

## REVIEW

# Digital Economy: A Vision From The Future

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### ABSTRACT

The article shows that the foundation of the digital economy can be a new paradigm for predicting the future from the future, i.e. from the future in which the development goal has already been achieved. This allows to minimize all costs and completely avoid incorrect system solutions of the existing trial-and-error approach. Using the achievements of the technological revolution of Industry 4.0, an effective digital economy can be formed only when it is seen as an economy of coordinated interests between the state, business, society and the interests of each individual in real time at every local level. This will make it possible to solve the problem of ensuring the high quality of life not of citizens in general, but of each individual.

## 1. Introduction

The article was written on the basis of research conducted by the author from the period when in the country, under the leadership of academician V.M. Glushkov, there was an attempt to practically implement the idea of the OGAS, as well as of research ongoing to this day. All these works reveal the reasons

why the introduction of the achievements of scientific and technological progress for a long time only intensifies the crisis in the socio-economic development of Russia and its lag behind the advanced countries of the global world is growing. As the President of Russia said on December 8, 2018, the danger of this phenomenon is that "The world as a whole is in a state of transformation: a very powerful, dynamically developing transformation. If we do not ori-

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ent ourselves in time, if we do not understand in time what we need to do and how - we can lag behind forever" <sup>[1]</sup>. Therefore, the main goal of the work is to draw the attention of the scientific community and decision-makers that a new methodological toolkit developed by the author can become the foundation for identifying the causes of all the problems of Russia's development and solving them. The basis of the toolkit is:

- (1) definition of a single goal-setting;
- (2) integrity, complexity, system approach and interdisciplinary in understanding and in relation to the identified objectively set goals;
- (3) a single indicator for comparing all processes - "time";
- (4) a single criterion of effectiveness for the entire system and any subsystem in any context - this is the "time between" the goal and the reality where each individual, country and the world are as a whole.

A new methodological toolkit made it possible to form a new paradigm for predicting the future from the future, that is, from that future when the goal is achieved. <sup>[2]</sup> A vision from the future made it possible to understand:

- (5) patterns of development of the human community and ways to achieve the goal;
- (6) the nature of a systemic crisis and there are only two development paradigms, one of which is characteristic of crises, and the other can create all conditions for development without crises;
- (7) in the conditions of the technological revolution of Industry 4.0 and the rapid implementation of digital devices, to form a digital economy and solve all 12 national projects together and with a minimum of resources and time and achieve an objectively set goal will become possible only when a single development strategy for Russia is developed and implemented.

At the same time, the digital economy will be considered as the economy of agreed interests between the state, business, society and the interests of each individual: in real time; at each local municipal level in the regime of self-government; when implementing personalized production using digital technology at his request, without producing anything superfluous. These are the basic conditions for solving all problems and we get a forecast horizon not for 2024 or 2030, but for the whole long term until the goal is achieved. Thus, a vision from the future provides a choice of a model of the future not by trial and error, but with an understanding of the ultimate goal and in the interests of each individual living in the whole of Russia. This is the only possible condition that can motivate each individual to realize their own potential, to increase labor productivity, to ensure accelerated and sus-

tainable development in time and space in relation to the goal while reducing consumption of all types of resources. And this ensures the quality of life not of citizens in general, but of each individual.

## **2. OGAS as The Beginner of Digital Economy**

It seems that for the first time the idea of creating a digital economy was written back in the late 60s of the last century in the works of the Soviet scientist, developer of electronic computers in the USSR, doctor of technical sciences, professor, honored worker of science and technology of the Russian Federation, academician of the Russian Academy of Natural Sciences Anatoly Ivanovich Kitov. Then he posed a question to the top leadership of the USSR and the scientific community about the need to manage the economy throughout the country based on the widespread use of electronic computers. Speaking about the possibilities of such management, A. A. Kitov wrote: "In industry, using digital machines, automatic control of individual units, machines, and production lines and even entire automated plants is carried out. The use of electronic digital machines reduces the number of staff, saves materials and energy, increases production speeds (increases the pace of work), improves product quality and reliable control over the production process ... and digital machines can be used for semi-automatic control and control of complex production, energy or combat systems". <sup>[3]</sup> At the same time, Kitov convinced the country's leadership that the implementation of his project would allow the USSR to overtake the United States in the development and use of computer technology without overtaking them (as he said, "Overtake without overtaking").

