SKOLKOVO
Moscow School of Management

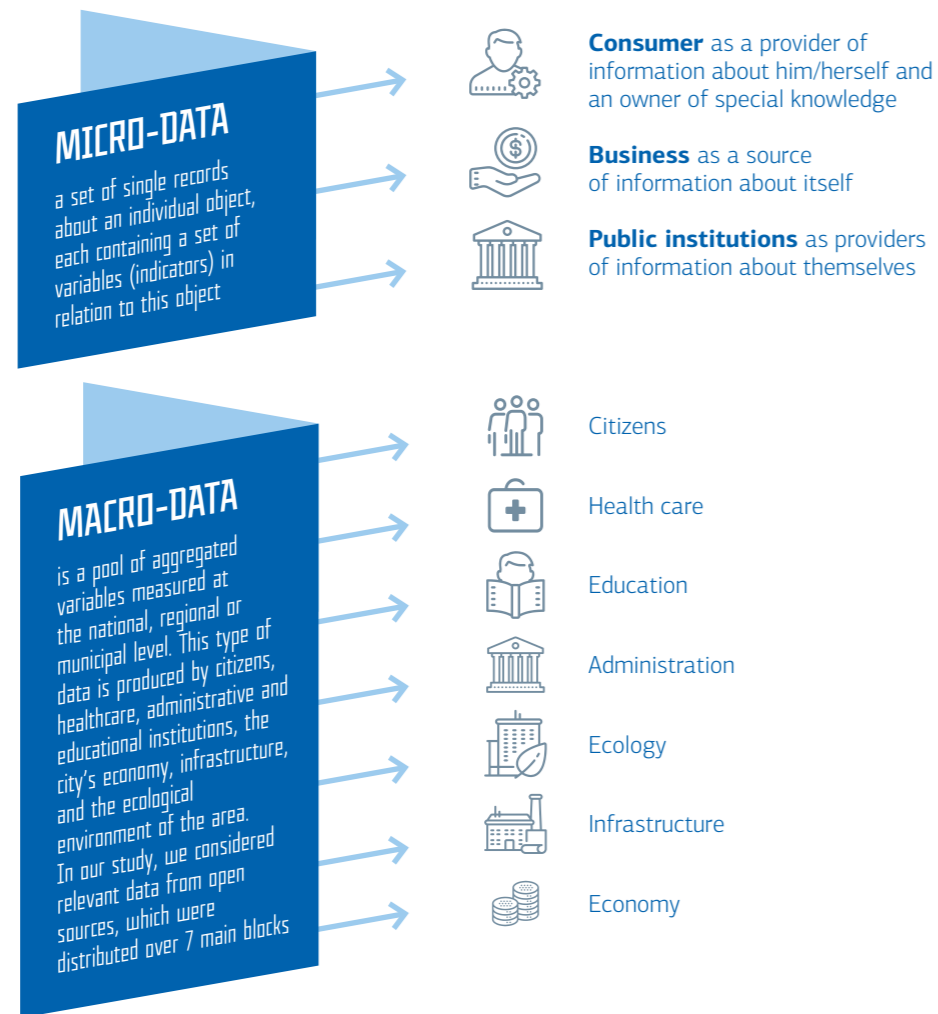# DATA-BASED CITY: WHICH INFORMATION IS NEEDED FOR IT TO BE POSSIBLE

Systematization of key Big Data sources for New Gen Cities. Urban ecosystem participants: challenges and cooperation potential

October 2019

Digital economy development affects not only business processes, but also everyday services and offerings in all areas of everyday life. Rising trends in digitalization and urbanization of the society have created the need to transform our usual understanding of cities, while increasing availability of data and speed of time-to-market have opened up opportunities for inventing new solutions. However, the lack of common view on what data is available and who is the provider and custodian of data leads to inefficient development of initiatives.

Data Driven City (DDC) is an evolutionary type of city that provides basic services to citizens in the most efficient way through an innovative approach to the organization of the urban environment that is based on the use of the latest technologies and data. Such cities are an essential part of the modern digital economy. Thus, understanding of the current state of individual, business, and government data collection processes can help relevant actors to identify the best ways to integrate existing urban infrastructure and emerging digital solutions.

The absence of cooperation between municipalities and businesses hinders productive implementation of urban projects, and discard interests of all parties involved. For effective development of urban infrastructure and improvement of the living standards of citizens it is necessary to create an **ecosystem of micro-and macro-data interaction**. This motivated Centre for research in Financial Technology and Digital Economy SKOLKOVO-NES to launch a study devoted to the systematization of existing data providers and data types in the city context in order to understand the opportunities and challenges of DDC development in Russia.

MICRO-DATA
a set of single records about an individual object, each containing a set of variables (indicators) in relation to this object

Consumer as a provider of information about him/herself and an owner of special knowledge

Business as a source of information about itself

Public institutions as providers of information about themselves

MACRO-DATA
is a pool of aggregated variables measured at the national, regional or municipal level. This type of data is produced by citizens, healthcare, administrative and educational institutions, the city's economy, infrastructure, and the ecological environment of the area. In our study, we considered relevant data from open sources, which were distributed over 7 main blocks

