Approved
Government decree
Tajikistan from "30" December
2019, No.642

# Concept
# DIGITAL ECONOMY IN TAJIKISTAN

## 1. GENERAL

1. The concept of the digital economy in the Republic of Tajikistan (more - Concept) is based on the Message of the President of the Republic of Tajikistan, the Leader of the Nation of the respected Emomali Rakhmon
"On the directions of domestic and foreign policy of the Republic of Tajikistan" dated December 26, 2018 and in accordance with the decree of the Republic of Tajikistan of January 31, 2019, No.39 "On the results of the socio-economic development of the Republic
Tajikistan in 2018 and the challenges for 2019."

2. The concept is in accordance with the provisions of the Constitution of the Republic of Tajikistan, international legal acts recognized by the Republic of Tajikistan, and other regulations of the Republic of Tajikistan.

3. The concept is based on the National Development Strategy of the Republic of Tajikistan until 2030 and represents a general vision of using modern digital technologies to achieve the highest goal of Tajikistan's long-term development, namely, improving the standard of living of the country's population, reaching the standard of living of middle-income countries as soon as possible, and significantly reducing poverty, as well as achieving the country's priority economic development goals, such as energy independence and food security. , the country's exit from the communication impasse and its transformation into a transit, accelerated industrialization of the country and the creation of new jobs. The ubiquity of digital technologies, including breakthrough technologies, should be the basis for sustainable economic development and the growth of the country's international competitiveness. The digitalization of the economy will create a new model of economic growth, attract international investment, spur the transformation of existing and new types of production, strengthen export orientation and at the same time meet domestic demand through import substitution. The concept aims to generate digital dividends on issues critical to national development, such as job creation, gross domestic product growth (further-GDP), transformation of the service sector and improving the quality of life of the population.

## 2. A SHARED VISION FOR DIGITAL TRANSFORMATION IN TAJIKISTAN

4. Global digital transformation processes are constantly accelerating, encompassing more and more areas of human activity. New "breakthrough" technologies are also being developed at an accelerated pace, the correct application of which determines national competitiveness in the 21st century. There is a paradigm shift in digital transformation: whereas in the past the world's leading countries have viewed digital transformations within individual industries, today the national economies of the world's leading economies are moving entirely to digital. This new paradigm will form the basis of the process with the digitization of the Republic of Tajikistan.

5. The Concept provides for the formation of a common vision of digital transformation in the republic based on the international model of creating a digital economy. This model includes, first and foremost, a number of measures to strengthen the non-digital foundation of the forthcoming digital transformation.

6. First, this includes assessing the current state and developing a range of measures to strengthen the regulatory framework, as well as government policies on the introduction of new technologies, strengthening leadership and institutions for change management, assessing and developing the necessary human capital for transformation, assessing the state of the business environment (entrepreneurship), research and development and the innovation climate, a number of measures to strengthen information security and build confidence in digital technologies.

7. Secondly, the concept aims to strengthen the digital framework, such as building a modern digital infrastructure and providing ubiquitous broadband access, developing modern communication systems, creating date centers and digital platforms.

8. And thirdly, the concept envisages the transformation of key areas of economic activity of the republic, the digitization of which can have a cascading impact on the entire economy of the country, such as the transformation of the public services sector and the transition to digital government, the digitalization of the social sphere, as well as key industries such as energy, extractive industry, agriculture and the creation of new sectors, such as financial technologies (FinTech). It is also important to note the role of the National Bank of Tajikistan in the introduction of financial digital technologies and in the banking and payment services market. Monetary and monetary policy and supervision of the banking system should be carried out using advanced financial digital technologies. The National Bank of Tajikistan will play a special role in the development of financial digital technologies in the country.

## 3. THE STAGES OF DIGITAL TRANSFORMATION TAJIKISTAN

9. The concept envisages a gradual, step-by-step transition to the realization of the vision of digital transformation in the republic. Initially, three stages are planned until 2040. The first stage until 2025, the second stage until 2030 and the third stage until 2040. All stages of digital transformation will also be carried out as part of the Digital CASA project.

10. The concept assumes both the progressive, period-long and phased implementation of measures and activities, depending on the specifics of its priorities, objectives and directions for the development of the digital economy.

11. Legislation and other non-digital frameworks are constantly being improved, and the practice of strategic forsyth is being introduced to predict scenarios for the development of digitalization and to make appropriate decisions and measures to optimize processes.

12. At each stage, a program and action plan for the implementation of the Concept is developed and adopted, pilot and pilot projects are implemented to find and implement the best forms and ways to effectively develop the digital economy system.

13. Further stages of digital transformation in the country will be planned in accordance with the next national strategy of the republic's development.

## KEY INITIATIVES IN THE FIRST PHASE OF DIGITAL TRANSFORMATIONS IN TAJIKISTAN UNTIL 2025

### § 1. Strengthening non-digital foundations and identifying key initiatives and projects with cascading effect

14. A number of key initiatives and measures aimed at strengthening non-digital frameworks will begin to be defined and prioritized: strengthening the regulatory framework, developing a policy and legal framework for key processes in the digital economy, such as identification/authentication, privacy, personal data control, data management, open data regulation, digital contracts and other legal instruments, as well as information security and cybersecurity regulation.

15. In the first phase, a roadmap for the introduction of e-government will be developed, which will be implemented for short, medium and long-term periods. The roadmap will be aimed at displaying the overall projection of the use of modern digital informationcommunication technologies (the first stage of one to three years) to offer at least five pilot electronic services through the public services portal. The implementation of the public services portal as a "single window" principle will serve to provide public services.

### § 2. Training of qualified personnel

16. In addition, the first phase involves the training of highly qualified and skilled personnel for digital projects, as well as the establishment of a system for training qualified staff in both universities and enterprises, and for the development of digital skills among the population as a whole. The concept envisages the development of a multi-stage plan to continuously improve the skills of government employees and the digital ecosystem, which will deal with digital transformations.

### § 3. Create a model for managing digital transformation

17. The first phase envisages the creation of a coordinating and governing inter-agency body, the Digital Economy Development Council under the President of the Republic of Tajikistan. The process of implementing digital transformation in the country is carried out by the authorized state body in the field of the digital economy and increasing interactions with other players of the digital ecosystem.

