THE GOVERNMENT AS A PLATFORM
A (CYBER)STATE FOR THE DIGITAL ECONOMY
DIGITAL TRANSFORMATION
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This paper presents further research\(^1\) by the Center for Strategic Research on transforming the public governance system. In 2017, we broached publicly the idea of “the Government-as-a-Platform,” the idea of transforming public governance using possibilities afforded by new technologies. The Government-as-a-Platform metaphor is important for us not only in its technological aspect, even though this is what this paper is largely focused on. Of course, it was important for us to propose a vision of the future state where the governance machine is small, decisions are made fast, there are no public agencies acting as intermediaries between people and their data, there are greater opportunities for constructing individual development trajectories and for resolving real-life situations people face in their personal life and at work. It was particularly important to demonstrate how civil service itself should change during digital transformation of public service provision, of licensing, supervising, and monitoring activities, and of making managerial decisions.

Today, when digital economy and new technologies have become buzzwords, it is important to make sure that words are followed by deeds. Many countries face the question of digitizing the state, and Russia is not among the leaders, although outwardly, the lag is not catastrophic\(^2\). The state should become, on the one hand, a paragon of successful innovations for individuals, non-profits, and businesses and, on the other, it should provide an environment that is conducive to innovations, which we believe to be impossible without the public governance system perceiving the reality of digital economy through its everyday activities.

Digital transformation is impossible in a flood of paperwork, in individual offices, when duplicate information systems are created, systems that will be limited by the “walls” of their respective agencies; digital transformation is impossible unless individuals and organizations are seen as partners in handling the common task and as customers of the entire public governance system. The organizational culture should change\(^3\) both for decision-making and for developing software. “Quality,” “result,” and “client” should cease being just buzzwords. Priority should be given to civil servants mastering digital skills and knowledge and to truly comprehending the opportunities technologies afford. Such an approach links prioritizing digital transformation of public governance with the third\(^4\) priority in our proposals for reforming public governance and changing hiring policies.

In our paper, we attempted to make our metaphorical concept as down-to-earth as possible by planting it on technological and governance soil and to present the key ideas on how the public platform should be created. I hope this paper will help make the discussion of digitally transforming public governance more substantive and its final implementation under the “Digital Economy” program will not repeat previous errors.

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\(^3\) Alexey Mordashov, head of Severstal, provided an excellent description of the emerging difficulties and the importance of properly implementing the changes [http://hbr-russia.ru/liderstvo/lidery/24981/](http://hbr-russia.ru/liderstvo/lidery/24981/)

\(^4\) Our proposals feature four priorities: introduction of a regular management and strategic governance system, digital transformation of public governance, new quality of personnel management, and modern regulatory policies.
The key discussions that gave rise to the idea of the Government-as-a-Platform took place in the fall of 2016, mostly on weekends, and they were attended by Oleg Fomichev and Savva Shilov, Deputy Ministers of Economic Development, Mikhail Fedorenko, public governance expert, and Andrey Sharov, Vice President of Sberbank, who was the first person to utter this definition. Promoting the idea of “proper” digitization would have been impossible without their active participation. At different stages, Zaven Ayvazyan, Vasily Burov, Mikhail Dmitriev, Ivan Begtin, and Mikhail Pryadilnikov took part in the 2016 discussions. In December 2016, the principal ideas were presented at the meeting of the “Public Governance” working group. I would like to thank the members of this group: Mikhail Abyzov, Minister of the Russian Federation; Alexei Teksler, First Deputy Minister of Energy; Gleb Nikitin, the then First Deputy Minister of Industry and Trade, currently Governor of the Nizhny Novgorod Region; they supported the idea, and their constructive remarks helped us improve our paper.

Particular gratitude is due to Herman Gref, the head of the “Public Governance” working Group and Chairman of the Executive Board of Sberbank, and to Alexey Kudrin, Chairman of the Board at the Center for Strategic Research Foundation; they made the issue of reforming the public governance system one of the key discussion topics in 2016-2018.

Ivan Begtin (Informational Culture), Dmitry Oguryaev (Sberbank), Alexey Petunin (SAP), Oleg Shakirov, and Anton Sokolnikov made significant contributions to the text. Vladimir Mau proposed valuable suggestions. On behalf of the authors, I would like to extend our gratitude.

Maria Shklyaruk, Vice President, Center for Strategic Research

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3 Members of the working group Andrey Chibis, Deputy Minister of Construction and Utilities, Yuri Lyubimov, Deputy Minister of Justice, and Andrey Slepnev, Deputy Head of the Executive Office of the Government of the Russian Federation, provided invaluable help in developing other sections in our proposals.
EXECUTIVE SUMMARY

The target function of implementing the Government-as-a-Platform (GaaP, Platform) idea is people’s well-being and promoting economic growth based on introducing technologies. The Platform is focused on an individual in a new digital reality. The state should create an environment that will help individuals realize their full potential; the state should also create a comfortable and safe environment for creating and introducing innovative technologies and for individuals wishing to develop their full potential.

Establishing the GaaP will ensure:

For the state
- Decreased general public expenditures by 0.3% GDP by 2024
- Building data into decision-making processes, automated algorithms for decision-making, radical re-engineering of processes, real-life situation monitoring:
  - Process speed
  - Increased number of real-time economic indicators obtained from alternative sources
  - Targeted public support
  - Remote monitoring of objects of supervision and monitoring

For business
- Decreased administrative expenses related to supervisory and monitoring activities and reporting
- Customers’ satisfaction with the quality of services
  - High volume of public data used by businesses
  - High share of businesses using/subscribed to state data

For individuals
- High level of satisfaction with the quality of public and municipal services
- Increased promptness and improved quality of services and minimized in-person communication with governmental agencies
  - High share of digital services provided proactively
  - High share of data individuals provide only once
  - Personalized public services

Today, people have to interact with governmental agencies in many situations (the birth of a child, apartment purchase, etc.) by visiting their offices in person.

For instance, when a child is born, a parent should apply to a civil registration office to obtain the birth certificate, to a local registration office to have the child registered, to a social security office for benefits and subsidies, to the revenue service. Later, parents need to apply to pre-schools etc. The person functions as a transmitter of paperwork between these offices.

After the digital transformation, people will no longer have to do all those things. Already at the maternity hospital, information about the birth of a child will be inputted in the “data ocean” and the child’s “digital twin” will be born. From now on, the digital twin will “overgrow” with more and more data. Platform-based services will proactively offer various services to individuals. For instance, when a child is born, the services will ensure that all the requisite payments are automatically transferred to the mother’s banking card (prior clarification might be obtained as to what card the money should be transferred to); the birth certificate will be sent to the parents’ address (if, after the transformation, the certificate still exists as a piece of paper); the resident e-register (instead of the obsolete house register) will be adjusted automatically, and just as automatically, the child will be enrolled in a preschool. In 14 years, services will automatically invite the child to receive their passport and to be enrolled in career counseling courses based on their school grades and psychological tests.
Interaction between individuals and the state will change. Instead of providing single “selective” services using public (agency-based) information systems (SIS) and databases, the state will transition to comprehensive handling of people’s real-life situations based on a single bulk of data and algorithms for working with those data developed jointly by federal executive bodies.

Fig. 2. Citizens – GaaP Interaction
State-of-the-art technologies will more effectively protect people’s data from unauthorized access, and safe backup will prevent data loss.

When a person logs in the public platform, they will use their “digital twin” to interact with the digital ecosystem and obtain the digital services they need.