Citizens

Health care

Education

Administration

Ecology

Infrastructure

Economy

This study is the first attempt to systemize data sources relevant for DDC development in Russia and other countries. The results will be useful to anyone related to the urban initiatives design and implementation . In particular, data providers can identify gaps in the collected data, as well as understand which data is available to both their competitors and partners in order to formulate their own strategies related to the country's urban agenda. The state and the regulator can identify areas of the information collection, processing and usage that require additional control or stimulation.
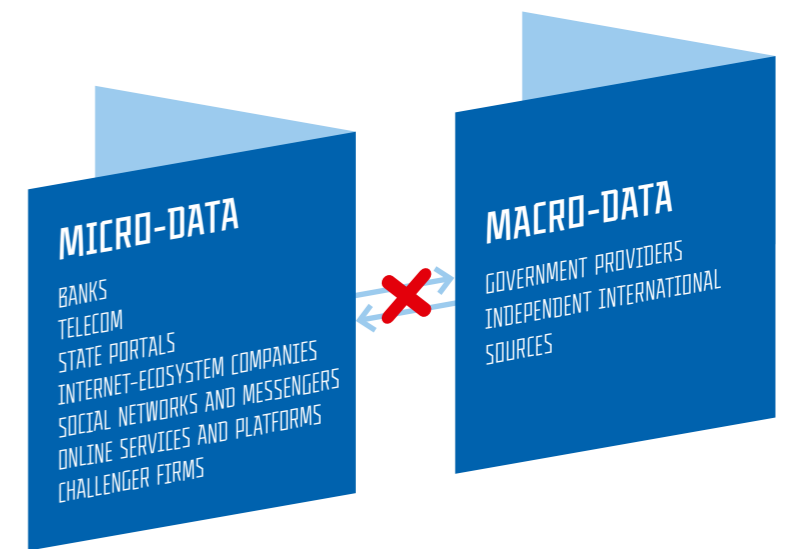
Key Findings

1 | **«Captured data» – hidden data obtained with the use of deep analytics.**

Information from this category is not obvious at a first glance. Captured data is obtained by deep and comprehensive analysis of open-source or provided data, e.g. GPS data. It is common for a person or a company neither to be aware of nor to worry about their voluntary provision and consent to the collection and analysis of such data. On the one hand, companies receive additional information that provides opportunity to create products important for the city. On the other hand, this can initiate problems related to the misuse and overuse of personal data.

2 | **Micro-and macro-data collected from different city sources exists in isolation from each other.**

Macro-data is collected mainly by government providers, while micro-data is contained mostly in the hands of tech giants from various sectors and financial institutions. Micro – and macro-data providers rarely cooperate, especially in the areas of data sharing and usage. As a result, there is lack of initiatives within the urban agenda. According to the open source data, there are few successful examples of PPP projects in Russia aimed at cooperative data usage. Moreover, open access tools (e.g., publication of detailed databases with primary sources or open API) are not widely used.

MICRO-DATA
BANKS
TELECOM
STATE PORTALS
INTERNET-ECOSYSTEM COMPANIES
SOCIAL NETWORKS AND MESSENGERS
ONLINE SERVICES AND PLATFORMS
CHALLENGER FIRMS

MACRO-DATA
GOVERNMENT PROVIDERS
INDEPENDENT INTERNATIONAL SOURCES

3 | **The approach based on the analysis of combined micro-and macro-data has a potential to enrich existing predictive models and improve the citizens' standards of living in various areas of life**

A few examples include city's transport system and the cultural life:
Transport system. Based on the number of cars in a particular city area (microdata), city administration can make a more balanced and accurate decision regarding the development of transport infrastructure in the given area (e.g., parking lots, commute interchanges). Therefore, a theoretical predictive model (macro-data on the planned number of built parking lots in the district X in 2020) enriched with microdata on real demand for parking spaces becomes more complete.
Cultural life. Different cultural city entities, such as galleries, theaters, cinemas or museums, have micro-data on visits as well as other financial performance indicators. The administration can use anonymized data on cultural events visits as well as search queries (e.g. micro-data provided by telecom operators, search engines or banks) to understand attendance trends and estimate consumer demand in order to increase cultural city events turnout.

4 | **Current challenges and problems of DDCs are related to the low financial returns on projects, as well as the complexity of data integration.**

The value of any city initiative consists of direct and indirect effects. The latter ones, despite generating a significant part of the project value, are difficult to measure in monetary terms. In addition, effective implementation of DDC systems requires a comprehensive approach and participation of both business representatives and government authorities. Furthermore, public authorities macro-data is the most widely used source. Other sources include international organizations, however, their objectivity may vary based on the chosen methodologies.

The Moscow School of Management SKOLKOVO is one of the leading private business schools in Russia and the CIS. It was founded in 2006 by members of the business community. The school's founding partners are 8 Russian and multinational firms and 11 individuals, each a leader of Russian business. Moscow School of Management SKOLKOVO offers programmes for businesses of any type and size – from startups to large multinational corporations.

Moscow School of Management SKOLKOVO ranks among the three youngest business schools to have successfully completed the complex accreditation process and has become Russia's first private business school to receive EQUIS accreditation, one of the most prestigious international accreditations for premier international business schools.

Centre for Research in Financial Technologies and Digital Economy SKOLKOVO-NES was created as an independent Russian think-tank of analysis and expertise in financial technologies and digital economy.

Centre works on 3 key areas: research projects (applied and academic), educational programmes and institutional partnerships. Academic research is aimed to be published in peer-reviewed academic journals, while applied research may be used for public discussion and policy advise.

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2500 alumni of degree and entrepreneurial programm,

22000 attendees of corporate programmes,

150 corporate clients,

150 international professors,

more than 200 research projects in the areas of education, energetics, economics, philanthropy and urban studies.

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