National Center for Digital Economy

Smart city technologies implementation in Russia

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Workshop ‘Subjectification of UK and Russian Smart Cities’

DAY 2: DEVELOPING A VISION

University of Salford, Manchester, UK

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Smart Cities in Russia: strategic context

- Starting from December 2018, the Government of Russia defined new national projects and formulated their goals and objectives for the period up to 2024 in 13 strategic areas:

Human Capital	Comfortable living environment	Economic growth
Healthcare (January 1, 2019 - December 31, 2024)	Safe and high-quality roads (December 3, 2018 - December 31, 2024)	Science (October 1, 2018 - December 31, 2024)
Education (January 1, 2019 - December 31, 2024)	**Housing and urban environment** (October 1, 2018 - December 31, 2024)	Small and medium enterprises and support for individual entrepreneurial initiatives (October 15, 2018 - December 31, 2024)
Demographics (January 1, 2019 - December 31, 2024)	Ecology (October 1, 2018 - December 31, 2024)	**Digital Economy** (October 1, 2018 - December 31, 2024)
Culture (January 1, 2019 - December 31, 2024)		Labor productivity and employment support (October 1, 2018 - December 31, 2024)
		International cooperation and export (October 1, 2018 - December 31, 2024)
		Comprehensive plan for the modernization and expansion of arterial infrastructure (October 1, 2018 - December 31, 2024)

Departmental project “Smart City”

- On October 31, 2017, the Ministry of Construction, Housing and Communal Services of the Russian Federation approved the departmental project on the digitization of the municipal economy “Smart City” (order No. 695/pr)
- The vision of a smart city:
  - a convenient city
  - a city where all innovations and technologies are applied to increase people’s comfort
- The project is implemented in the framework of two national and two federal projects:
  - National project “Housing and urban environment”
    - federal (priority) project “Building a comfortable urban environment”
  - National project «Digital economy of the Russian Federation»
    - federal (priority) project “Information infrastructure”
      - creation of an information resource “Bank of smart city solutions” at the expense of the federal budget
- The total funding for the project for 2019-2024 from the federal budget is RUB 1 bln (over GBP 12.2 mln)

Digitization of urban economy: expansion into the regions

- The Ministry of Construction of Russia has developed a draft guidelines for regional administrations on the implementation of the federal project “Building a comfortable urban environment”
  - it is proposed to include the digitization component in the regional and municipal programs for the modern urban environment development
  - a subsidy is provided from the federal budget – up to 15% of the total amount of funds for the implementation of the related activities
- Thus, in 2019-2024, RUB 35,8 bln (near GBP 437.5 mln) can be spent on measures to digitize the urban economy