The platform will aid in discharging most functions not via the authorities, but via platform solutions. Transitioning from one mode to another may be effected through the following key principles:

- **data-centrism and objectivity**: constant accumulation of data about management objects, monitoring via big data technologies, the internet of things, artificial intelligence; the right to make routine decisions is transferred to information systems: essentially, a transition is made from monitoring to permanent auditing of systems and aiding in preventing failures;

- **service- and process-based approach**: integration of and assistance with people’s real-life situations or a facility’s life cycle on a “ready-to-use” basis with “packages” of public functions and commercial services based on a single digital platform for data storage, automating business processes, analytics, decreasing steps in processes, etc.;

- **flexibility and speed**: making rapid changes to processes and fine-tuning them in order to achieve results and putting it “on the market.”
### TODAY

- **Over 250,000 sites of authorities and public and municipal organizations**
- **Separate agency-based systems linked via the Interdepartmental Electronic Interaction System (IEIS)**
- **Unstructured, disparate, erroneous, contradictory data**
- **Independent IT management in each federal executive authority (FEA), Independent IT budgets**
- **Lack of uniform rules and principles for designing public IT systems. Technological contradiction and gap**
- **Most public services are not provided electronically**
- **Inter-agency processes take a long time to run and also require colossal organizational and financial expenses**
- **Multiple (tens of thousands) public information systems**
- **Multiple identification systems based on different principles**
- **Physical identification (physical presence required)**
- **The user independently “combines” post factum individual services they need**
- **Decisions are made by civil servants; human error and corruption are possible**

### TOMORROW

- **Single frontal system with omni-channel capabilities (including a chat bot)**
- **Micro-service ecosystem based on single bulk of data**
- **Benchmark data in a single meta-model, continuous process of monitoring data quality**
- **Deputy Prime Minister for Digital Transformation. Chief IT architect and CDO in each agency reporting to the Deputy Prime Minister**
- **Uniform architectural principles and uniform, state-of-the-art, easily updatable technology stack**
- **Switching all in-demand services into the e-format**
- **Continuous, integrated, digital, rapidly configurable processes**
- **Reliance on common key information resources (units). Maximum use of cloud services**
- **“Digital twins,” a digital profile and a convenient digital signature based on a single identification system**
- **Uniform remote biometric identification system**
- **Proactively provided integrated services**
- **Most decisions are independent of humans: they are algorithmized, automated, and are made by artificial intelligence**
To implement these principles, the public governance system will have to operate as an advanced IT corporation, which will result in a series of radical changes in the following areas:

- **Public participation model:**
  - the model of a service state will need to be introduced (the culture of “the state for my sake”) by developing proactive online services offered by the state that will meet the needs of citizens and businesses;
  - the state acting as a coordinator will manage interaction between all the parties to the platform, but it will have to act as a creator of an interaction ecosystem, not as a standing prohibiting regulator;
  - it will require introducing continuous feedback to get a better understanding of people’s demand for the actions of the state.

- **State processes:**
  - the state infrastructure will become a single focal point for all requests for public services (where state participation is retained);
  - instead of digitizing outdated processes, digital transformation will be aimed for: the capacity to create the most effective and efficient process of achieving the goal with a system of continuous, rapid, and minimum-cost improvements;
  - using reliable and uniform data for decision-making will afford new opportunities for setting goals, assessing results, and eliminating corruption.

- **The civil service:**
  - will develop the “digital mindset”: acceptance of the digital reality, ability to work effectively in that reality, digital skills and personal development;
  - a uniform digital interaction platform for civil servants, businesses, and individuals will emerge;
  - predictive analysis and artificial intelligence will help perform routine tasks; civil servants will focus on conclusions, and not on the routine.

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INTRODUCTION

Currently, the so-called “fourth industrial revolution” entails virtually annual changes of technologies and business models in traditional economic sectors; whole new sectors emerge regularly. Russian economy is incapable of properly supporting innovative activities, of meeting domestic investment and customer demand; it is vitally dependent on imports. At the same time, in its exports, it is limited to the raw materials sector.¹

The root cause of these problems is the imperfect and uncompetitive public governance system. Given the increasing pace of technological and economic changes in the world, the Russian public governance system faces increasingly more diverse and complex tasks, but is not ready to solve them.

To ensure Russia’s long-term competitiveness, a new governance system should be set up that will become the technological, regulatory, and cultural foundation of future development. The role of such a foundation could be assumed by the Government-as-a-Platform (GaaP, Platform), a qualitatively new system of structuring and exercising the functions of Russia’s executive authorities (EA) based on integrated and digitized processes and advanced technologies (single system of collecting and storing data, digital infrastructure, automated decision-making, etc.).

The idea of the Government-as-a-Platform is a radically new quality of public governance. It will ensure transitioning from current irrelevant approaches to planning and monitoring plan implementation (with indicators such as “application of funds,” “average wage,” etc.) to precise “personalized” indicators of people’s quality of life and of the development level of all economic sectors. New indicators will allow prompt feedback from control targets, more precise work with key development indicators, and recording personal responsibility levels in the process of making managerial decisions.

Implementing the digital transformation that implies transitioning to the Government-as-a-Platform is rather complicated. The current governance system is interested in conserving the status quo for as long as possible. This is why a deployment process should be set up to transition from current governance methods to forward-looking ones. It must be coordinated and maintained at the highest possible level.

When discussing digital transformation scenarios, two paths present themselves.

¹ For more details, see the “New Technological Revolution: Challenges and Opportunities for Russia” report by the Center for Strategic Research.
The first is a traditional and evolutionary one: preservation and gradual improvement of current agency-based information systems, establishing new systems, improving exchange between them, and gradually integrating them. This is a slow and costly way. Its key flaw is preserving such technologies for building governance systems as rapidly become outdated and do now allow for getting today’s key competitive edge: ensuring data quality and having the option of changing processes rapidly. In addition, this scenario preserves the so-called “digital feudalism”8 when agencies use their informatization budgets to automate their processes while preserving their antiquated nature; in addition, the agencies are geared toward using data in their area only, which results in incomparability of data in different information systems.

The second way is the digital transformation of current processes and management structures, a transformation based on introducing new technologies (this is the path proposed by the Center for Strategic Research in the present paper).

Digital transformation is an in-depth restructuring and re-engineering of business processes with a wide use of digital instruments as mechanisms for process implementation. This transformation results in significant (several-fold) improvement of process characteristics (reduced execution time, eliminating whole groups of sub-processes, increased output, drop in resources expended on executing processes, etc.) and/or emergence of radically new qualities and attributes (automated decision-making without human participation, etc.).

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8 See: [http://www.rbcplus.ru/news/5acf361a7a8a94d5cd561097utm source=rbc&utm medium=mainplus&utm campaign=792020-5acf361a7a8a94d5cd56109](http://www.rbcplus.ru/news/5acf361a7a8a94d5cd561097utm source=rbc&utm medium=mainplus&utm campaign=792020-5acf361a7a8a94d5cd56109)
Digital transformation involves creating a new ecosystem of an IT government “next” to the current systems of public automation based on new principles and technologies that afford public governance qualitatively new possibilities. The new ecosystem gradually replaces the functions and services; during the “transition period,” “old” and “new” systems exist in parallel, and “old” system services are gradually (with appropriate changes to their functionality) are transferred to the new Platform.

We believe that introducing the role of the Platform’s Chief Architect and concentrating managerial and financial resources is the key decision for a successful digital transformation. The digital transformation should be managed at the level of a deputy prime minister (or a minister given there is the office of a deputy minister for public governance reform) to whom a Digital Transformation Center reports.

![Diagram](image-url)

**Fig. 5. Changing the landscape of public information systems during digital transformation**

The entire budget currently allocated for automating the authorities should be transferred to the Digital Transformation Center to concentrate the funds on the objective of digital transformation. Undoubtedly, at stage 1, this budget should be allocated to support the existing systems and development objectives. However, the Digital Transformation Center should develop rules for development of promising systems in digital economy, and for gradual abandonment of outdated ones that could be replaced with new platform solutions.
One of the principal objectives of the Center for Digital Transformation of Public Governance (hereinafter referred to as the Management Center) is expert management and execution of functions of the Competences Center / “Chief Architect”:

1. defining the frame of reference for the entire country, defining the architecture of public services, platforms, and their interconnections, basic services systems, “public” data model;

2. making architectural decisions on all levels;

3. ensuring the emergence of federal executive authority (FEA) development programs relying on the proposed frame of reference including setting up project teams in each FEA;

4. taking stock of duplication in development plans, eliminating duplication, determining owners of functions-services;

5. defining rules for interaction of services and checking them for compatibility;

6. defining and monitoring implementation stages.