18. The concept also proposes to determine how responsibility for digital transformation is shared between different agencies and how inter-agency monitoring, monitoring and reporting are carried out. Digital mechanisms for continuous monitoring of the tasks, receiving and developing feedback, monitoring and reporting mechanisms, as well as assessing the quality of services provided by digital users and the population will be developed separately.

## § 4. Identify key targets for digital transformation success

19. The concept also provides for the definition of the first stage of the targets that will be achieved after each phase of digital transformation in the country. This in the first stage of implementation will include such indicators as, improving the position of the republic in international rankings, increasing access of the population and households to broadband and mobile Internet, increasing international traffic and bandwidth, the number of laid fiber optic connections, the number of institutions connected to a single state digital system, the growth in the number of users of digital services, the growth of the quality of digital services provided, the growth of the share of services provided in the digital format , the number of new jobs created in the digital sector and many others.

## § 5. Assessing the current state of digital development in Tajikistan

20. In the first phase, the Concept provides for an in-depth assessment of the current state of digital development in the Republic of Tajikistan using international models. The state of non-digital foundation of the coming transformations, public policy, leadership and institutions, human capital, business environment, research and development (further research and development) and innovation, information security and trust, legislative frameworks, as well as digital infrastructure, digital infrastructure, broadband, telecommunications, data centers, etc.

21. The level of use of digital technologies for the public sector, the private sector, the population and households, as well as the level of development of the digital economy and digital skills, will also be assessed.

22. During the evaluation process, the Concept provides for identifying the major gaps and weaknesses of digital transformation, as well as identifying and prioritizing digital projects in key industries that will be more elaborated in the framework of the Medium-Term Digital Economy Development Programme of the

Republic of Tajikistan (which will be developed and approved after the approval of the Concept) and are included in the implementation plan of this Program. The concept is intended to give priority to projects of digitalization of the energy industry, agro-industrial complex and telecommunications sector, in accordance with their strategic importance for the country's development, as stated in the National Development Strategy of the Republic of Tajikistan for the period up to 2030.

23. At the initial stage, it is envisaged to determine the method of prioritization of digital transformation projects, which will be used in the development of the National Digital Economy Program of the Republic of Tajikistan. The methodology will be developed in the context of comparative analysis of projects in terms of complexity and strategic importance of tactical importance in the context of national tasks. Projects related to so-called "easy victories" that are fast and easy to accomplish will be identified, but it is important in terms of positioning the successes of digitalization.

24. Strategic projects that have a significant impact on improving the country's competitiveness and solving strategic national problems requiring serious investments of both financial and human resources will also be identified.

25. In addition, in the process of prioritization, projects that are currently feasible under existing financial and resource constraints will be excluded or abandoned in the process of financing, and whose attempts to implement in the current conditions will only take resources away from more strategically important and easily implemented projects.

## § 6. Digital Transformation Education

26. At the initial stage, the Concept envisages the launch of information and education support and positioning of digital transformation in the country, both domestically and internationally. This will include targeted work with local and international media, public organizations, business structures and potential investors both in the initial stage of digitalization - to educate the population of the republic and to attract potential partners and investors in this process and to organize a wide discussion of the Medium-Term Program for the Development of the Digital Economy of the Republic of Tajikistan, and at the further stages of the implementation of this program, when it will be important to highlight and position the successes in the implementation of digital projects in all areas in time. , to cover the first victories as widely as possible and to effectively attract investments in expensive digital projects and the introduction of breakthrough technologies.

## § 7. Digital Transformation Ecosystem

27. Initially, the Concept aims to launch a number of initiatives to create a digital transformation ecosystem involving leaders and representatives of the private sector, especially its leading sectors, as well as the information communications technology sector (further-ICT), of non-profit organizations, Creating an effective digital transformation ecosystem is essential to ensure the

maximum involvement of all participants and potential beneficiaries of the digital transformation process. The success of digitalization depends in large part on the degree of engagement of all players in the ecosystem, so mechanisms will be developed to ensure the continued engagement of the ecosystem, which will allow us to determine, over time, how to create public-private partnerships.

### § 8. Funding and budget

28. Also in the first stage, the Concept provides for the development of issues of financing and budget of digital transformation of the republic from all sources of funding not prohibited by the legislation of the Republic of Tajikistan. Budgets will take into account the phase-out of digital transformation, as well as the best international practices similar to the Republic of Tajikistan in terms of the level of digitization of countries. In addition, funding issues will involve all members of the digital transformation ecosystem, especially potential sponsors, development institutions and possible investors, with the aim of for public-private partnerships both domestically and internationally involving major global manufacturers of digital technologies and equipment, international development institutions, international funds and other possible partners.

## THE SECOND PHASE OF DIGITAL TRANSFORMATION TAJIKISTAN (2026-2030)

### § 1. Broadband, information security, cybersecurity and cloud technology

29. In the second phase of digital transformation between 2026 and 2030. The concept envisages further development of digital foundations in the country by launching large-scale infrastructure projects to strengthen the regional digital communications infrastructure to provide broadband and mobile Internet access throughout Tajikistan, including in remote mountainous areas, rural and hard-to-reach areas.

### § 2. Creating date centers, platforms and developing digital services

30. In the second phase, the creation of regional, urban and district date centers that meet the norms and requirements for information security of the Republic of Tajikistan, platforms, as well as projects to provide digital public services will also be launched. To that impact, the effort is to transform the delivery of public services at the internal and inter-agency level so that digitalization leads to greater delivery of services to the public. It is not intended to digitize existing services, but to optimize the entire process of providing services using digital technologies.

31. The second phase will be implemented as part of the Digital Casa project, which provides for the creation of regional infrastructures, date centers and regional connections.

### § 3. Information support, Center of Excellence and Innovation

32. At this stage, it is also planned to continue active awareness and positioning of the digital transformation process in the country, work in the media (further-media) and with the general public to explain the benefits of using digital technologies and work in the context of the digital transformation ecosystem to improve access to information, government, business environment and increase entrepreneurial activity.