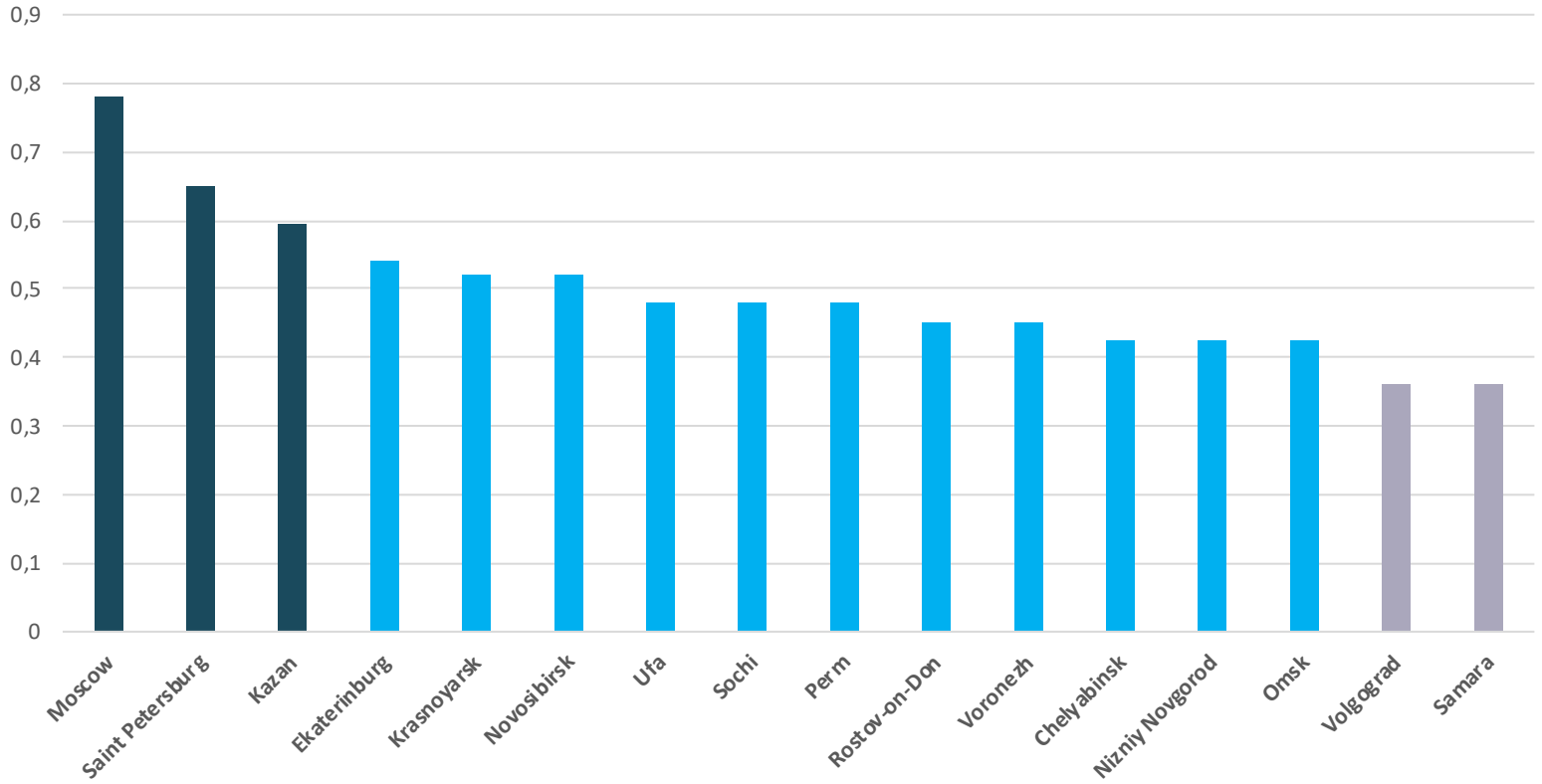
Smart city standard

- On February 4, 2019, the Ministry of Construction of Russia approved the Smart city standard (order No. 80/pr)
- The standard defines 28 smart city elements, grouped into 8 sections:
  1) city government
  2) smart housing and utilities
  3) innovation for the urban environment
  4) smart transport
  5) smart public safety systems
  6) smart environmental safety systems
  7) communication network infrastructure
  8) tourism and services

each of them includes the necessary minimum of requirements so that the respective urban economy can be characterized from the federal level as intelligent (smart) and ensuring the achievement of the goals proclaimed in the 'Smart city' departmental project

Rating of smart cities in Russia – National Research Institute of Technology and Communications (2017)

- 26 indicators in 7 areas: smart city management, smart people, smart technologies, smart environment, smart infrastructure, smart finance, smart economy (16 cities were evaluated)