The Competences Center also defines the set of “basic services” to be included in the prototype (MVP – minimum viable product) of the new digital platform of public governance. As development progresses, new data will be linked to the prototype, new services will be added to the prototype’s functionality gradually replacing the existing information systems and eliminating unnecessary processes.

Some services may be developed by commercial organizations and may interact with the public digital platform under set standards and interfaces.

The process of introducing the Platform should be supported by the institution of Chief Digital Officers (CDO) appointed to EAs; the officers will implement EAs’ digital transformation plans. They are expected to report to the deputy prime minister (or the relevant minister – see above) for digital transformation.

Draft recommendations on the functions and powers of the CDO (see http://economy.gov.ru/minec/about/structure/depino/201805046) were developed by the Ministry of Economic Development in accordance with the action plan in the “Shaping research competences and research and technological groundwork” area of the “Digital Economy of the Russian Federation” program approved by Decree No. 1632-r of July 28, 2017 of the Government of the Russian Federation.
In addition, the digital transformation process entails creating:

- the required legal framework;
- a system for managing GaaP deployment;
- public-private partnerships;
- technological basis:
  - instruments for open processing:
    - a set of instruments for using cutting-edge and forward-looking technologies as the GaaP's foundation (artificial intelligence, big data, blockchain, internet of things, digital signature, etc.);
    - repositories of developed components (for repeat use of public projects' code);
    - repository of all public and non-public Application Programming Interfaces (APIs), including uniform standards;
    - a system of monitoring the use of source code;\(^\text{10}\)
  - micro-service architecture;
- The GaaP's functional core:
  - template of state data and services collected from the entire subset of databases and services;
  - standards for providing and integrating services;
- national data management system (including master-data ledger for all public information systems and data repositories, mechanisms for providing Data as a Service for businesses).

A regulatory framework compliant with GaaP objectives should be created; that requires revising current legislation, digitizing lawmaking, and adopting necessary regulatory acts on the basis of the following principles: unification, structuring, algorithmization, harmonization.

\(^{10}\)Said repositories and system of monitoring the use of code are necessary to prevent creation/procurement of the same technological or functional components of the Platform.
**Unification** is tying regulations and rules to the same foundations treated and calculated in a uniform manner (for instance, excluding situations when alimony payment adjustment is in one case tied to the minimum wage, in another case to the living wage, and in a third case to inflation).

**Structuring** is creating and using uniform document templates (for instance, for court rulings) that rely to the maximum extent on systemically designed structure of public meta-data for conveniently rendering them computer-readable for subsequent processing.

**Algorithmization** is developing regulatory acts using the algorithm approach (for instance, as charts) setting a full and unequivocally interpreted procedure for a particular situation.

**Harmonization** is eliminating contradictions in meaning in legislation, removing situations when the same document is subject to different regulations that conflict with each other (for instance, there are certain requirements in enforcement proceedings to protect social deposits so that a person could have sustenance; collection orders are essentially the same enforcement document, but they are not subject to the same protection, other regulation applies).

Introducing the platform will result in Russia getting a flexible, objective, fast mechanism for public governance and for making strategic decisions. This mechanism will drive the growth of the public and businesses’ trust in the state, the increase of the state’s appeal and of its economy’s competitiveness in the rapidly changing global world; that increase will be expressed in an influx of investment and migration into Russia of people oriented toward development and innovations.
1.

PREREQUISITES AND OBJECTIVES OF THE DIGITAL TRANSFORMATION OF THE PUBLIC GOVERNANCE SYSTEM

1.1 PREREQUISITES FOR ESTABLISHING THE PLATFORM

Currently, the global pace of technological innovations is growing; there is an in-depth restructuring of production, logistics, and consumption. During the so-called “fourth industrial revolution,” technologies and business models in traditional sectors change virtually every year.

Requirements for the speed of decision-making are increasing, too: plans become outdated as they are written, and our governance system is still intended for the 20th century speed of life: the full cycle from adopting a strategy to synchronizing all lower-level documents required to implement it can take up to several years. The ascendance of new generations (Y, Z) results in the changes of the society’s psychological makeup: the new generations are accustomed to living online, to getting services and resolving their problems by using mobile apps.

The economy becomes increasingly “Uberized”: due to large-scale introduction of state-of-the-art information technologies, intermediaries are eliminated and transactions are done directly between customers and suppliers of goods/services. New technologies (the internet of things, cloud technologies, distributed ledger, artificial intelligence, big data) radically change business and management models, and today’s information ecosystems serve as foundations for emergence and development of entire global markets chiefly characterized by transition from linear technological chains to multilateral partnerships based on new principles of international division of labor and “net-centrism.”

The public governance transformation implemented in leading countries is a response to the technological challenge and growing competition for people with competences that are in demand in the digital economy. Digitization is one of the key priorities in that transformation.
The current state of Russia’s public governance does not rise to today’s challenges. The current system of strategic planning is almost unconnected to the everyday work of executive authorities and resource distribution practice and does not entail any real responsibility for achieving strategic goals. This situation is related to the general problems of falling bureaucratic efficiency against the background of reduced public control and to the problems in obtaining reliable data fast enough to make prompt decisions. There are also problems with obtaining sufficient information for assessing the impact that decisions made have on socioeconomic development.

In their everyday work, executive authorities are characterized by:

- an archaic document-centered governance system, a multi-element vertical, digitization of outmoded processes;
- large-scale use of hard copies, the need for applicants to be physically present for their problems to be solved;
- virtual absence of interaction between different agencies’ information systems;
- selective changes to processes: within individual agencies with a proactive head (mostly in finance: the Federal Tax Service, the Federal Treasury).

One of the few significant improvements is improving the quality of public services by setting up the multifunctional centers and the Integrated Public Services Portal (McKinsey’s “Digital Russia: New Reality” report of July 2017 mentions it). At the same time, it should be noted that current projects for automating the work of executive authorities (EA) suffer from all the flaws listed above. They enshrine current sub-optimal disparate models, processes and governance bodies, “cementing” this sub-optimality. These projects are, therefore, tactically speeding up and improving, but strategically slowing down the development of the public governance system.

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12 See the abstract of the “Administrative Reform Prospects” report (Ya.I. Kuzminov, A.B. Zhukin, eds.) https://www.hse.ru/data/2016/06/21/116116123/

13 See https://www.mckinsey.com/~/media/McKinsey/Locations/Europe%20and%20Middle%20East/Russia/Our%20Insights/Digital%20Russia/Digital-Russia-report.ashx

14 In addition, McKinsey’s above-mentioned report says that “many digitization projects have not always been aligned, the budget may incur additional expenses to integrate those system and to develop ‘from scratch’ certain systems that have been previously developed for other agencies or regions.”
For instance, the Strategy for the Development of the Information Society in the Russian Federation approved by Decree of the President of the Russian Federation No. 203 of May 9, 2017 defines the list of forward-looking technologies (that include artificial intelligence, the internet of things, big data processing, etc.). It does, generally speaking, set the objective of implementing them in the executive authorities of Russia. However, the Decree has no emphasis on implementing this strategy, and concretization is left at the discretion of work on developing the e-government.

In its turn, the Systemic Project of the E-Government of the Russian Federation (with 2020 planning horizon) developed on Instructions of the President of the Russian Federation No. Pr-646 of March 25, 2013 outwardly declares going entirely paperless, eliminating human factor in decision-making, interactivity, etc., but in essence, it is based on further development of disparate agency-based models of data storage, information exchange between agencies using the Interdepartmental Electronic Interaction System and says virtually nothing about restructuring processes and using forward-looking technologies that would allow for a qualitatively new state of the governance system (the section describing the characteristics of e-government’s architecture essentially describes requirements for services, security, etc.).