33. It is also planned to focus efforts on the catalyzing and synergistic effect of digital innovation and digital entrepreneurship in both services and manufacturing through:

- Creating an innovative ecosystem and developing effective financial tools for digital innovators and entrepreneurs;
- Develop effective business incentives by reducing barriers such as limited access to finance, markets and lack of skills needed for digital innovation;
- Creating an enabling environment for the development and experimentation of smart solutions with the greatest transformational potential applicable in various sectors of the economy and industries, as well as for cross-sectoral cooperation;
- implementing effective mechanisms to identify and prevent potential threats and risks associated with the introduction of the latest digital technologies in a timely manner.

34. These initiatives are to be developed through the Center for Excellence and Innovation in digital, which will be created as part of the Digital CASA project.

### § 4. Pilot project launch

35. In the second phase, the Concept also calls for the launch of priority pilot projects to test and roll out new, including innovative technologies in key sectors of the economy and social sphere, including public services,migration, international trade and customs, education, the financial sector with the use of fintech solutions, especially to manage the flow of remittances to the country from abroad, and in the context of the launch of the Smart City project, such new and innovative projects will also be launched as part of the Digital CASA project.

## 6. THE THIRD STAGE OF DIGITAL TRANSFORMATION IN TAJIKISTAN (2031-2040)

36. The third phase of the digital transformation of 2031-2040 involves further strengthening the non-digital and digital foundations in the country and

launching digital projects in key sectors of economic activity in the country, as well as in the social sphere in accordance with the priorities of the National Development Strategy for the period up to 2030, which includes primarily agriculture, energy, telecommunications and transport, industry, including mining, trade, including international transforming services, culture, education and medicine.

37. By the end of the third phase in 2040, it is planned to receive substantial digital dividends from the implementation of the medium-term program of development of the digital economy of the Republic of Tajikistan, including additional GDP growth of 1.5-2 percent, the creation of up to 0.5 million new jobs and the growth of the quality of life of the population through a significant transformation of the service sector.

38. Further stages of digital transformation in the country will be spelled out in accordance with the new national development strategy of the republic.

## 7. TAJIKISTAN IN THE RANKINGS INTERNATIONAL ORGANIZATIONS

39. According to the World Development Report 2016: Digital Dividends, Tajikistan is one of the countries in the digital economy in terms of digital adoption. This means that the digital economy in Tajikistan is at the very beginning of its formation. This fact is confirmed by the assessment of the Republic of Tajikistan in a number of international indices and ratings.

40. Of particular concern are the downward trends of the country's already lagging positions on a number of parameters in the last few years:

- according to the World Economic Forum's 2018 Global Competitiveness Ranking, Tajikistan ranks 102nd out of 140 countries. Compared to the rating for 2017, Tajikistan's position has decreased from 79th place;[1]

- According to the ranking from the World Economic Forum's 2016 Global Report on ICT Development, Tajikistan ranks 101st out of 139 countries in terms of the economic impact achieved from ICT use. Compared to the rating for 2015, Tajikistan's position has decreased from 93rd place; [2]

- According to the ranking from the World Economic Forum's 2016 Global Report on ICT Development, Tajikistan ranks 103rd out of 139 countries in terms of the impact of digital technologies on new business models. Compared to the rating for
2015 Tajikistan's position decreased from 90th place; [3]

- According to a ranking from the World Economic Forum's 2016 Global Report on ICT Development, Tajikistan ranks 94th out of 139 countries in terms of the impact of digital technologies on organizational

[1] http://www3.weforum.org/docs/GCR2018/05FullReport/TheGlobalCompetitivenessReport2018.pdf

[2] http://www3.weforum.org/docs/GITR2016/WEF_GITR_Full_Report.pdf [3]It's also there.

models. Compared to the rating for 2015, Tajikistan's position has decreased from 84th place;[2]

- According to the ranking from the World Economic Forum's 2016 Global Report on ICT Development, Tajikistan ranks 71st out of 139 countries in terms of ICT usage and efficiency. Compared to 2015 data, Tajikistan's position has decreased from 65th place;[3]

- According to the world economic competitiveness report of the 2018 World Economic Forum, Tajikistan ranks 26th out of 137 countries in terms of public procurement of advanced technological products. But compared to the rating for 2017, Tajikistan's position has decreased from 20th place.[4]

41. The concept provides for a detailed analysis of the reasons for the continuing lag in these key ratings and the development of a number of measures aimed at correcting negative trends.

42. The reasons for this significant lag in the development of the digital economy from other foreign countries and countries in the Central Asia region are both the shortcomings of the legislative and regulatory framework in the digital economy, as well as serious gaps in the creation of digital infrastructure and the provision of ubiquitous broadband Internet access, as well as the lack of digital skills, the weakness of the culture of innovation, the lack of demand for new technologies from state-owned enterprises, the lack of understanding of digital technologies by the population , a lack of investment in digitalization, a lack of institutional framework, weak management of digital projects, lack of financing for digital infrastructure and innovation, weak private sector, including the ICT sector, an insufficiently supportive environment for business and innovation, and, as a result, a low level of digital applications by entrepreneurs.

43. In the context of the analysis of the current state and data of international ratings, it is important to note the possibility of quickly overcoming the existing backlog in the Republic of Tajikistan by effectively using new, including innovative technologies, as well as best practices from international experience. The concept also provides for partnerships with global digital transformation leaders, leading development experts and institutions, as well as participation in international investment projects such as Digital CASA.

## 8. DIGITAL BASICS

44. Electronic communications regulations form the legal basis for the telecommunications sector.

45. Tochiktelecom is the dominant player in the country's telecommunications market. In 2016, the Government of the Republic

[2] It's also there.

[3] It's also there.

[4] http://www3.weforum.org/docs/GCR2018/05FullReport/TheGlobalCompetitivenessReport2018.pdf

decided that all international connections for voice and data transmission must pass through the Single Switching Center, which is technically operated by Tochiktelecom.

46. Broadband penetration in the Republic of Tajikistan is one of the lowest in the region. Access to broadband is limited by high prices for subscribers - some of the highest in the world and limited number of fixed lines, as well as a lack of investment in the creation of modern fiber optic infrastructure throughout the country.

47. High prices for wholesale international IP transit also complicate the widespread availability of broadband. Today, the cost of international transit is one of the highest in the world. On the other hand, this leads to an increase in demand for local content, which increased from 10% in 2010 to 40 percent in 2015, opening up interesting opportunities for the growth of the national digital sector of local content providers. To date, however, broadband restrictions and the difficulty of obtaining a licence to produce audio-video content have hampered the development of the sector.