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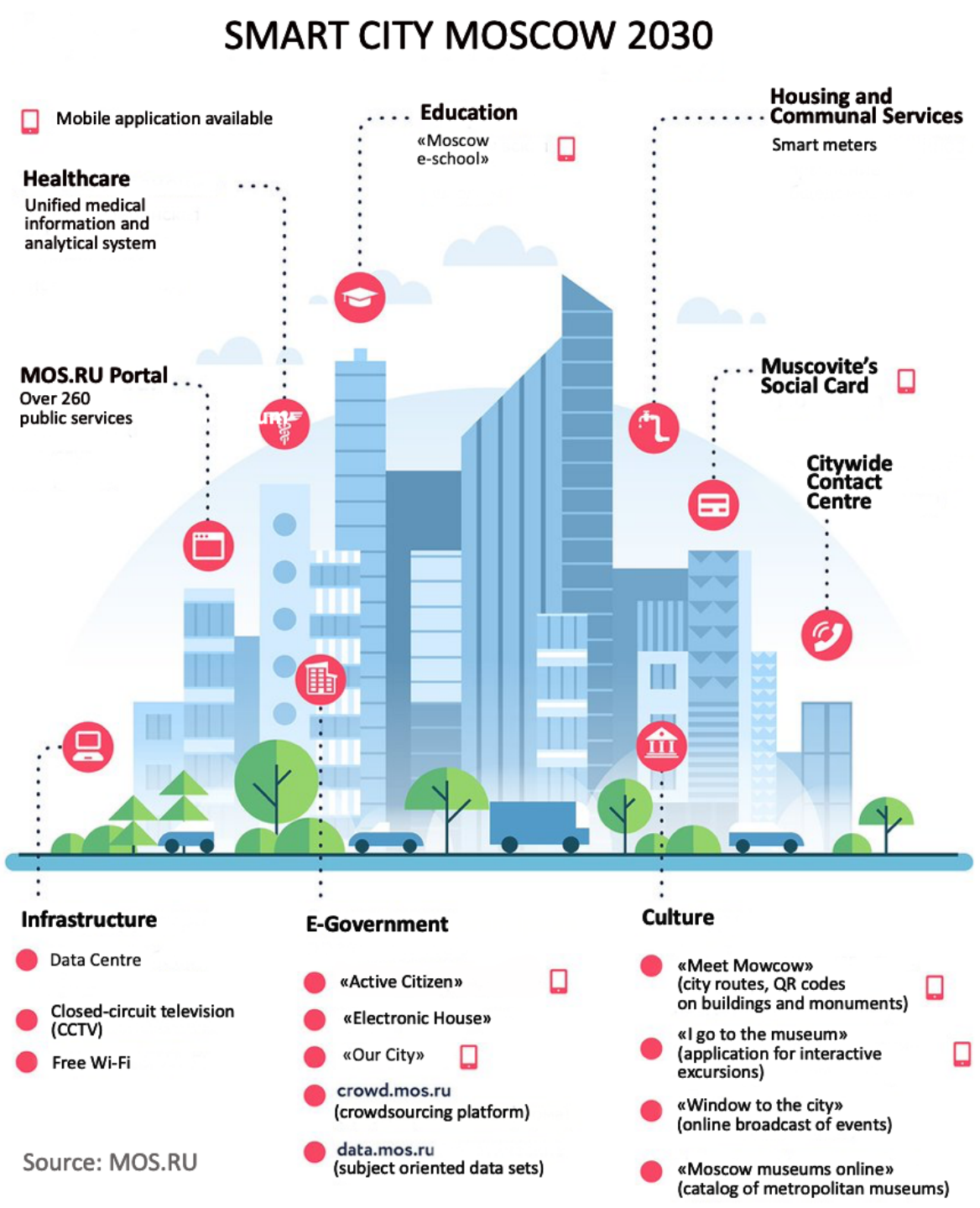
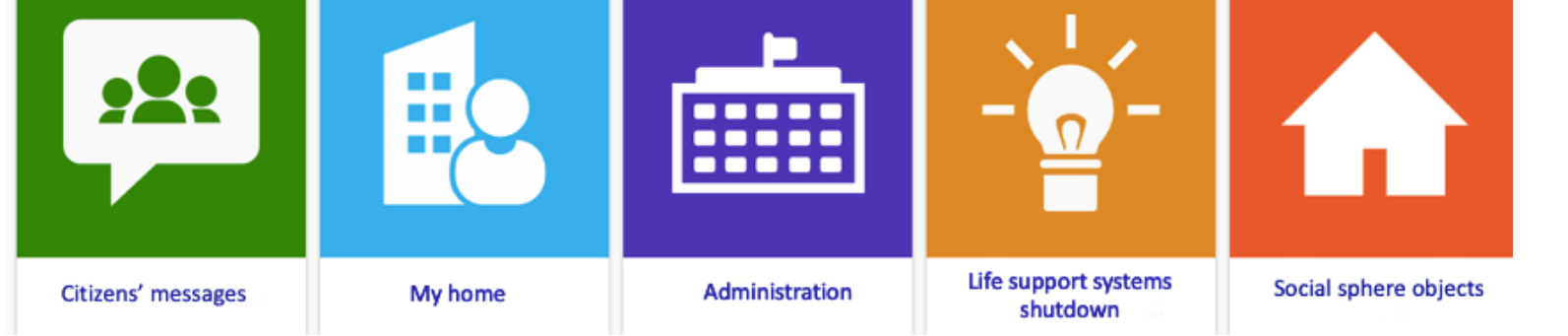
Best practices – No. 1 Moscow