To increase its competitive edge, the economy vitally needs a new quality of public governance. It can be achieved only by transitioning to new models of managing processes and data.

Implementation of new models of public governance requires winning the competition for human capital, creating unique conditions for bringing human abilities to fruition, guaranteeing safety and security in the urban environment, in business, and in the new information reality, and creating an environment that is comfortable to live in and to realize the full potential of knowledge and skills.

Two key characteristics of the Government as a Platform are ensuring top “human-oriented” governance and service provision and ensuring top “human-independence” of the process of service provision (when both collecting and processing information and making decisions).

1.2 THE PLATFORM’S REQUIRED CAPABILITIES

Responding to the above-given challenges and resolving current issues requires creating a transparent public governance system based on a data-centric and process approach and entailing the following effects:

- “from documents to data”: collection, storing, processing, and structuring all the necessary data is ensured; rules of delimitating access to data (including categorizing them under various levels of sensitivity) and of data protection, data storage and archiving, responsibility for data accuracy (based on the data lake concept) are defined; priority of trusted data over paper documents is established; paper documents are completely abandoned and processes are entirely digitized after being qualitatively re-engineered;
• public information systems are switched to a platform ensuring “seamlessness” in using any stored data and functionality based on uniform regulatory rules;

• decisions made are transparent primarily due to maximum possible disclosure of data, to introducing automated decision-making technologies and maximum possible elimination of the human factor thereby ensuring the necessary level of trust in the public governance system;

• decisions are made on the basis of real-time data and reliable historical data;

• a digital ecosystem has been created where citizens and businesses interact with the state in a multi-channel mode using various mobile devices thereby ensuring the required speed and convenience; this system also allows for expanding at a relevant pace the capabilities of citizens and businesses’ interaction with the state;

• the possibility of independent suppliers creating apps/services is ensured;

• mandatory practice of continuous process improvement based on a feedback system from users reporting on their satisfaction with the resolution of their problems is established;

• expenses on the state machine are optimized by eliminating superfluous processes, functions and jobs in civil service.

In addition, digital transformation needs to ensure a radically new capability of the public governance system: high speed of making changes to governance processes. It will become possible due to building a flexible state-of-the-art architecture, by using cutting-edge methodologies, frameworks, technologies, and instruments. These key requirements define the architecture of the public platform as described below.

The resulting hi-tech digital public governance platform minimizes the human factor and attendant corruption and errors, automate the collection of managerial (statistical, tax, and other) reporting, ensures objective decision-making based on analyzing real-life situations and on state-of-the-art technologies. Its open interfaces of machine-to-machine interaction will allow independent suppliers, among others, to expand the possibilities for interaction between citizens and the state by developing their own apps working on the platform.

Decision-making will undergo qualitative changes – separated from slow human-dependent collection and procession of data from various sources, decision-making will become largely fast and systemic, it will be based on accurate and reliable data and human-independent algorithms, including artificial intelligence. The public governance system, including other managerial systems, requires making strategic, tactical, and operational decisions. Access to accurate data and technologies for their analysis will change all types of decisions (see Fig 6. Changes in the quality of decisions made), even though only operational decisions are most likely to become algorithmized.
Introducing GaaP will, among other things, give an impetus to the development of regions: bridge the gap in governance quality between the regions and the federal center, give a decisive impetus to bridging the “digital gap” and give equal opportunities in using state-of-the-art technologies. Undoubtedly, that will require dialog and reliance on solutions from the regions leading in digitization. However, for many regions that do not have the capability of making significant investment into digital transformation the option of using centralized solutions will be advantageous.

A person’s “digital twin” based on data collected for many aspects (health, education, psychological specifics, etc.) will afford greater opportunities for building individual trajectories of personal development.

The creation by 2024 of no fewer than ten sectoral (industrial) digital platforms for basic economic areas (including digital healthcare, digital education, and “smart cities”) as stipulated by the “Digital Economy of the Russian Federation” program\textsuperscript{15} should be also done within the paradigm of GaaP deployment. Otherwise, independent development and introduction of the above-indicated platforms separately will result in the repeat of the situation with disparate agency-based databases and information systems at a more cutting-edge instrumental level.

\textsuperscript{15} Approved by Decree No. 1632-r of July 28, 2017 of the Government of the Russian Federation.
The Government-as-a-Platform is primarily an ecosystem of three principal groups traditionally considered as stakeholders in the country’s socioeconomic development (see Fig 7. Principal elements of the GaaP Ecosystem). Each stakeholder group has its own interests that can be met when implementing digital transformation.

- **The State** is interested in improving the quality of public governance (speed and quality of strategic decisions, citizens and business’s satisfaction with public services), adaptability to challenges of the new technological paradigm and changing economic conditions, keeping the human and technological capital in the country, improving the country’s competitive edge on global markets.\(^{16}\)

- **Citizens.** As consumers of public services and objects of state protection, individuals are interested in expanding the range and improving the quality (at least in minimizing time expended on interaction with the state) of public services, decreasing the cost of public services and expenditures on public governance as a whole, reducing the human factor in service provision, increasing safety, security, and stability of the business and living environment.

- **Business.** In addition to the interests of citizens, business is interested in creating, at the state’s expense, technological platforms and infrastructure, conducting R&D that business could use for business purposes (thereby cutting expenses and getting access to cutting-edge technologies), in creating legislation that is conducive to starting and developing business, in preferences from the state and in support for business’s work on foreign markets.

Accordingly, businesses could be both consumers and manufacturers of GaaP services (and they could pass them on to the state as part of the digital platform – see below), and they could also be providers of those services (integrating them into the GaaP for a fee, they will become party to a public-private partnership).

\(^{16}\) In the present context, we speak about a target-oriented state. In the current situation, individual representatives of a state are interested in “conserving” the status quo and realizing personal interests to the detriment of achieving global objectives of increasing efficiency.
Ultimately, relations between stakeholders in the process of implementing the digital transformation will be settled via legal norms and technological architecture. In our report, we do not consider special laws and regulatory documents that will regulate the use of the platform and interaction between stakeholders; instead, we will focus on the key elements of the business architecture (see **Fig. 8. SDP Business Architecture** below).

**The State Digital Platform (SDP).** Integrated hardware and software environment that supports algorithmized relations between a significant number of parties (see above: the state, citizens, business), provides them with integrated business processes, services, information, and analytics. Using the SDP results in reduced transaction expenditures and offers opportunities for including new participants (via APIs etc.).
Current stakeholders are interested primarily in increasing the speed, quality, and range of services, in increasing the speed of changes made to the processes of service provision, and in cutting state expenses. That determines the principal components of the SDP architecture (see sections 3 and 4) and their functionality.
3. BUSINESS ARCHITECTURE

The SDP’s business architecture that secures results and meets the requirements described above contains the following principal parts (see Fig. 8).

The first, basic layer is the infrastructure data layer. It is the totality of physical and logical data storage units structured in accordance with the data lake concept; it is centralized aggregation of big volumes of data from multiple sources; if necessary, it also includes primary data processing (such as verification and cleaning) for subsequent use. The data themselves are structured in accordance with a single meta-model that ensures a uniform approach to treating the data and using them in various applications.

The data infrastructure layer provides for receiving data from various sources: an integrated databus based on uniform standards, languages and interfacing protocols, and interfaces for obtaining said data (APIs). Various external information systems (Russian/foreign, commercial/governmental, etc.), businesses and citizens, internet of things (IoT) devices could serve as data sources. The integrated storage model combines data from various sources, such as public data (in open and limited-access sources), socioeconomic statistics data, sectoral data, research data, etc.