48. About 35 percent of the population has access to the Internet, most of whom use it through mobile devices. In the period 2013-2018, the market development slowed due to the decline in economic growth and other factors, including the economic downturn in neighboring states and the decline in remittances to the country, the mandatory registration of all mobile and broadband subscribers and social media platforms, which reduced the income of telecom operators.

49. The most common today are 2G networks, especially in rural areas, where more than 73 percent of the population lives, and the expansion of 3G/4G coverage can lead to an increase in Internet penetration.

## § 1. Data and date centers

50. The country has established date centers (public and private), but low level of access to broadband inhibits the creation and digitization of data, which leads to extremely low level of use of data centers.

51. The concept envisages, in the first phase of implementation, to create a market for commercial data storage and processing centers that meet the information security requirements of the Republic of Tajikistan and to review the regulatory requirements for data storage in the country. It is also necessary to develop and approve standards for the evaluation of data centers. At the moment, there is no information about the amount of commercial data and their price has not been determined, and possible business models related to the processing, storage, analysis and exchange of data have not been worked out.

## § 2. Information security and cybersecurity

52. The issue of information security is the basis for the formation of public policy and the development of public relations in the process of digital transformation. The concept calls for measures to improve information security and cybersecurity. The concept envisages the development and adoption of a separate program to regulate information security and cybersecurity in all areas of digital applications in the country.

53. The development and implementation of this Concept is based on the fundamental principles and directions of information security development, including:

- Using the latest technologies to ensure the integrity, privacy, authentication and accessibility of transmitted information and processing processes;
- Preferential use of software and equipment that has been under appropriate government control by the relevant state commissioner of the information security authority;
- mandatory use of information protection technologies using government cryptographic standards;
- Develop regulations governing the use of multi-factor digital identification of a person, including commercial use, including the use of biometric data;
- Establishing competency centres for biometric authentication in the digital economy;
- applying cryptographic technology to create, securely store and monitor the use of authenticating information by participants in information interactions for cryptographic authentication, based on the use of cloud storage and an automated protocol for distribution, integration and preparation for the use of authentication information (cryptographic technology of distributed (cloud) storage and use of authentication information);
- To harmonize, develop and maintain storage and management systems for government data, create software systems using distributed registry technologies;

-developing the concept and using trusted third party technology based on cryptographic algorithms and protocols for its use in services by an information infrastructure reinforced by qualified electronic signature;

- by legislating the rights and responsibilities of participants in information interaction in the processing of personal data, large user data, including in social networks and other means of communication. Establishing responsibility for the improper processing and security of such data;
- Creating an information security knowledge system based on an online education platform and a national e-library;
- Develop mechanisms to prevent illegal information from appearing in the Tajik segment of the Internet, including mechanisms to delete it;
- Creating an information system (national base) of knowledge about new malicious activities and possible system vulnerabilities;

- the creation of a specialized resource designed to work with the authorities to communicate data promptly on the signs of illegal information technology activities (computer fraud, imposed communications services, phishing schemes) to counter computer crime, including in the financial sector, as well as other cases of criminal and illegal use of information technology;
- creation of the National Computer Incident Response Center, the National Electronic Digital Signature Certification Center, the testing laboratory for the research of software software systems, malicious code, information security tools for information security tests on the basis of the "Center for Technical Protection of Information, Certification and Examination"

The General Directorate for the Protection of State Secrets under the Government of Tajikistan;

- The creation of a system of expert organizations in the field of computer forensics;
- Ensuring that the risks and threats of the safe operation of public-use communication networks are minimized, taking into account the information security requirements of the Republic of Tajikistan to ensure the management and reliability of the Internet segment;

-Development of information security standards in cloud, nebulous, quantum, virtual and augmented reality systems and artificial technologies
Intelligence and oversight of their compliance;

- Develop a plan to transfer the routing of traffic of the internal segment of the Internet to Tajikistan;
- Develop a requirement for cross-border data sharing between participants in information interaction in the digital economy;

Creating effective mechanisms for government regulation and support in the field of information security while integrating the national digital economy into the international economy.

§ 3. Digital skills

54. The majority of the country's population recognizes the need for digital competence, but the use of personal computers and internet information and communication in tajikistan is much lower than in many other countries of the Commonwealth of Independent States (further-CIS), and there is a serious digital skills gap between individual groups of the population.

55. The use of digital technologies is expanding in the country's education system. Educational institutions have access to the Internet in accordance with state requirements. The subject of computer science is included in general education curricula and training for ICT in vocational education institutions is being carried out. However, the quality of educational programs and professionals with vocational education does not meet the requirements of the digital economy. There is a shortage of

qualified teachers at all levels of education. There is also a "brain drain" among qualified professionals.

## 9. DIGITAL ENTREPRENEURSHIP, RESEARCH AND TECHNOLOGY AND INNOVATION

56. Tajikistan has established some science and innovation infrastructure, represented by various development institutions, innovation parks and centres, to be used to develop the digital economy. In addition, there are mechanisms for the creation of public-private partnership (further-PPP) (there is a law and projects on PPP - Safe City). To date, however, special innovation management regimes are poorly developed and there are not enough initiatives to support digital entrepreneurs. There are no mechanisms for financing digital innovation, limited sources of financing for start-ups, no special tax regimes, and programs to support high-tech exports.

57. The digital sector in Tajikistan is also in its infancy. This is also due to the practical lack of access of entrepreneurs to broadband, which hinders the development of innovation in the country. Less than 1% of existing businesses offer digital services. For the same reasons, there are virtually no companies producing digital content and media products, including the difficulty of obtaining a license to produce audio-video content.

## 10. RESULTS OF THE CURRENT STATE ASSESSMENT

58. Summing up the rapid assessment of the current state of the digital economy in the Republic of Tajikistan, it should be noted that at the moment the main drag on tangible digital transformations is the inflated prices for quality Internet access, as well as the lack of modern digital infrastructure for Internet access, especially in rural areas. These factors have an impediment to innovation in the country, the introduction of digital technologies and industrial solutions (most enterprises do not have access to broadband Internet), and therefore the development of digital services (less than one percent of enterprises provide digital services) and the digitization of key sectors of the economy and social sphere.