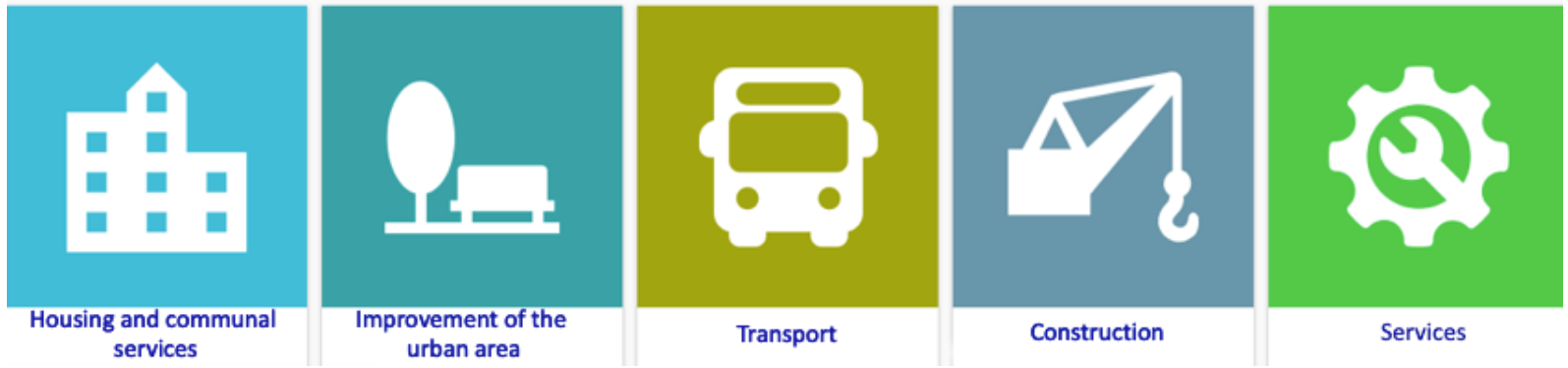
- In 2018, the draft strategy “Smart City Moscow 2030” was published
  - Defines 9 principles for the development of smart city:
    - smart city for people
    - residents’ participation in city management
    - AI to solve urban problems
    - digital technologies to create a complete barrier-free environment in all areas of life
    - joint city development based on mutual benefit for citizens, businesses, research and education communities
    - the dominance of the digital document over its paper analogue
    - cross-cutting technologies in all areas of city life
    - domestic digital solutions
    - green digital technologies