Unlike the traditional technology of storing structured data that is built on top-down design concept, from business requests, and processes internal information, data lake-type storage accumulates information that is not fully structured, external information, as well as data-flow information: data from various sensors, event logs, and streaming video.

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17 They are developed either by specialized public companies or by commercial contractors, but in either case the development is carried out under integrated architecture control, see Section 6.2 below.
Fig. 8. SDP Business Architecture

Target architecture

Interfaces

Applications

Services platforms

Data and infrastructure

- E-interfaces: mobiles/desktops/browsers
- Physical interfaces: Solutions for hard-to-access places and special population groups

Public applications

Commercial companies' applications

- RLS solution A
- RLS solution B
- RLS solution C
- RLS solution D

Multifunctional centers

Services marketplace

Applied business logic services

Developing applied business logic services

- Basic universal services: AI and big data, digital identification, digital signature, information security, distributed ledgers, managing data access

Cookies

Citizens

Data storage

IoT device infrastructure

- Public systems
- Social media
- Historical data
- Commercial systems data

- Urban
- Resource-based
- Commercial
- Personal

Open

Clouds

Resource-based

Commercial

Personal
In this set-up:

- Data are not distributed by “documents” (unlike in the traditional design paradigm for agency-based information systems), and various services may use the same data for different purposes. Thus it implements the “data-centrism” of the digital platform and of the public governance in general when documents required in order to meet various interests of various users, i.e. information/service consumers, may be obtained from the same set of data by running a selection and applying appropriate structuring in accordance with a particular description procedure.

- At the same time, data are protected from unauthorized access, and data access is delimitated depending on their owner and permitted access level.

- As we can see, most services based on integrated data storage with complete incoming data should be run automatically without needing human participation.

The SDP’s data-centric architecture makes data source accessible for any authorized application or network node that wants to use data. The data layer is key since it is used by:

- services built on the traditional “classical” algorithmized business logic, but with human participation;

- services built on artificial intelligence technologies;

- services built on predictive analytics technologies.

The data layer serves as basis for the layer of platform services that, in turn, may be divided into basic universal services and applied business logic services.

Basic universal services\(^\text{18}\) are sufficiently universal systemic technological solutions/technological platforms/frameworks that, once fine-tuned to serve specific business tasks, may be used not in a single one, but in a whole series of user applications. They are used as basis for designing applied business logic (the sequence of steps in a process) of user applications providing “cross-cutting” services. Examples of basic services are:

- an integrated trusted identification environment based on the Integrated System of Identification and Authentication (ISIA) that includes a broader ecosystem of identification and authentication, including the so-called biometric identification: it provides technological capabilities for “one-stop-shop” services with access to the entire range of services provided within the SDP through any applications via the integrated profile and interface of a user who has undergone the identification procedure;

\(^{18}\) They are developed either by specialized public companies or by commercial contractors, but in either case the development is carried out under integrated architecture control, see Section 6.2 below.
• a distributed ledger and automatically executed “smart contracts”\textsuperscript{19} that are used to develop applied services connected to registering property rights, to notarial services, to tax regulation, to bank transactions;

• artificial intelligence that ensures replacement of routine functions executed by people with automatic bots for, for instance, applied services of mass processing applications from individuals, routing requests for consultations, and providing information;

• big data that are used by applied services for predictive analytics presented as a report or draft decision proposed by algorithms, which results in personalized public services and regulation;

• various messaging services (email, SMS, MMS, push technologies, etc.).

The layer of applied business logic services\textsuperscript{20} implements in a programming code a totality of rules, principles, and domain objects’ behavior dependencies, i.e. a programming implementation of steps in automated business processes/operations, their rules and restrictions, their combination into an integrated network that provides users with services they require and, further on, resolves a user’s real life situation (for instance, registering the birth of child, recording a move to a different permanent address, registering a company, obtaining a construction permit, etc.).

Applied business logic services are built on the layer of basic universal services and repeatedly use them. For instance, virtually all steps in business processes for approving loans, re-registering vehicles, etc. require identifying the process participant as a first step. That initiates the use of a basic service of digital identification. A distributed ledger service can be used in designing applied services for maintaining credit histories, registering vehicles, etc.

Ideally, designing business logic boils down to defining the sequence of operations with data taken from the data layer (storage) and to submitting the results of these operations to another process or for consideration to a human (who performs a particular role in the GaaP, primarily that of supervision and decision-making at some stage); all data required to provide a service are present in the data layer; therefore, business logic algorithms run automatically without involving a human to input additional data.

In essence, the result of running applied business services (and the results of running certain basic technological services) is what is valuable for the consumer as it presents the consumer with the results of the work of the GaaP as a whole.

We should note that certain basic technological services can directly submit the results of their work to end consumers (bypassing subsequent architecture layers). It primarily applies to artificial intelligence and big data: reports, forecasts, draft decisions (and decisions themselves) “hard-wired” directly in the appropriate technological basis can go to the consumer without any processing at subsequent architecture layers.

\textsuperscript{19} Smart contracts.

\textsuperscript{20} They are developed either by specialized public companies or by commercial contractors, but in either case the development is carried out under integrated architecture control, see Section 6.2 below.
The first three layers are covered by the API (see also Section 4 below) that provides the options of connecting external stakeholders: non-governmental organizations and citizens. They, in turn, may develop their own applications thereby significantly cutting expenditures by using shared architecture and the SDP’s basic technological services. All the above-listed is stored in clouds (either public or featuring certain access restrictions depending on the nature of data) that ensure flexible scaling of services’ productivity, failure tolerance, easy access to technological components, and an integrated solution for protecting applications and data.

Applied business logic services may be developed and provided both by the state and by authorized commercial suppliers (see Section 6.3 below on possible public-private partnership in developing the GaaP).

The layer of applications proper is intended for “conveying” the results of running applied and basic SDP services to consumer and for ensuring feedback (where a business process provides for it). Applications can be accessed via user interfaces on various devices, and applications give users access to services.

Services may be combined into modules that make navigation easier and provide for convenient use. The layer of applications displays both those steps of business processes that require some action on the part of the user and the results of running automated processes (end results or results at checkpoints), and draft decisions proposed by SDP algorithms for users to accept them or for manual input.

Services may be also accessible for users who do not have the possibility of using applications on the internet. Access may be provided at special points via physical interfaces (similar to the existing Multifunctional Centers).

In addition to immediate technologization of the work of the state system and in addition to digitizing most managerial processes in the state bureaucracy, the use of the above-indicated architecture changes the model of decision-making. The bureaucratic process that involves operational decision-making following communication between a large number of officials from various agencies is replaced with decisions on the basis of strictly determined rules and data analysis.

SDP developers can either fully automate the decision-making process on the basis of artificial intelligence technologies and big data, or entrust the right of final decision to a human.

When designing the SDP, the task of developing primary rules for the platform’s work is handled first. Already today, there are some operational-level managerial decisions that are either easily algorithmized and/or solved with high reliability on the basis of deep machine learning technologies that make great successes today and that, in turn, rely on big data. In the near future, such decisions may be transferred to “intelligent agents”: AI-based software systems.

Once the public governance system is digitized, “intelligent agents” can handle all the routine work

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21 They are developed either by specialized public companies or by commercial contractors, but in either case the development is carried out under integrated architecture control, see Section 6.2 below.
taking upon themselves a significant chunk in the work of its rank-and-file employees; “intelligent agents” can also perform supervising and monitoring functions freeing them from the negative influence of the human factor.

Complicated tasks that require political decisions or “human” approach (non-standard, political, psychological and emotional situations) as well as those tasks that pertain to controlling the Platform’s work and correcting possible errors will continue to be handled by a small number of highly professional, specially trained employees.

As a result, the state machine itself will be (ideally) transformed into a small and highly professional service performing the most complex functions and working professionally with automated systems. A significant number of civil servants will specialize in working with data and machine learning to provide for the functioning and improving intelligent systems and developing the rules of their work.

