

## Methods for Developing Smart City Systems in Uzbekistan

Rakhatullaev Valijon Farkhadovich

Resercher, Tashkent University of Information Technologies, Independent

### ABSTRACT

In this article, we analyze the development of smart city systems in Uzbekistan. The trends and perspectives of integrating information and communication technologies (ICT) into urban environments in Uzbekistan are examined. The criteria of trust, transparency, and accountability, specific to corporate governance, are gaining importance in improving the investment environment, ensuring financial stability, and promoting sustainable economic growth.

### ARTICLE INFO

**Received:** 10<sup>th</sup> April 2024

**Accepted:** 8<sup>th</sup> May 2024

### KEY WORDS:

smart city, ICT, financial stability, sustainable economic growth, smart urbanization

### Introduction

Today, the role of smart city systems in the rapid development of countries worldwide is unparalleled. Uzbekistan is gradually implementing the development of smart city initiatives, defining its own strategies and programs. The Decree of the President of the Republic of Uzbekistan "On the Development Strategy of New Uzbekistan for 2022-2026" outlines tasks to make the digital economy a key driver in various sectors.

In particular, the strategy aims to increase the size of the digital economy by at least 2.5 times, further develop digital infrastructure, cover all settlements, social facilities, and highways with broadband networks, and enhance production and operational processes in the real sector of the economy as well as in the financial and banking sectors. It includes significant tasks such as increasing the level of digitalization to 70% by the end of 2026, expanding the software industry by five times, and increasing their exports tenfold to reach \$500 million USD.

In 2022, the State Program "The Year of Human Dignity and Active Neighborhood" outlined the task of digitalizing production and operational processes in the real sector and financial and banking sectors. On August 22, 2022, to implement the priority tasks of elevating the field of information and communication technologies, the President issued a decision "On Measures to Bring the Field of Information and Communication Technologies to a New Level in 2022-2023."

According to this decision, by the end of 2022, the coverage of residential areas with broadband mobile communication networks will reach 98%, and high-speed mobile internet coverage along international highways will reach 60%. Additionally, by building 40,000 km of optical fiber communication lines and creating the opportunity to connect an additional 800,000 households to high-speed Internet, the coverage of optical fiber communication will increase to 80%. Involving the private sector in providing electronic government services, doubling the number of users in the regions, and creating centers to equip youth with necessary skills will increase the export volume of IT services to \$100 million USD.

### Strategic Planning

#### 1.1. Formulating Strategies and Goals

For the successful development of smart city systems, clear strategic planning is necessary, including:

- **Analyzing the Current Situation:** Assessing existing infrastructure, identifying challenges, and understanding the specific needs of the city.
- **Setting Priorities:** Establishing short-term and long-term goals that address the most pressing issues.

- **Developing a Roadmap:** Creating a detailed action plan with timelines, milestones, and budget allocations.

- **Monitoring and Evaluation:** Implementing key performance indicators (KPIs) to measure progress and adjust strategies as needed.

### 1.2. Interdepartmental Coordination

Effective smart city development necessitates coordination among various city departments and services:

- **Creating Interdepartmental Working Groups:** Facilitating collaboration and data sharing between departments such as transportation, utilities, and public safety.

- **Aligning Objectives:** Ensuring that all departments work towards common goals and that their initiatives complement each other.

### Technological Solutions

#### 2.1. Internet of Things (IoT)

IoT technologies are foundational to smart cities, connecting various devices and sensors into an integrated network:

- **Smart Parking Systems:** Helping drivers find available parking spaces in real-time, reducing traffic congestion.

- **Street Lighting Management:** Adjusting the brightness of streetlights based on time of day and pedestrian presence, conserving energy.

- **Environmental Monitoring:** Using sensors to monitor air and water quality, providing data for timely interventions.

#### 2.2. Big Data and Analytics

Big data and analytics enable cities to make data-driven decisions:

- **Transportation Data Analysis:** Optimizing traffic flow and reducing congestion by analyzing vehicle and pedestrian movement patterns.

- **Predictive Maintenance:** Forecasting infrastructure failures and scheduling maintenance to prevent disruptions.

- **Energy Management:** Analyzing consumption patterns to optimize energy use in buildings and public infrastructure.

#### 2.3. Artificial Intelligence (AI) and Machine Learning (ML)

AI and ML enhance the capabilities of smart city systems by providing adaptive and predictive solutions:

- **Predictive Infrastructure Management:** Utilizing AI to forecast and manage maintenance needs for water, electricity, and transportation systems.

- **Intelligent Traffic Systems:** AI-powered traffic management systems that dynamically adjust to current road conditions to reduce congestion.

- **Public Safety:** AI-driven surveillance systems that enhance security through real-time monitoring and anomaly detection.

### Data Management and Cybersecurity

#### 3.1. Data Management

Efficient data management is critical for the successful implementation of smart city technologies:

- **Data Standardization:** Ensuring compatibility and interoperability between different systems and devices.

- **Centralized Data Platforms:** Creating centralized repositories for data collection, storage, and analysis.

- **Data Accessibility:** Facilitating access to data for all stakeholders while maintaining privacy and security.

#### 3.2. Cybersecurity

The proliferation of connected devices increases the risk of cyber threats, necessitating robust cybersecurity measures:

- **Security Protocols:** Developing and enforcing stringent security protocols for all connected devices and networks.
- **Continuous Monitoring:** Implementing real-time monitoring systems to detect and respond to cyber threats.
- **Awareness and Training:** Educating city employees and residents on cybersecurity best practices to minimize risks.

### **Citizen Participation and Social Aspects**

#### **4.1. Citizen Engagement**

Engaging citizens in the development and implementation of smart city projects is essential:

- **Public Consultations:** Holding open forums and surveys to gather citizen input and feedback.
- **Feedback Platforms:** Creating online platforms for citizens to report issues and suggest improvements.
- **Educational Campaigns:** Raising awareness about smart city initiatives and their benefits through educational programs.

#### **4.2. Social Inclusion**

Smart city initiatives must address the needs of all population groups, including vulnerable and marginalized communities:

- **Accessibility:** Ensuring that digital services are accessible to people with disabilities and those with limited digital literacy.
- **Inclusive Design:** Developing technologies and services that consider the diverse needs of all residents.

### **Conclusion**

The development of smart city systems in Uzbekistan requires a comprehensive approach, incorporating strategic planning, modern technological solutions, efficient data management, and active citizen engagement. Success depends on the collaboration of all stakeholders and the ability to adapt to evolving challenges and opportunities. By leveraging these methods, Uzbekistan can create sustainable, efficient, and inclusive urban environments that enhance the quality of life for all its citizens.

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