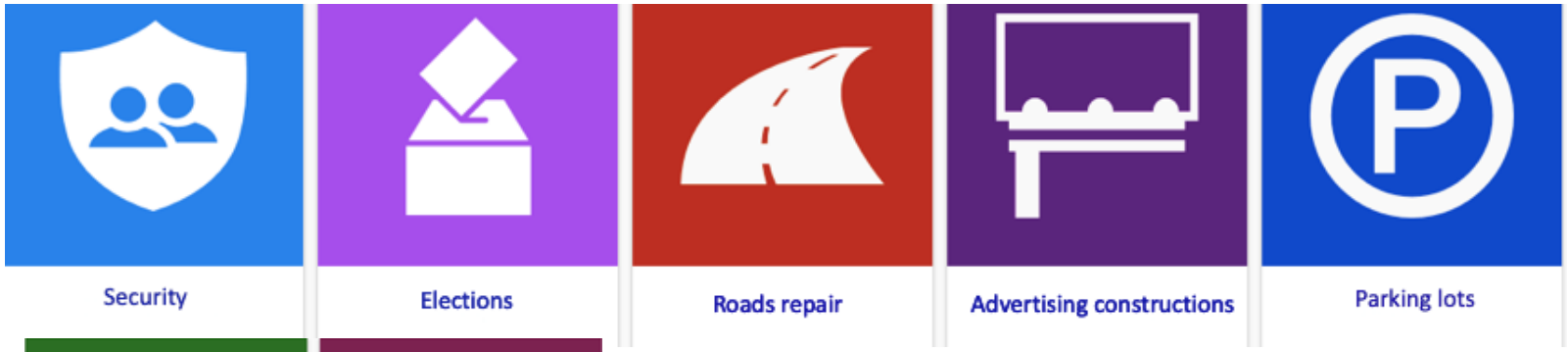


Best practices – No. 2 Novosibirsk

- Digital platform “My Novosibirsk” is created: http://map.novo-sibirsk.ru/portal
  - 16 services have been implemented, 1 is under development
  - all sections are tied to the city map, which shows thematic layers
  - through “Citizens’ messages” section, one can send messages to the city administration about the problems of urban economy and receive information on their consideration status
    - according to portal statistics, over the last 365 days, 5,310 citizens’ appeals were reviewed, 1,932 are being considered







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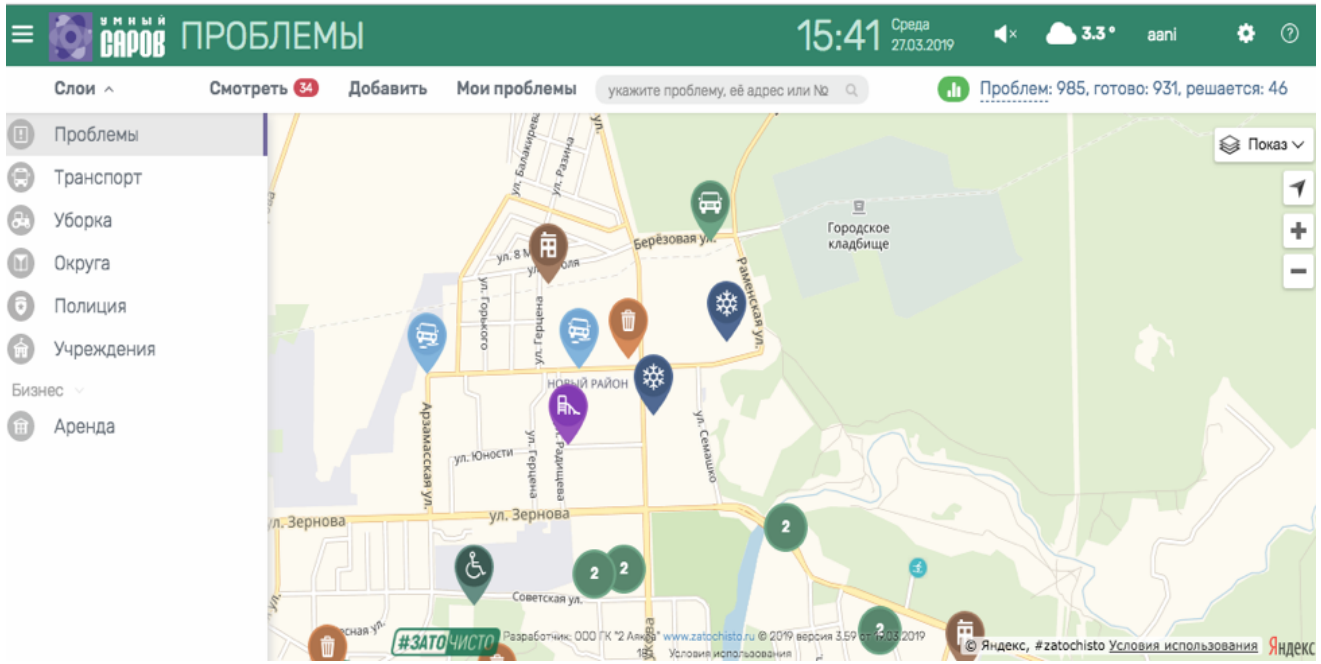
Best practices – No. 3
Sarov (Nizhny Novgorod region)