Supervision and monitoring functions should be among the first to be transferred from officials into the purview of a system of “intelligent agents,” which will entirely eliminate the human factor, corruption potential, and possibilities of other abuses.

Ultimately, decision-making will be based on big data analysis, ensuring the possibility of more flexible individual approaches to all participants (be they citizens or companies) in their interaction with the state. In future, that will afford broad possibilities of building a flexible tax system and social security system.
4.

TECHNOLOGICAL ARCHITECTURE

The evolution of the principles of building technological architectures of software and hardware platforms (similar to the SDP in the number of users, their geographical spread, functional coverage, volume of processed data) is presented in Fig. 9 below.

Fig. 9. Evolution of the principles of building technological architectures

<table>
<thead>
<tr>
<th></th>
<th>Before the 1980s</th>
<th>1990s-2000s</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus</td>
<td>For the functional structure of an organization</td>
<td>For the organization’s business processes</td>
<td>Virtual organization, distributed processes and functions</td>
</tr>
<tr>
<td>Computational platform</td>
<td>Mainframe</td>
<td>Client/Server</td>
<td>Component-oriented Service-oriented</td>
</tr>
<tr>
<td>Software</td>
<td>Monolithic software</td>
<td>Monolithic software</td>
<td>Distributed software</td>
</tr>
<tr>
<td>System use</td>
<td>Within the organization</td>
<td>Intended to be used between businesses via e-interfaces</td>
<td>Systems are intended to exchange data in real time</td>
</tr>
</tbody>
</table>

The figure indicates that the flexible development of today’s global technological SDP platforms is ensured primarily by designing them with Component- or Service-Oriented Architecture (SOA). The further development of this approach is MicroService Architecture (MSA), which entails abandoning a single, monolithic structure. MSA applications are built as a series of small services, each of them working in its own process and communicating with others using light-weighted mechanisms. These services are built around business needs and are quickly and independently deployed with the use of a fully automated environment.
Principal MSA advantages are that the components (microservices) of the platform:

- are cheap to replace, quick to be put into operation, quick to deploy, and quick to scale independently of others;
- are failure-tolerant;
- allow for use of various technologies and languages: that makes the change of technological platforms cheap and will not stop the work of the entire application.

Communication between SDP services as well as between the SDP and third-party applications should use the OpenAPI\textsuperscript{22} Specification: a specification (standard) for building interfaces between different programs and data storages in accordance with uniform rules. OpenAPI Specification is supported by a specialized framework, which makes it easier for software manufacturers to use it.

Using said technological approach will “splice” various applications (extensions of SDP services) and increase the pace of their improvement; it will make it possible for third parties (primarily software developers) to develop new services and applications using the SDP basis and best practices of building high-load systems.

\textsuperscript{22}https://www.openapis.org
5.

TECHNOLOGICAL TOOLS

When developing the SDP, there are two principal strategies of working with software suppliers:

- purchasing proprietary software: instruments and platforms copyrighted by their manufacturers, who sell them;

- using free open-source software, since this software is developed by a community, and not by a commercial company.

Since there are no ready-to-use standard functional solutions for developing public governance platform (unlike, for instance, corporate information systems designed to manage commercial companies), there are essentially no differences between these options from the point of view of structuring development process, the possibility of using standard architecture solutions for “basic services,” labor intensity, improving and supporting the SDP. Both presuppose combining technological components and essentially developing functionality/services “from scratch.”

Using open-source tools and platforms to develop the SDP appears preferable for following reasons:

- independency from developers of proprietary software, therefore, lower licensing payments and payments for software support (saved money, primarily public funds, can be re-channeled from payments to western manufacturers to developing Russian software development ecosystem); no sanctions risks;

- shaping an independent software development ecosystem (that can be used for developing the SDP through governmental efforts, and for commercial development of related services), improving the qualification of Russian developers, involving them in the promising global ecosystem of open-source projects, creating an environment for fostering own technological innovations, including those with an export potential;

23 Software developed in this manner will be owned by the state augmenting the public repository of programming codes for ensuring subsequent free re-use.
- reliability and security: workability and correct functioning of open-source products is verified by both millions of enthusiasts and professionals from all over the world and is available for analysis by specialized organizations; in addition, the pace of correcting errors depends on the community and product users and not on the vendor’s policies;

- flexibility and speed of development: open source code allows reaching a very high level of meeting specific terms and needs of an organization due to accessibility and spread of means of development, which is of particular interest when running unique business products (as in the case of the SDP).

Using open-source tools does not mean that creating the SDP will be the province of a decentralized and practically unmanageable community of enthusiasts. The development of the SDP should be controlled, institutionalized, and have strictly set goals and deadlines. Using open source will simply make creating the SDP more efficient and less costly due to the above-mentioned reasons.
6.

THE SYSTEM FOR MANAGING
THE DEVELOPMENT OF THE PLATFORM

6.1 MANAGEMENT PRINCIPLES

The program of developing the GaaP at the top level should be managed on the principles of managing a project portfolio\textsuperscript{24}: a set of components grouped together for effective management and achieving strategic goals.

Strategic decisions on the parameters of the GaaP under development, about prioritizing development of particular services, about the global allocation of resources (setting up new authorities, adopting targeted financing programs, etc.) are made at the level of managing a project portfolio.

Development of services takes place at the level of programs\textsuperscript{25} constituting a portfolio (in essence, designing and introducing each service is a program); the SDP is fine-tuned and deployed on a large scale, and attendant organizational, regulatory, and resource tasks are handled at the same level.

The SDP is developed, its prototype is deployed in pilot projects, and authorities are prepared for the launch of new services at the level of projects.\textsuperscript{26}

Managerial principles to be followed when developing software deserve a special mention. To ensure requisite flexibility and speed in developing the SDP, the developers should use:

- **DevOps** (development and operations): a methodology for software development focused on very active interaction and integration into a single team of programmers, testers, and administrators, who develop and service a common service/product in a synchronous manner. The principal

\textsuperscript{24} See GOST R ISO 21504-2016. “Project, programme and portfolio management – Guidance on portfolio management.”

\textsuperscript{25} See also GOST R 54871-2011. “Project management. Requirements for program management.” A program: a totality of interrelated projects and other activities intended to achieve a common goal and implemented in the environment of general restrictions.

\textsuperscript{26} See also GOST R 54871-2011. “Project management. Requirements for program management.” A project: A complex of interrelated steps intended to create a unique product or service with limited time and resources.
The goal of the methodology is to create a single cycle of inter-dependency between developing, operating, and deploying software to help organizations create and update software operated in real time in a faster and easier manner.

- In developing a prototype, Agile principles should be used, i.e. an approach to developing software geared toward using iterative development, dynamic shaping of requirements and ensuring their implementation within continuous interaction between self-organizing working groups that include professionals in various areas. Compared to the classical waterfall methodology, Agile principles make for a far more active involvement of service owners and users into developing the services, which is very important at the prototyping stage, where the speed of testing different variants of implementing the service and maximum "nearness" to the consumer are critical factors in the success of digital transformation.

6.2 MANAGEMENT STRUCTURE

Fig. 10. GaaP deployment management structure

Full implementation of the Platform’s concept entails a fairly long time-frame. Clearly, such a major transformation of processes whose stability is a matter of concern for a great number of participants directly or indirectly involved with the work of the state machine requires a relevant management structure for implementing the concept, for preparing regulatory framework and basic infrastructure, and then for gradually replacing traditional mechanisms of public governance with digital ones.
Therefore, taking into account strategic importance of the task, we propose establishing a management system composed of the following principal elements.

To ensure prompt decision-making at a proper level, the development of the Platform should be headed by a person in the rank of Deputy Prime Minister in the Government of the Russian Federation (or a minister on condition that there is a deputy prime minister for reforming public governance).