## THE MAIN OBJECTIVES OF THE CONCEPT

59. The aim of the Concept is to create an environment conducive to the transformation of human activities under the influence of digital technologies, including the development of the information society, the transition to providing digital public services and digital government, the widespread introduction of digital technologies in the economy and social sphere and, as a result, the acceleration of the country's economy, the improvement of the country's international competitiveness, the additional growth of national GDP and the improvement of the quality of life of the population through the use of digital

technologies in the medium term until 2040, as well as the creation of conditions for the gradual transition of the economy of the Republic of Tajikistan to a fundamentally new trajectory, ensuring the creation of a digital economy.

## THE MAIN DIRECTION OF THE CONCEPT

60. The concept includes the following main areas: strengthening non-digital foundations, developing digital infrastructure, first of all - ensuring broadband access to all the population throughout the country at affordable prices, transition to digital government, digitalization of key industries and ensuring information security and cybersecurity, development of human capital and creation of an innovative ecosystem.

61. The concept proposes to solve the following tasks necessary for the formation and development of the digital economy:

- Improving e-government and moving to digital government as an innovative way of interaction between the state, business and the population. Creating government as a platform for digital interaction between all players in the country's economic and social life;
- the further development of the information society and the transition to a digital society as a new stage of development of a post-industrial society, in which digital data acts as both a tool of labor and as a subject of work, and a large part of the workers are engaged in the production, storage, analysis, processing and implementation of data;
- the development of a digital economy as a data-based economic activity. In this regard, the Concept envisages the development of the Data Continuum structure, which includes the creation, collection, transfer, storage, security, sharing, analytics and data recognition.

Implementation of the Concept's objectives involves the gradual implementation of the following projects:

62.1. A package of initiatives to digitally transform public services and transition to digital government:

- Creating and developing a public system to identify entities of information relations focused on the provision of digital services and providing authorized access to information;
- developing a system of providing digital services to individuals by enabling all kinds of digital requests and notifications from users' personal offices on the Single Public Services Portal, which will be established in the process of transition to digital government;
- Creating a Republican platform based on cloud computing technologies using modern encryption tools to integrate departmental information systems, resources, and digital services across and from the country;
- Creating a republican integrated service-calculation system;

- The use of electronic paperwork to provide electronic services to legal and natural persons by exchanging legally relevant electronic documents signed by electronic digital signature;

- the large-scale use of electronic documents in commercial activities, including permitting, fiscal, contractual, payment and commodity-accompanying functions;

- creation of the republican state archive of digital documents based on the archives of electronic documents of ministries and departments, the executive authorities of regions, cities and districts of the republic;

- Phasing departmental electronic document systems to use open digital signature verification certificates issued by certifying centers accredited to the State Open Digital Signature Verification Management System;

- Processing of limited-spread service information

- Ensuring the innovative development of the state legal information system to improve electronic legal communication between citizens, business and the state;

- implementing the concept of open data, which is the result of government agencies and organizations by creating a Single Republican Open Data Portal as the main tool for dissemination of it;

- introduction of technologies of electronic democracy, electronic participation, ensuring effective dialogue between the state and citizens and business.

62.2. In order to successfully transition to digital government at the inter-agency level, the Concept is designed to focus on general principles that will be followed by implementation and which will address all the contentious issues that arise as the implementation progresses. This includes:

-Scalability of infrastructure and focus on ensuring ever-increasing demand;

-a unified approach to the creation of a digital government as a whole (rather than a large number of all kinds of initiatives at different levels of ministries and departments);

-Government digital by default (not electronic);

-Digital from start to finish (not even the early stages of transformation, initially in parallel with the provision of public services in the traditional form and through service centers);

-Customer-centricity of services (sharpening for the needs of the user, not the department);

-Proactiveness (predicting the user's needs, not reacting to them);

-Platform dependency of services (access from any device);

-Interoperability

-Transparency of public (rather than the closedness of data and processes of public administration);

-Government as a platform (not just a service provider);

-using open standards (open by default)

(to ensure integration opportunities including);

-security as the backbone of the network architecture.

62.3. A package of initiatives for digital business transformation:

- the formation and development of the National Digital Trade System, which will ensure the formation of legally relevant digital documents throughout the chain from the creation to the delivery to the final consumer of goods, works, services, and will be based on the application of the world's generally accepted digital trade communication protocols and safe transport mechanisms, the use of a single standard of electronic documents based on the national and international standard;

Promoting the integration of business processes of commercial organizations and government agencies in order to improve the efficiency of digital interaction of the business state;

Expanding the use of Internet of Things technologies in manufacturing and transportation and logistics processes using cryptographic solutions to protect industrial networks;

- The use of remote banking channels from mobile devices, client applications for smartphones and tablet computers, which are protected by the requirements of information security requirements of the Republic of Tajikistan;

- use of integration tools with an automated information system of a single settlement information space.

It is intended to meet these challenges by developing and implementing a range of scientific, technical and organizational activities.

## 13. THE USE OF "BREAKTHROUGH" TECHNOLOGIES FOR GOVERNMENT TRANSFORMATION, KEY INDUSTRIES ECONOMY AND THE TRANSITION TO A DIGITAL STATE

### § 1. Government as a platform

64. The digital state primarily means digital transformation, which leads to the emergence of new business models based on data. The more service providers know about their customers, the more personalized offers they can create by providing services that meet customer needs as much as possible and even anticipate needs that customers themselves may not yet know about.

65. This will allow to provide services to citizens and entrepreneurs, anticipating the need for a particular service, based on the analysis of transactions. The key direction for transforming the approach of providing services and interaction between the state and citizens and business will be the transition to the principles of open structure (Open API), which will build a qualitatively new level of cooperation with the commercial sector. This will make it possible to use resources effectively by

concentrating on digital infrastructure, giving the "last meter" to the provision of public services to civil society and the private sector.

66. At the same time, non-state information resources will be a front-end, integrating public services into their own ecosystems, where citizens and entrepreneurs will be able to initiate and receive public services.

67. The model of governance of the state - citizens (G2C) will be implemented, when not a citizen applies to state agencies for services, and the state, understanding the needs of citizens, contacts them to provide public services without the need for physical visits to institutions.

68. The first key principle for improving all processes (G2C, G2B, G2G) will be the implementation of Paper-Free interaction - the exclusion of paperwork, the transition to the principle of "one statement."