- Smart Sarov platform is implemented: https://smartsarov.ru
  - provides services not only to the city residents, but also to the municipality employees to perform their daily tasks
  - combines urban data from disparate sources into a single database
    - to manage urban infrastructure
    - to provide new opportunities for the administration, businesses and city residents
  - has 26 public and service layers, structured by modules in accordance with the elements of the smart urban environment
    - security
    - city infrastructure
    - urban areas
    - municipal government
    - socio-cultural sphere
    - citizens involvement



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SOME OF 100 REGIONAL CASES – No. 1 – TRANSPORT | Monitoring of the road network, incl. use of urban parking space

ЭКОНОМИКА

BRIEF DESCRIPTION OF THE SOLUTION

Intelligent monitoring of the road network
Increase efficiency in:
- management of the parking space of the city, incl. paid parking
- activities to identify and prevent traffic violations in terms of parking and stopping cars
- monitoring the condition of road signs, cleaning and maintenance of streets, the condition of other road infrastructure objects

Complex of automatic monitoring

SOVA

TERMS OF IMPLEMENTATION AND DATA USED

Approval of a targeted installation program for monitoring complexes based on the analysis of parking congestion foci and non-compliance with regulations, normative definition of inter-level and inter-agency data exchange, integration with external information systems (municipal administrative commissions, paid parking accounting system)
Financial and economic model: procurement within the framework of Federal Law No. 44, lease agreement with the right of redemption, concession under Federal Law No. 115
Data: vehicle license plates, time, place and nature of traffic violations, time and place of the parking session

PROBLEM SITUATION

- Ineffective management of the city's transport system due to the lack of complete, reliable and up-to-date data, incl. inefficient use of parking space in the city
- A high level of violations of the rules of parking and stopping the vehicle, incl. impaired traffic flow due to impaired vehicles
- Lack of monitoring the state of the road network, incl. street cleaning
- Reduced public safety on the roads

COST AND DURATION

Calculation of an exemplary project for 50 cameras

FROM **6** MONTHS

FROM **33** MLN RUB

DIGITIZATION RESULTS

- Managing the maintenance of the road network, incl. parking space of the city, on the basis of complete, reliable, accurate and relevant analytical data and forecast models in real time; as a result, a high level of efficiency of their maintenance and use
- Identification of more than 99% of cases of violations of the rules of parking and stopping of 25 types of violations around the clock; as a result, a decrease in the level of violations and an increase in the level of public safety
- Round-the-clock monitoring of the maintenance and cleaning of streets in real time; as a result, an increase in the efficiency of maintenance and cleaning
- Growth of non-tax budget revenues

IMPLEMENTATION EXPERIENCE

Voronezh, Belgorod, Ufa, Orel Russia), Astana (Kazakhstan)

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SOME OF 100 REGIONAL CASES – No. 2 – CONSTRUCTION & HOUSING | Improving the effectiveness of the waste management system

ЭКОНОМИКА

BRIEF DESCRIPTION OF THE SOLUTION

Waste management allows authorities to have online information on the activities of all operators with waste in a single information system, up to each container site and each car; as a result, a high level of management and effectiveness of control activities

Algorithms of the system allow developing an optimal territorial waste management scheme in compliance with the principle of minimizing costs and tariffs

TERMS OF IMPLEMENTATION AND DATA USED

Regulatory obligation of municipal solid waste operators for the transfer of navigation data, video surveillance data, and other measurement data to the regional waste management system

Financial and Economic Model: Public Procurement under Federal Law No. 44

Data: vehicle navigation data, data on specified routes, contract terms, data on apartment buildings, owners, regulations, tariffs, data on municipal solid waste operators