In the course of developing the Platform, several functional tasks should be handled that, from our point of view, should be structurally distinct, and such structural distinctness can be achieved within a single ministry and an organization that reports to it and is involved directly with technical issues.

At the level of operations, the program is headed by the Digital Transformation Center (Management Center<sup>27</sup> in charge of the Program Office, Competences Center, and the SDP Operator (the Operator)).

**Functions of the Management Center:**

- leading the Platform’s strategic development;
  - coordinating political interests of all participants and stakeholders;
  - determining priorities and key landmarks of development on the basis of analyzing current trends and forecasting the development of the global market situation, technological and managerial paradigms;
  - strategic management of subordinate bodies.

**Functions of the Program Office: managing the development of the Platform within the landmarks set by the Management Center, including:**

- ensuring requisite resources (financing, contractors, partners, etc.);
- developing and introducing the methodology of managing the Platform’s development;
- developing, implementing, and supporting an information system of planning and monitoring (if necessary);
- hiring specialized personnel to manage the portfolio of Platform development projects, training said personnel, developing a system of incentives for the participants;

<sup>27</sup> Preferably organized as a public not-for-profit organization, largely because a public not-for-profit organization can be vested with rights stipulated in its charter documents in addition to rights indicated in Federal Law No. 236-FZ of July 3, 2016 “On public not-for-profit organizations in the Russian Federation and on amending individual legislative acts of the Russian Federation.”
• supervising the course of development; generating periodic reporting on the course of development for the superiors;

• risk management;

• ensuring prompt paperwork flow;

• forming cross-functional teams and providing basis for their work;

• running promotional programs for services among the population and the authorities.

• In terms of the preceding section, the Program Office manages the portfolio of Platform development projects.

**Functions of cross-functional teams (CFT)**

A cross-functional team including representatives in charge from each party concerned is responsible for launching a particular service and carries out:

• development of an integrated process of providing a service on the basis of the SDP, including a Service Level Agreement (SLA);28

• tactical and operational management of developing the appropriate part of the SDP (hardware and software complex) or altering the existing one;

• implementing the process of providing the service (including through contractors employed by the Management Center upon the recommendation of the Program Office to carry out work on developing the Platform), including working through legislative issues, managing relevant paperwork and training personnel of the authorities and the Operator (see below), “promoting” the service among the population and running appropriate educational programs.

That will make it possible to discover all the requirements for integrating participants and the risks of that integration (ranging from organizational and technological to legislative) in the course of developing a Platform solution.

Cross-functional teams for developing a comprehensive service intended to resolve a “real-life situation” and geared toward the end consumer will ultimately replace the bureaucratic process (with operational decisions made following collaboration between a large number of officials from various agencies) with a new SDP-based one. They will build effective collaboration between all participants in the process of resolving “real-life situations”; duplicating will be excluded, integrated exchange of information and data will be set up.

28 Service Level Agreement: an agreement on the level of providing a service, a document that defines key parameters of the quality of providing the service.
In terms of the previous section, the CFT manages the program of Platform development projects.

The CFT puts each launched service into operation to be run by the Operator (see below) ensuring it has been properly tested and documented and personnel (technical and managerial) has been properly trained.

**Functions of the Competences Center:**

- performing the functions of the Platform’s Chief Architect:
  - formulating the “framework,” preliminary and concept design of the SDP;
  - analyzing key architecture and technological solutions proposed by the CFTs;
  - developing solutions for ensuring architectural, technological, and legal integrity of the Platform;
- ensuring the creation of programs for developing authorities based on the proposed framework, including setting up cross-functional teams; taking stock and ensuring coordination between these programs;
- determining owners of functions and services;
- expert and methodological support for cross-functional teams, the Program Office, the Operator, including:
  - analyzing global trends in technological development and managerial paradigms;
  - studying and accumulating foreign and Russian experience in building similar platforms and conveying it to the participants of implementing the Platform;
  - involving leading professionals and companies in implementing the Platform;
- developing “template services,” ensuring integrity of the SDP, eliminating duplicating of services and maximizing the use of existing services;
- determining the ontology of metadata, master data;
- developing standards used to build the Platform including standards for services including SLAs and APIs;
- setting up the maintenance of a repository of the SDP’s programming code components and their re-use in similar projects / SDP development projects;
• accrediting services developed outside the Platform development program by third-party manufacturers (including commercial ones) for possible integration into the Platform and providing them to the customers under the Platform’s “umbrella”;

• setting up the process of managing changes to the Platform, changes to the implemented services;

• participating as independent members of commissioning boards in putting services created by the CFTs into operation.

The SDP Operator accepts into operation a developed service and provides it to consumers complying with the set SLA. The Operator also fine-tunes and improves the services it operates.

Splitting the functions of implementing and operating the services between the CFTs and the Operator is intended to ensure high quality of developing and providing services: the CFTs and the Operator should be simultaneously motivated to offer a degree of satisfaction for the service consumer, while the Operator, being in charge of maintaining SLA compliance, will accept into operation only those services that can ensure compliance with the given SLA; accordingly, the service should be well developed, documented, the Operator’s personnel and relevant authorities should be properly trained, etc.

In addition to setting up above-listed bodies, each authority should have the new position\(^\text{29}\) of a Chief Digital Officer\(^30\) whose principal task will be organizing the authorities’ support for the CFT’s work, supporting the processes of the authorities’ digital transformation in accordance with plans developed by the Management Center.

The budget currently allocated for the authorities’ information systems should be re-distributed in the following way:

• subject to the approval of the Competences Center, the authority determines the budget for maintaining the functioning of the authorities’ existing information systems to be spent on maintaining the existing systems in the working order until they are integrated into / replaced by the SDP;

• the budget for developing the authorities’ existing information systems is sequestered and transferred at the disposal of the Competences Center.

Any requests from the authorities to automate services/processes are considered by the Competences Center, and an individual decision is taken on each service/process: either it is to be implemented in the Platform (with the timeframe for the implementation set) or the possibility of transferring it for implementation to commercial companies is to be considered, or implementation should be denied as inexpedient.

\(^{29}\)At the level of deputy heads of executive authorities.

\(^{30}\)Chief Digital Officer, CDO.
6.3 FORMS OF BUSINESSES’ PARTICIPATION

Rules (regulatory and technological, primarily on the basis of the OpenAPI Specification, see Section 4) should be set for connecting to the SDP external applications developed by independent developers, opening the possibility for expanding the range of services provided to citizens and businesses through certified third-party services.

Once the rules have been set, third-party developers will have the possibility of offering the state (the SDP “owner”) to develop for a fee (as contractors) individual elements and/or related applications (parts of the SDP’s hardware and software complex) and to develop and provide entire digital services related to the SDP (both in the contractor model and in the public-private partnership model in a “joint venture” offering digital services to citizens, businesses, and the state). For instance, some particularly technologically advanced bank may undertake, as a contractor, both to develop software for providing the service of registering legal entities, and to act as provider of a “ready-to-use” service in partnership with the state, splitting revenues and expenses accordingly.

In addition, we can be talking not just data exchange between “public” and “commercial” services or their integration; in future, we can be talking large-scale interaction between public and commercial (private) digital platforms.

As regards the economic mechanism of the functioning of such a model, a two-tiered plan can be implemented for third-party suppliers regarding access to data contained in the SDP. Access to some data can be gained for a set fee, access to other data can be gained at prices set by the operator(s) of the SDP or its individual components. Another option is the operator charging third-party suppliers of end services a set fee for transactions carried out via the relevant services.
7.

APPROACH TO DEPLOYING THE PLATFORM

To deploy the GaaP, the requisite regulatory framework should be created. To that end, stock should be taken of the current legislation, lawmaking should be switched to the “digital basis,” and required regulatory acts should be adopted.

After stocktaking, roadmaps should be developed for each authority in order to amend the legislation; the roadmaps should be harmonized with deploying the technological part of the SDP. In addition, the activities plan of the State Duma of the Russian Federation should undergo major adjustments for the first four years of work for the purposes of developing the Platform.