69. The digitalization of government-business interaction (G2B) is aimed at reducing the transaction costs of entrepreneurs, increasing transparency of decisions taken by government agencies and organizations.

70. This initiative will be key and involves ensuring transparency and simplifying measures of financial and non-financial support for small and medium-sized businesses, as well as providing other public services to legal entities.

71. The key exercise will be the implementation of the Digital by Default principle, which provides for the planning and subsequent provision of public services exclusively in digital form, with the expansion of the possibility of self-service.

72. A single platform will be created to effectively manage employment processes, aggregating analytical and statistical information on the labour market. In addition, in order to increase transparency in compliance with the conditions of labor laws and prevent their violation, as well as formalization of labor relations, conditions and a digital platform for concluding labor relations with the fixation of payments on social benefits and pension contributions, etc.

73. In order to promote active civic position and build feedback from the population, measures will be implemented to further develop the principles of "Open Government" and "Open Parliament." Accordingly, "open budgets" - a mechanism of public control over the expenditure of budget funds will be developed; "open regulations (further-NPA)" - published draft regulations and bills for further public discussion; "open data" - data in public access for commercial use, not related to state secrets, personal data and other data specified in the legislation of the republic.

74. The formation of electronic compliance systems will allow for a better legislative process, a transparent and public mechanism that allows the public and, in particular, the business community to be able to participate directly in the rule-making process. These measures will help to increase the level of trust in the state and create a favorable climate for doing business through the openness of legislative initiatives.

75. In order to increase the transparency of the electoral system, the Concept provides for digitalization measures that will ensure the creation of an effective system for the formation and updating of voter lists, which will integrate the central public bodies, the population records, the electoral commissions and the local executive bodies. The structure of the system will serve as a basis for electronic voter registration during the period of electoral events, the development of public services, as well as the further modernization of the electronic electoral system as a whole.

76. In order to monitor the social

a single analytical platform will be introduced to reflect information at the level of central government agencies as well as local executive bodies.

77. In order to ensure a reliable legal environment and strict protection of the rights and freedoms of citizens, the interests of legal entities and the state requires a holistic, global digitalization of this direction.

78. In addition, as part of further digitization of law enforcement agencies, the transition to paperless paperwork will continue, as well as the introduction of information analysis systems aimed at improving their effectiveness.

## 2.Spatial data

79. In today's society, digital information about spatial data has become an important strategic resource of public administration and has become the key to its sustainable socio-economic development. It is therefore necessary to create an environment that ensures that consumers have access to and use spatial data digitally.

80. In order to unify, develop and maintain spatial data up to date, the system of state geodesic support will be modernized, a single system of coordinates will be established, open maps will be created on single formats and data structures using distributed registry technologies.

81. Work will be carried out on the integration of individual spatial data into one information space, automation of procedures is ensured so that every newly appeared object, whether a house or a road, during the procedures of public services will appear on the map, updating it. The introduction will improve the availability and quality of services provided to the population in land relations, architecture, construction, environmental management and environmental protection, geology, housing and utilities.

82. An important direction is the creation of a geo-information platform of special purpose, which will become a geo-information basis for systems of management of the structural organization and public security of the state.

## § 3. Digitising business

83. The digitalization of production in key sectors of the country's economy is also very weak. Digital tools are being used in certain sectors. For example, in the financial sector (crowdfunding), transport and logistics. Startups are emerging in agriculture.

## § 4. Digitalization of industry

84. The main sectors of the real economy of the republic, where digitalization is needed, are industry and
Electricity. The development of the mining industry in the country involves the emergence of a high-performance industry with a wide use of autonomous technology and decision-making system mainly based on big data analysis.

85. The digitalization of the extractive and manufacturing industries will be one of the main priorities for the development of the industry in Tajikistan. In the second or third phase, it is planned to launch pilot projects to create model digital factories in the manufacturing and mining industries, where technologies will be introduced
Industry 4.0.

## § 5. Digitalization of energy

86. The development of the electricity industry and its digitization will have a cascading effect for the growth of all sectors of the economy, especially industry in Tajikistan. The target state of the electricity industry is characterized by the further intellectualization of energy systems (Smart Grid). The smart grid will have the ability to control the behavior of all its elements in order to provide a sustainable, adaptive, cost-effective, reliable and safe electricity supply. The task of building and efficient operation of the intelligent power grid will affect all participants in the electricity industry: generation, transmission, distribution, marketing, consumption and system operations. The introduction of a full accounting of the energy consumed and produced by the so-called Smart metering system, and in the future, the automatic processing of big data (Big Data) will allow to organize the management of load (Demand Response), including by improving tariff policy for end-users.

87. In order to improve energy efficiency and reduce energy loss, smart energy management systems and energy-saving technologies are planned. This will ensure the consumer's interaction with the grid, in particular to be able to choose tariffs, manage their own electricity consumption, generate electricity into the grid with their own renewable energy sources and sell electricity.

## § 6. Digital transport and logistics

88. The main challenge to the digitization of the transport and logistics sector is to increase transit traffic. In the initial stages, the main effect will be achieved through the transition to electronic paperwork, and further through the introduction of an intelligent transport system, which will increase the volume of trucking by providing quality and safe road infrastructure between the regions of the republic and in international communication.

## § 7. Digital agriculture and agriculture

89. The digitalization of agriculture will further develop the country's agricultural sector as a priority sector of national economic development. It is planned to implement a number of measures aimed at automating traceability of agricultural products through the introduction of blockchain technologies, with the inclusion of all the organizations involved, which will provide quantitative accounting and the ability to track the entire life cycle of agro-industrial products. The introduction of the traceability system will have a direct impact on attracting investment in the industry and expanding both the export product line and the geography of agricultural supplies. The introduction of full monitoring of traceability will also improve the quality standards of agricultural products, which will increase the attractiveness and competitiveness of products in foreign markets.

90. In addition to the creation of new and developing state information systems in the country's agricultural sector, it is necessary to provide broadband access to all farms and enterprises of the industry, to use the best international practices of digitalization of the agricultural sector and to accelerate the introduction of automated systems and the latest technologies in farms and enterprises of the industry.