PROBLEM SITUATION

- Low efficiency of the regional waste management system due to its low transparency
- Insufficient quality level of territorial waste management schemes due to the use of “manual” data processing; consequently, inefficient expenses when calculating the required gross revenue
- Low quality of waste management services, the formation of unauthorized landfills and landfills in residential areas due to insufficient monitoring and control of waste operators and waste generators
- Low availability of information on the activities of waste operators
- The high level of tariffs for the residents on waste management services due to the opacity of the tariff system and confirmation of the actual costs of operators

COST AND DURATION

FROM **3** MONTHS

FROM **1,7** MLN RUB

DIGITIZATION RESULTS

- The optimal territorial scheme of waste management with the principle of minimizing costs through the use of big data technologies, mobile technologies and artificial intelligence technologies; as a result, cost reduction by optimizing transport logistics up to 30%
- Monitoring and control of compliance with schedules and routes of transportation of municipal solid waste operators, availability of contracts for the provision of services with waste generators and the generation of waste in places of accumulation in real time; as a result, the timeliness and completeness of the removal of waste, the prevention of unauthorized landfills and dumps in residential areas, the high level of quality of waste management services
- Information on the activities of the regional operator, waste operators is available (also for the residents) in real time, its fullness, relevance and authenticity is ensured
- Services for dealing with municipal solid waste are provided at economically reasonable and optimal rates.

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IMPLEMENTATION EXPERIENCE

15 regions of Russia: Moscow Region, Arkhangelsk Region, Kemerovo Region, Tambov Region, Yaroslavl Region, Sakhalin Region, Nizhny Novgorod Region, Vologda Region, Ulyanovsk Region, Ryazan Region, Penza Region, Republic of Bashkortostan, Khanty-Mansi Autonomous District, Primorsky Krai, Republic Crimea

SOME OF 100 REGIONAL CASES – No. 3 – HEALTHCARE | Improving the efficiency of the organization of the ambulance service

(the solution is possible for implementation in state medical organizations)

ЭКОНОМИКА

BRIEF DESCRIPTION OF THE SOLUTION

The solution allows to increase the efficiency of the organization of the ambulance service through the use of modern information and analytical systems using artificial intelligence technologies, which allow real-time automatic dispatching of field services, build optimal routes based on any necessary criteria: time of arrival, transportation costs , the required number of employees per shift, etc.

The solution can be used as an independent solution or integrated into any existing IT system.

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TERMS OF IMPLEMENTATION AND DATA USED

Availability of IT infrastructure, information systems with which it is possible to integrate the routing system

Financial and economic model: procurement or service model

Data: data on the working hours of employees of field services, GPS-coordinates, information about the points to be visited (time interval, address, etc.)

PROBLEM SITUATION

- Insufficient level of efficiency of the organization of the work of emergency medical services due to the opacity of their movement, non-optimal management decisions on routing and prioritization
- In the majority of field services, the routing process is carried out manually, which entails additional costs for logisticians, and also leads to non-optimal construction of routes
- High level of transportation costs for ambulance services
- Lack of responsiveness, arrival of ambulance services, high level of arrival time violations

COST AND DURATION

FROM **3** MONTHS

FROM **20%** SAVING

PILOT FREE

DIGITIZATION RESULTS

- A high level of efficiency in organizing the work of ambulance services due to the full automation of the routing processes; in more than 95% of cases, human involvement is not required
- Information about the movement and routing of ambulance services is available in real time
- Reduced transport costs - up to 30%
- Reduced average travel time - up to 35%
- Decrease in the number of delays - up to 25%
- It is possible to customize the system in order to optimize any parameters important to the customer

IMPLEMENTATION EXPERIENCE

Moscow, Moscow region

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Regional management platformization as a trend