As the first order of business in the technological part, the Platform’s basic architecture should be developed, principal technological and key applied services should be determined (see Section 3 above), that is, the framework of the Platform should be defined and principal parameters of the state digitization should be set.

Then, proceeding from the Platform’s core architecture, each authority should develop its program for developing digital services and digital transformation. To help them in solving the task, already at this stage CFTs should be established and certain financial and human resources should be allocated. All authorities are set the single deadline for developing these programs.

EAs submit their development programs to the Competences Center that:

1. systematizes them, singles out and defines other technological and applied services;
2. defines the owners of services;
3. develops concept and preliminary designs of the Platform;
4. organizes the development of the SDP prototype;
5. designs the public governance structure based on the Platform’s preliminary design;
6. determines the plan of deploying the Platform, determines the key landmarks, need for resources, pilot projects (selects between two and four significant model services based on the “quick win” principle).

All the key elements of the Platform that correspond to its core architecture (see Sections 3 and 4 above) should be realized in the SDP prototype that realizes model services.

Once the prototype has been developed, no fewer than between two and four pilot implementations should be run: trial projects run to study the prototype’s positive and negative aspects and to determine whether it is expedient to introduce the solution on a large scale or it needs to be refined; these projects are also run to study implementation methods, testing completed managerial structures, etc.

At least one implementation should be run in a Greenfield situation when there are no legacy information systems, and at least one implementation should be run in a Brownfield situation when there is a legacy system, and gradual transition to the SDP should be effected.

Running the first pilot implementations can be done on trial real-life situations/services that business or individuals encounter. The services for the first pilot projects should be selected on the basis of minimizing risks for consumers, highest readiness of all participants for the pilot projects, and maximum probability of success.

Pilot projects will bring the necessary experience, work out the methods and approaches for cross-functional teams’ highest-quality work; they will also shape the methods and programs for team training and mechanisms for decision-making for all participants; the most effective and efficient model will be developed that allows the project activity to be expanded to other services ensuring gradual transition away from the current system of performing functions and replacing it with the new model of public governance.

Subsequently, the Platform’s developed framework should be augmented with new services in accordance with the developed plan. Services may be developed by third parties: the Competences Center should analyze their quality, security, and compatibility with the SDP; following that, if the analysis yields positive results, the Competences Center issues permission to include third-party services in the SDP environment.

This approach will result in the SDP gradually taking the place of separately functioning public information systems, including the public services portal, the Interdepartmental Electronic Interaction System and others, thereby ensuring necessary foundations for new capabilities of public governance, including the possibility of using new approaches to taxation and social security.

The issue of personnel will be the key one. Today, few people in the civil service have the necessary digital competences; therefore, the civil service and the teams handling digital transformation will require an influx of people with new competences, the influx of bearers of the new organizational culture. To mitigate the “culture shock” and transformation of civil servants who had started their career before the digital era, training should be provided.
8.

INDICATORS OF THE PLATFORM’S SUCCESSFUL DEVELOPMENT

Based on the task set, a flexible, adaptable, hi-tech, data-based system of public governance should be established by 2024; within the same period, the structure of the state machine, processes of interaction with public service consumers, and routine auxiliary processes should be optimized. Key target indicators of GaaP success are:

1. reduced cost of operations in the public governance system;
2. increased speed of providing public services (by an order of magnitude);
3. user satisfaction;
4. lack of traditional "paper" services.

In addition to target indicators, several indicative figures (controlled during the course of GaaP deployment) are proposed:

- adopting the requisite regulatory framework;
- cutting the number of civil servants with the attendant reduction in the payroll budget, medical insurance and social security etc;
- increasing the number of SDP-based services;
- number of partners using the SDP to build their services;
- increasing the level of process digitization in public governance and the number of entirely paperless services;
- the share of state information resources whose data are constantly accessible to all authorized users in real time under fully documented protocols, including through the use of access software interface;
• increased number of SDP users (percent of population density);

• number of people using digital services vs. number of people using traditional services;

• reducing the overall number of public information systems (PIS), first of all at the federal level, by combining their functionality within the SDP and eliminating duplicate functions in the PIS of various levels and based at various agencies.
9.

**KEY RISKS AND WAYS TO RESPOND**
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| 1 | Slow adoption of required regulatory acts | High        | Significant | Without the requisite regulatory framework (adjusting existing regulatory acts or adopting new ones that make it legal for “intelligent agents” to make decisions or obligate EAs to submit all data to a single storage), the GaaP may not be developed. Regulatory acts define that it is possible as a matter of principle to use a particular technology; they also are immediate directives to act for state machine’s employees. | • Monitoring and assistance at the highest level in implementing the GaaP development program in the part pertaining to adopting the requisite legal acts (see Section 6.2 above).  
• Setting appropriate tasks for all the EAs.                                                                                                                                                                   |
| 2 | Resistance of the current governance structures | High        | Significant | A key success factor in any transformation process is support for the project at the level of top and middle management. As a rule, projects usually fail at the middle management level. | • High level of decision-making (deputy prime minister/minister with relevant powers: “mandate” to transform the public governance system).  
• Creating “transformation agents” in EAs, maybe special units in charge of developing the GaaP.  
• Creating training programs and further education programs for employees of EAs being “transformed.”  
• Creating a system of motivation and incentives for employees of EAs being “transformed” in order to achieve the goals of developing the GaaP. |
| 3 | Insufficient financing | Medium      | Medium   | Expenses for developing the GaaP should not be sequestered no matter the state of public finances. In the total budget expenditures, GaaP financing will not be a major expense. At the same time, its development is critical for ensuring the state’s future revenues. | • Continuous monitoring of achievement of the program’s goals in accordance with earmarked finances and timely escalation of problems to a necessary level.  
• Working out the possibilities of setting up public-private partnerships, attracting private investment into developing services, particularly those with high monetization potential. |
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| 4  | Insufficient experience in building such platforms                   | Medium      | Medium    | Essentially, Russian specialists have already accumulated significant experience in building high-load federal-level systems. Experience in using cutting-edge technologies is accumulated simultaneously with the rest of the world.  
The key task here is to properly design the system for managing GaaP development and assemble a team of managers and professionals with relevant experience.                                                                                     | • Shaping a flexible and adaptable governance system  
• Creating a Competences Center accumulating Russian and global experience in building and deploying such platforms.  
• Attracting Russian and foreign professionals while shaping a relevant system of incentives featuring both challenging tasks and appropriate remuneration at a level commensurate with remuneration in the commercial sector. |
| 5  | Population apathy                                                   | Medium      | Significant | Experience shows that the pace of introducing innovations into the life of society becomes faster and faster, especially since innovations bring tangible advantages to their consumers. The key thing here is informing potential GaaP users in an efficient and timely manner about its new emerging capabilities and ensuring the possibility of effective feedback and the possibility of user opinion influencing the plans for developing the GaaP. | • Implementing specialized programs for promoting the GaaP among the population,* including news feeds, mass mailings, TV and internet broadcasts, etc.  
• Monitoring the public opinion on the results of developing the GaaP.  
• Setting up public bodies/e-plat-forms enabling users to influence the plans for developing the GaaP’s functionality and to submit proposals on using technologies, tools, etc. |
| 6  | Quality of data in existing storages                                | High        | High      | Combining data from various storages takes certain time and is accompanied by their alignment, correction of errors, etc. The experience of implementing existing PIS demonstrates that it requires certain efforts and resources. In addition, some red tape should be overcome to “open up” data and to classify data by access and sensitivity level.                                                                 | • Planning a separate block of work linked to designing meta-data, combining individual storages into a single information space while allocating appropriate resources and appointing persons in charge at the highest level. |

* Similar, for instance, to Singapore’s Smart Nation program [https://www.smartnation.sa](https://www.smartnation.sa)
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