## § 8. Digital trade

91. The concept envisages a wide range of measures aimed at removing the country's barriers to digital commerce in general, as well as increasing the competitiveness of local entrepreneurs. The creation of a support infrastructure that includes direct and indirect measures, including the establishment of digital trade service support centres (E-commerce and Fulfillment) will also be a priority.

92. The introduction of a single information environment and the labelling of manufactured and imported goods in conjunction with the construction of an electronic invoice platform will create an ecosystem aimed at preventing, restricting and curbing unfair competition; guarantees of the quality and price of goods purchased, the authentication of goods, and the resistance to the illegal importation, production and trafficking of goods, including counterfeit goods.

## § 9. Digital finance

93. The concept involves the development of financial technologies, non-cash payments and the emergence of an active financial community, playing a key role in the efficient financial industry and the developed infrastructure of the payment services market.

94. The financial sector will be modernized using advanced technologies such as distributed registries, the supply of new financial instruments and products, the digitization of all budget processes and the simplification of procedures through integration with public information systems. The activity of the financial community with the support of the regulator (NBT) involves the introduction of the latest technologies, in general, partnerships with financial institutions, communication companies and other companies engaged in information technology, to reduce the risk of fraud in the online environment, the introduction of new financial digital services products, to improve customer experience while using the latest and highest services to improve the stability of the financial system.

## § 10. Biometric model of remote identification

95. In order to ensure the security, simplification and development of digital services, including public, social and commercial services, it is planned to build a model of remote identification, including based on various biometric indicators, based on the principles of risk-oriented approach.

96. The introduction of a digital identification mechanism will be a fundamental infrastructure. It will create a universal digital environment for interaction and communication between financial institutions, clients, government agencies and other organizations, and agencies. This will qualitatively improve the level and efficiency of the provision of financial, state and other services.

97. The financial sector will provide the tools to develop digital commerce and implement initiatives to create an innovative ecosystem that ensures that payments are made quickly, easily and reliably, that they check counterparties, and access financial instruments for business development and government support.

98. In general, with the construction of infrastructure for paperless billing of invoices and other documents on contractual relations, it is necessary to modernize the system of interbank settlements and the ability to carry out interbank transfers in real time, which in the first place would reduce the transaction costs of small and medium-sized businesses, increase the confidence of the participants of the "business for business" (B2B) market with non-cash payment tools, as well as develop direct payments between individuals (and personal).

99. Of particular importance will be given to the development and implementation of a set of measures to stimulate non-cash turnover.

Measures will be implemented to support financial and non-financial nature for representatives of small and medium-sized businesses, to hold events in conjunction with international payment systems, financial credit institutions and other market participants to improve financial literacy of the population.

## § 11. The development of the digital sector

The development of the ICT industry is a key component of the digitization of all sectors of the economy. The peculiarity of the industry is that information technology is an important part of modern business, contributing to the achievement of results and positive economic indicators for other sectors of the national economy. In addition, the introduction of information technology requires effective measures to ensure information security and cybersecurity.

## § 12. Digital education

101. In order to achieve the objectives of the Human Capital Concept, the education system will be fully updated in accordance with the best practices in the world. The new education will meet the needs of the digital economy, with a focus primarily on information analysis skills and the development of creative thinking.

102. The development and promotion of digital literacy at all levels of primary, secondary and higher vocational education will be undertaken to develop creativity and critical thinking among the younger generation. At the secondary general education level, the "Information Technology" will be phased in to increase the programming basics training hours starting in the 2nd grade. Programs of 5-11th grades will also be supplemented, primarily by revising programming languages to take into account the inclusion of STEM elements (robotics, virtual reality, 3D-pringing and others).

103. In order to develop and support talented young people, regular hackathons, olympiads and competitions will be held, as well as various robotics and programming circles.

104. At the same time, teachers will be trained on an ongoing basis in new digital technologies to improve and learn new knowledge. A digital learning system will be introduced.

105. Primary and secondary education will include the same activities to increase students' access to resources and knowledge as for secondary general education (including hackathons, Olympiads, competitions and training infrastructure).

106. In addition, model training plans and professional standards will be modernized, which will be used in accordance with the requirements of the labour market (employers) to develop the skills and competencies required by a future specialist.

107. At the same time, computer science programmes will be revised to provide quality training in basic digital skills for primary and secondary

vocational education professionals. In addition, there will be refresher courses for teachers in educational programmes that provide competence for the use of ICT.

108. In the field of higher and postgraduate education, model curricula and programmes based on professional standards and labour market requirements will also be modernized, taking into account the introduction of the "Information and Communication Technologies" discipline in all these specialties.

109. In order to ensure the production of the in-demand specialists, the content of educational programs in ICT specialties will be reviewed.

110. In order to bring industry and education closer together in the country's higher vocational education institutions, their extra-budgetary funds will involve representatives of enterprises by opening competence centers.

111. In order to improve the digital literacy of the population, local executives will provide ongoing training and retraining to the population, including vulnerable people: women, pensioners, the unemployed, migrants, those with disabilities in demand for digital skills. This is essential to create and fill new jobs in the digital economy and to distribute its dividends fairly.

112. Digital training programs for small and medium-sized businesses will also be developed. In order to expand educational opportunities, a national open education platform will be created for all those wishing to acquire the necessary skills, which will provide online courses, first of all, providing basic training in in-demand engineering and technical areas, with the involvement of the best teachers and professors of universities and representatives of the country's production.

113. At the same time, applying the concept of lifelong learning, enterprises will provide corporate training for professionals, strengthening communication and technical skills of the profession.

## § 13. Digital culture

114. The concept involves the creation of a network of virtual museums, a library and digitally digital format of all libraries and museum funds, recordings of concerts, performances, significant elements of material and intangible historical and cultural heritage.

## § 14. Digital ecology

115. The creation of a "Unified State System for monitoring the environment and natural resources" will contribute politically and legally to the implementation of the national strategy of sustainable development and prevention of environmental disaster; promote transparency and democratization of society in the area of environmental and natural resources; to create the necessary conditions for the access of the general

population to environmental information resources; to monitor public opinion on environmental issues, and in the economic aspect, to improve the efficiency of the use of natural resources, public production, to improve the socio-economic conditions of the population.

116. Socially, it is about improving health and increasing life expectancy; create the conditions for improving the ecological culture and environmental education of the population.

