KAZAKHSTAN

"Digital Kazakhstan" State Program

In 2018 the Government of Kazakhstan launched the "Digital Kazakhstan" State Program (DKSP). The DKSP brings multiple digital development initiatives together and serves as a platform for transforming Kazakhstan into a digital economy. DKSP's main mission is to accelerate Kazakhstan's economic development and improve the quality of life of the population through the increased use of digital technologies, and as a result, Kazakhstan would transition from an oil economy to a data economy, with significant benefits for its population in terms of access to services and employment opportunities, among others. Conceived to be implemented over 2018-22, the DKSP supports digital development initiatives grouped into five pillars:

- Digitalization of key economic sectors to increase labor productivity and economic growth (industry and energy, transport and logistics, agribusiness, e-commerce and financial services);
- Transition toward a digital state to deliver services to the population and businesses, digitalize internal government procedures, and implement **"Smart City" initiatives**, starting with a number of selected pilot smart cities;
- Implementation of the "Digital Silk Road" with secure high-speed infrastructure for the transfer, storage and processing of data;
- Human capital development, including digital literacy initiatives aimed at students in secondary, professional and tertiary education, as well as for the general population;
- Creation of an innovation ecosystem, by supporting the creation of innovation platforms, the development of digital entrepreneurship, startups and research, the attraction of venture capital and the introduction of innovations into industry.

DKSP is currently in the process of being extended in time and scope to incorporate a sixth pillar centered on artificial intelligence (AI), to enable the country to implement a step-change in decision-making and the delivery of services that take advantage of the exponential growth in data, which can't be leveraged effectively with more traditional analytical tools.

Smart city initiatives

The country's urbanization rate is Central Asia's highest, at 57%, and its urban infrastructure is aging. The country has 14 cities of over 200,000 inhabitants, evolving in what is a largely dated infrastructure. Furthermore, Kazakhstan's cities are particularly vulnerable to several climate change-related risks, notably urban flooding, water scarcity, landslides and extreme heat, in addition to other natural hazards, notably earthquakes, placing an additional burden on the infrastructure. Modernizing and building resilience into the urban infrastructure, supported on deployment of digital technologies, is key to Kazakhstan's leveraging its position to enable high value-added economic activities outside traditional natural resources and fossil energy sectors.

SMART CITIES

Smart city – is an initiative to improve the management of city resources, services and infrastructure through the introduction of innovative solutions to create a comfortable environment for citizens.

In 2019 the Reference Standard for Smart Cities of the Republic of Kazakhstan was approved in order to standardize the approach to building smart cities. The priority areas of life in a smart city are security, transport, housing and communal services, education, healthcare and city management.

The concept of "smart city" includes a large number of components for creating a smart environment and smart management, from smart lighting to smart stops. Successful Smart City cases include Smart Astana (Nur-Sultan), Smart Almaty, Smart Aktobe, Smart Petropavl.

The concept of Smart City involves the introduction of information and communication technologies in the processes of urban management, which, in turn, stimulates the development of digitalization in the country.

Digital Nur-Sultan: what has been done in the IT industry of the capital in 2021

Actually, all educational and healthcare facilities in Nur-Sultan are 100% equipped with a video surveillance system. In the capital's medical organizations, special plates with a QR code have been installed on the doors of doctors.

In 2021, the approbation of QR bracelets for persons registered for health reasons was also launched. In case of critical situations, it is needed to scan the QR code on the bracelet through the Smart Astana mobile application, where complete information about the patient appears from the Damumed system. Moreover, at the time of scanning, the trusted person receives an SMS notification about an alarm situation indicating the geolocation. This pilot project is being tested in Polyclinic No. 15, where 140 QR bracelets have been donated.

12 antenna-mast towers have been installed in Nur-Sultan to increase the level of communication. For the first time Kazakhtelecom JSC introduced FWA (Fixed Wireless Access) wireless Internet technologies into houses. This is a 4G based technology used in areas not covered by fiber optics. Work on installing FWA in Nur-Sultan will continue.

Implementation of the Intelligent Transport System (ITS) project in the capital:

This project has been systematically implemented since 2013, constantly developing and expanding. By 2023, the coverage of the city with the ITS system will reach 85%.

Implementation of the project of the digital twin of the city of Nur-Sultan: a geographic information center of the capital was created.