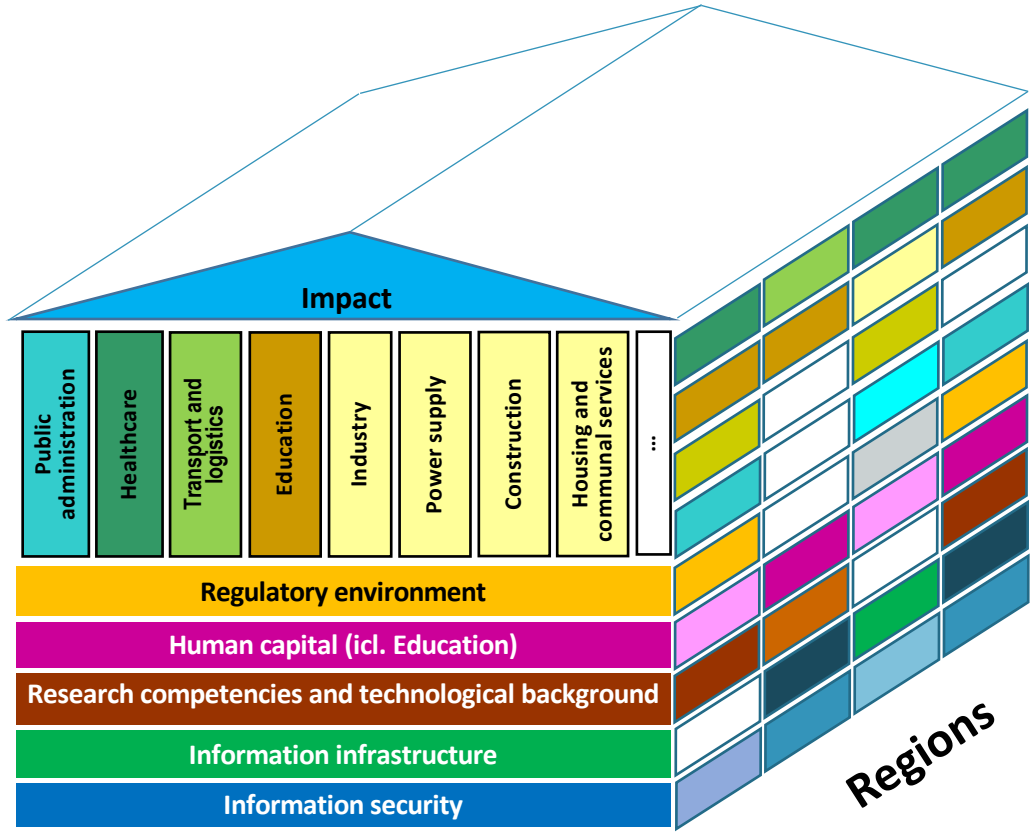
- Active development in the last 2-3 years
- In the majority of Russian regions, projects and programs for integrating digital platforms to improve the efficiency of regional and urban management and the quality of life have not yet been developed
- However, as showed above, there are a number of successful practices for creating and using digital platforms
  - the available solutions take into account international trends in digital technologies development (IoT, BigData, AI, Business Intelligence, etc.)
- Compared with regional administrations in the countries that are digital leaders, Russian municipalities underestimate a number of significant areas that influence the successful development of local digital ecosystems:
  - involvement of business communities in the creation of digital services, delegation of authority to business community, identification of regional centers of competence
  - initiation of several digital projects in order to support the most demanded in the future
  - improvement of digital services projects based on implementation results, identification and stopping of unsuccessful projects
  - integration of municipal and local information resources and services
  - support and / or creation of open source digital platforms for developing digital services and applications
  - developing digital skills and competencies of civil servants and employees of interested local companies and NGOs
  - integration with national and international information resources and platforms in thematic areas of priority for the region

Monitoring system for managed Smart City project implementation

Social and economic effects:
economic growth, competitiveness, employment, new business models, quality of services, social well-being

Use
of smart city technologies in different areas

Factors
affecting the development and use of smart city technology



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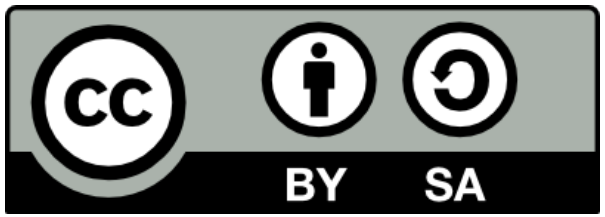

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