban Development.

Prospects for the development of Smart cities

In the future, smart cities will continue to develop with technological innovation and maintaining an ecological balance. With artificial intelligence and automated systems, energy distribution and resource utilization will be more efficient.





In the process of innovative urbanization, the following areas remain priority: - Achieving carbon neutrality-the development of energy sources that do not harm the environment.

- Use of biomaterials-work with environmentally friendly building materials.
- Increased cybersecurity-the protection of smart systems and the stability of urban management.
- Automation of urban infrastructure-improvement of real-time management systems using IoT and artificial intelligence.

Intelligent public transport, solar batteries and a unified security system are not a fantasy for some cities, but a reality. Here is a valid question: “What is the difference between smart and ordinary cities?” There are several approaches to the notion of “Smart city”, however, it always represents a point of population enriched by technology. The essence of those technologies is clear, here

devices interact without human participation with the outside world, but serve for its well-being. A simple example is a street lamp that turns on when there is not enough natural light. The goal of smart cities is to make the life of citizens more comfortable and safer, as well as to save city finances and territory. For example, with smart lanterns, city streets are safe even at night, but a minimum amount of money is spent on electricity, it will not burn for nothing until it gets dark.

In the ideal smart city of the future, technology welcomes residents at every step, they form a single ecosystem and are responsible for all aspects of human life: from public transport to waste recycling.

Technologies that bring cities to the level of "Smart City" are followings:

Data centers, that is, a single database, can compare and use different information when necessary. For example, when they call the rescue service, they can get information about the location of the injured person, and when they are admitted to the hospital, they can get information about their medical records. Another case, when someone fires a pistol on the street, the information can automatically reach the police with a picture of the suspect taken from the camera.

2. A universal city app: all the necessary information for urban residents can be combined in the application. Through it, a person living in a smart city can call a taxi, make payments, inform the government representatives about the bumps in the road, and at this moment they can learn about the information in which part of the city there is traffic jams and empty spaces in the parking lot. This vary program is currently in operation in the city of Chicago.

3. Driverless cars: Tesla, Uber and Google are ready to use their technologies on the roads. Driverless cars that count road signs will one day replace manually





controlled vehicles. However, in a smart city, it is also possible to work in a different way: such cars are connected to a network and route planning is done based on location.

It should be much safer. Self-driving cars can also receive advance information about accidents on the road and empty parking spaces.

4. Smart parking spaces: A study by the American Society for Intelligent Transportation shows that 30% of traffic jams are caused by car enthusiasts' long search for a parking space. The concept of "Smart city" makes easier this procedure using this app. Special sensors can measure parking time with precision to the second: the amount of money is also automatically removed from the card.

Parking sensors are used in many places in the USA and Europe: the system was first implemented in Paris and Kansas City.

5. Solar batteries: Taking care of ecology is an essential point of smart city, therefore, in almost all projects a special attention is given to the alternative variants of taking electrical energy. Municipal and private panels are a compact solution. For example, in Fujisawa Sustainable Smart Town, such panels are installed in almost every house. What does a smart city look like? we have mentioned that the term "Smart city" refers to various residential areas. For instance, Moscow city has also its own project: Moscow 2030. Many innovations have been introduced in major cities of America, Asia and Europe, including Singapoure, Dubai, Barcelona, Louisville and Chicago. A number of innovations

Conclusion: Smart Cities are not only the introduction of modern technologies, but also a new stage of improving the quality of human life, ensuring environmental sustainability and rational use of resources. Smart infrastructure, environmental environment and digital services will harmonize in the future smart cities, and the urbanization process will be more innovative.