The project has been almost 100% implemented, more than 16 thousand km of engineering networks have been digitized. The land plots of the capital with an area of 801 sq. km with an accuracy of 3 cm per 1 pixel have been digitized. As a result of engineering and geodetic work, about 144,000 wells of main and intra-quarter networks were filmed.

Digital models of the terrain and relief of the city have been fully built, 2D and 3D models of the built-up part have been built. 2D-3D technologies clearly show the load on engineering networks.

The new technology makes it possible to create intelligent building designs, see existing facilities transparently, provide control over the construction and operation of structures, and create a digital (information) model of buildings.

In addition, internal processes in terms of land relations, architecture and urban planning have been automated.

Thanks to the smart solution, new opportunities will open up in point planning of the city. The system will synchronize all data in the city into a single space and optimize existing processes. For example, automatic statistics will be visible on how business entities plan to develop in the city, where and what social facilities are needed.

The **Smart District** was launched in 2018 in the Baikonur district, the Zhastar microdistrict (Molodezhny), within the boundaries of A. Baraev, A. Kravtsov, Zh. Tashenov and T. Hussein streets, and city residents are actively using new "smart" solutions: intercom, pedestrian crossing, counters, underground garbage cans, video surveillance, barrier, recycling point, etc.

The advantage of the Smart District project is that Kazakh companies that have a smart technological solution can test it in practice, eliminate all weaknesses and bring the best version to the market.

The press service of Astana Innovations JSC reports that 37 "smart" wireless sensors were installed in the pilot mode in three metropolitan areas "Yesil", "Saryarka" and "Almaty" at once.

Now the municipal services of the city can track online cases of opening of manhole covers, monitor the fullness of garbage containers and the water level in storm sewers. In addition, temperature and humidity sensors, as well as an air quality sensor according to the IAQ index, were installed in the gymnasium school No. 22.

Operators

1. **Astana Innovations** (https://ain.kz/): Astana Innovations is working to transform the capital into a global smart city by creating an innovative ecosystem and a platform to support talents, young scientists, startups.

   Astana Innovations is actively involved in the development of cooperation between universities, scientific organizations and large technological enterprises, including foreign ones.

2. **Tengri Lab** (https://www.tengrilab.kz/en/#/): a system integrator, a company that was created to implement IT projects in the field of smart cities, big data processing, artificial intelligence, security and video analytics.

Tengri lab has a status of a partner of IBM, the world leader in software and server equipment for processing big data and artificial intelligence, and the Danish company Milestone Systems, a pioneer and a world leader in software development with open architecture. Tengri Lab is the strategic partner of the Nazarbayev University for the implementation of projects in the field of artificial intelligence.

In Kazakhstan, Tengri Lab actively cooperates with the national telecommunications operator – Kazakhtelecom JSC, the digital division of the ERG group of companies – BTS Digital, the system integrator in the field of IT, communications, automation and energy, the supplier of telecommunication and digital solutions – Transtelecom JSC, and other IT market participants.

1. **Digital Innovation and Transformation / DIT** (https://dit.kz/): IT company specializing in the digitalization of smart cities and higher education institutions.

   DIT is a developer of the ASHYQ application which function is checking visitors in public institutions for a positive PCR test for Covid-19. Ashyk enables through the use of a QR code and integration with the general database of the Ministry of Health of Kazakhstan to determine the status of a visitor: whether he is currently a carrier of the virus or not.

2. **RODES Technology** (https://rodestech.com/en3/): one of the top system integrators in the Intelligent Transportation Systems and Smart Cities sphere.

   Solutions for Smart city:

   - Integration platform
   - Geo-information system
   - Client applications, including those for tablets and smartphones
   - Resource meters: electricity, water, heat, etc.
   - Sensors of different emergency cases: gas analyzers, smoke detectors, weather stations, etc.
   - Security cameras with analytics
   - Monitoring of hazardous production facilities
   - Integrated security systems, transport security
   - Monitoring of engineering systems

3. **TargetAI** (https://targetai.kz/#): supplier of TargetEYE, an analytical platform for city surveillance cameras.

   Solutions for Smart city:

   - Public lighting operation control
   - Identification of non-working lighting devices and collection of uptime statistics
   - Intelligent transport system
   - Transport analytics

Useful links :

https://egov.kz/cms/en/smart-cities

https://ain.kz/en/home/

https://rodestech.com/en3/AQKOL%20SMART%20CITY/

https://smartalmaty.kz/