## § 15. Digital medicine

117. Digitalization of health care involves both further informatization of the industry with the introduction of the interoperability platform and the development of mobile health care, remote (telemed), and the introduction of breakthrough technologies, robotic training and artificial intelligence in the processes of student learning, diagnosis and management of treatment plans.

118. The health integration platform involves the ability to interact flexibly with each other and external systems, the ability to create an ecosystem of applications for end users with integration with wearable devices, mobile applications created by commercial companies, and the introduction of an electronic health passport for every citizen of the country.

119. A single data repository with "live data" will be created in stages by introducing regional medical information systems. Subsequently, the data collected will be used for medical statistics, analytics, and big data decision-making. This will enable the transition to paperless health care, optimization and efficiency of care provided, and continuity of care between different levels and medical organizations. There will be secure access in accordance with the information security requirement to key medical information for all participants.

120. Through personalized notifications and warnings, including through mobile technology, people will be involved in their own health and healthy lifestyles and healthy and healthy and varied foods. As a central hub for medical information, electronic health passports will provide timely and reliable information to both patients and health professionals, as well as health authorities and funding authorities.

## § 16. Digitalization of smart city government

121. Smart City initiative is the realization of conditions for creating cities convenient for citizens by improving their infrastructure. The strategic direction is to create an urbanized area in which the resources of urban services and private initiatives interact and cooperate to ensure the sustainable development of the city and create a favorable environment for residents and tourists through the technologies being implemented and the analysis of contextual information in real time.

122. To increase efficiency from the implementation of initiatives and optimize costs, the use of breakthrough technologies, such as Internet things, artificial intelligence, etc. is envisaged.

## 14. CREATING AN INNOVATIVE ECONOMY

### Future

123. The concept involves the implementation of a set of interconnected measures that are necessary to achieve the key ambitious goal of creating an innovative economy of the future.

124. The development of the country's innovative ecosystem includes, first of all, creating preferential conditions for all existing innovative technology parks and centers, improving their work and creating national innovative technology parks in the cities of the republic. This environment is designed to create the conditions for the attraction of ideas, technologies, digital solutions and talented professionals.

125. The development of innovation requires the creation of another necessary environment - a non-state professional venture capital industry. The development of the venture industry will require the adaptation of the legislative framework to finance start-up companies, including the development of a draft law on venture capital investments, which also regulates the activities of individual investors.

126. Also, with the development and regulation of individual venture capital investment, it is necessary to develop and implement measures to attract professional venture funds to the country. In addition to professional financial institutions, venture financing can be handled by large enterprises of the republic, organizing their own corporate venture funds. The state can facilitate the creation of such funds through investment or other incentives.

127. Innovative development will create the conditions for joint entrepreneurship (corporate innovation and superclusters) and prioritize technologies to create new industries. A favourable regulatory legal environment will be created for priority technologies and corporations, including transnational ones, will be involved.

128. These initiatives are planned for the second and third phases - until 2040.

## THE MECHANISM FOR IMPLEMENTING THE CONCEPT

129. In order to create a mechanism and ensure the implementation of the Concept, it is necessary to harmonize the interests of all parties interested in the development of the digital economy and combine the organizational, labor, financial resources of the state and business.

130. Taking into account the goals and objectives of the development of the digital economy, a mechanism for implementing the Concept is envisaged, which:

- ensures the involvement of all stakeholders (government, business, civil society and the scientific and educational community, international partners);

- Ensures transparency and accountability of its activities;

- Uses a design approach to implementing the Concept.

- Provides financial support for the development and development of the digital economy infrastructure through budgetary and non-budget funds;

- provides material support to the subjects of the digital economy.

## MONITORING AND EVALUATING THE IMPLEMENTATION OF THE CONCEPT

131. The implementation of the Concept will be monitored by the state authorized body in the field of digital transformation, as well as by international and public organizations of the Republic of Tajikistan.

132. The authorized public body in the field of the digital economy coordinates the activities of all public authorities, as well as establishes cooperation with the private sector, society and development partners. A Digital Economy Development Council under the President of Tajikistan will be established to regularly consult and monitor the implementation of the Digital Economy Concept, programme and roadmap.

133. In the course of implementing the Concept, responsible authorities submit quarterly reports to the State Commissioner for Digital Transformation.

The State Commissioner for Digital Transformation presents an annual report on the progress of the Digital Transformation Concept in Tajikistan to the Government of Tajikistan.

134. Information on the progress of the Concept and the annual report are posted on the website of the state commissioner of the Digital Transformation Authority.

## 17. FINAL PROVISIONS

135. Funding for this Concept comes from the state budget, as well as extra-budgetary funds, grants and other sources not prohibited by the law of the Republic of Tajikistan.

136. In order to specifically address the issues envisaged in 2020, the Medium-Term Program for the Development of the Digital Economy of the Republic of Tajikistan will be developed, the plan of events, financial support for the activities, the timing of their implementation, the targets and indicators for monitoring the implementation of the tasks, which will be determined by the responsible authorities.

## LIST OF ABBREVIATIONS

| | |
|---|---|
| Apk | Agro-industrial complex |
| Gdp | Gross domestic product |
| Ppp | public-privatepartnership |
| Ict | Informationandcommunicationtechnologies |
| Nbt | National Bank of Tajikistan |
| Research | Research and development |
| Ppa | Regulatory acts |
| Un | United Nations |
| Cis | Commonwealth of Independent States |

| | |
|---|---|
| Media | Media |
| Big Data | Big data |
| B2B | Business for business |
| B2C | Business for the consumer |
| True | - a computer network emergency response team or trained to prevent such situations |
| Data Continuum | a continuum of data |
| Demand Response | Demand management |
| Digital CASA | Digital Central Asia and South Asia |
| Digital by Default | Digital by default |
| E-commerce | e-commerce |
| FinTech | Financial technology |
| Fulfillment | A set of transactions from the time the buyer orders the order to the moment they receive the purchase. |
| G2B | Government to business |
| G2C | Government for citizens |
| G2G | Government for the Government |
| G-Cloud | Government cloud complex |
| Industry 4.0 | -thetwig-turned industrial revolution |
| API | Application programming interface |
| Paper-Free | -theservantwithout references |
| Smart City | isa smart city |
| Smart Grid | Smart electricity grid |
| Smart metering | Smart meters |