Since 1962, this idea was developed by the director of the Institute of Cybernetics of the Academy of Sciences of the Ukrainian SSR, Academician Viktor Mikhailovich Glushkov. He rethought the project of A. I. Kitov and intensified work on the creation of automated control systems (ACS). Since then, the introduction of computers in the national economic complex of the USSR began. There was an attempt to create various types of ACS (automated control systems) and based on them to create a nationwide automated system for recording and processing information. The so-called OGAS system. It was intended for the automated management of the entire economy as a whole. Academician Viktor Glushkov was a pioneer of this development <sup>[4,5]</sup>.

From various sources, one can trace several versions of Glushkov's proposals for the creation of an OGAS. In 1962, he proposed the OGAS project as a three-level network with a computer center in Moscow, up to 200 mid-level centers in other large cities and up to 20,000

local terminals in economically important places that exchange information in real time using the existing telephone network. Then Glushkov proposed using the system to transfer the Soviet Union into a new type of economy using an electronic payment system. This project has been rejected.

Since 1965 methodologically, the creation of the OGAS began to be designed taking into account the industry and territorial principles of economic management used in the USSR. It was assumed that the system will be based on industry-specific automated control systems (ISACS) to provide automated computerized economic management within each separate branch of the USSR on the one hand, and territorial automated control systems belonging to the USSR State Gosstat, the Central Statistical Bureau of the USSR, and the State Planning Commission of the Union republics on the other. This should have allowed the formation of the optimal structure of the macro-technological production process throughout the USSR and, as the OGAS developers considered, to be able to carry out operational control over the implementation of this project.

By 1980, the "Technical design of the OGAS system" was developed. But it was not approved. And after the death of Viktor Mikhailovich Glushkov on January 30, 1982, the project was stopped.

As you can see, OGAS as an idea has not been implemented. The author of this idea himself said, roughly, the following: the economic system that has developed in the USSR is so clumsy and immune to the achievements of scientific and technological progress that it is comparable to using an electronic computer (PC) to control cart.

At about the same time, carried away by the ideas of the OGAS, the author of this article investigated the problems of introducing the achievements of scientific and technical progress and automated control systems in trade. And also got a negative result.

What was it like? Studies have shown that the more achievements of scientific and technological progress and ACS will be implemented in the national economic complex, the more and more imbalances in the economy will be. That is, the acceleration of technological processes in production, in wholesale trade and at the same time maintaining the orientation of the production of consumer goods towards an abstract consumer slowed down all processes in retail. And this is how, the author wrote, it will lead to a crisis in the economy in that rigidly centralized model of the state system of management and planning that prevailed in the USSR. The worse it will be for a particular person. That is, the system was non-cybernetic, without feedback in understanding the negative results.

Having received such a result, and driven by the desire

to do at least something to save the idea of the OGAS, but in a new reading, the author took part in the All-Union Conference on the problems of the OGAS, RASU and ACS. The conference was dedicated to the 60th anniversary of Academician V. M. Glushkov and was held in Kanev on September 20-23, 1983. Given the brief abstracts published in the collection of that conference, I quote them verbatim <sup>[6]</sup>.

### **3. OGAS in the System of the Economic Mechanism of the Relationship between Production and Consumption**

At the stage of developed socialism, production relations are still commodity, and the satisfaction of personal material needs is more than 90% inherent in the commodity-money form, and therefore the economic mechanism of the relationship of production and consumption can be viewed through the mechanism of the relationship of production and trade.

It has been established that the circulation time of consumer goods is more than double the time of their production (in general for all goods, for individual groups of goods this time difference is even greater). The imbalances in the time of production of goods and their circulation mean that funds spent on the production of goods are returned to the state budget with a great delay.

Violation of the regularity and proportionality of accelerating all processes in social production and lengthening the time of circulation of goods in comparison with the time of their production are the cause of the emergence and intensification of other imbalances and negative phenomena.

Entering into the system of relations of a specific person with all his material and spiritual needs, state of health, desire to work according to his ability, etc., establishing optimal relationships between social production and this person will give the sum of optimal relationships at the level of the labor collective, region, republic, and the entire national economy. Only with such organizational and economic forms OGAS can become a reality, just as these new relations without OGAS cannot exist. Thus, the new economic mechanism of the relationship between production and consumption will make it possible to organically combine the achieved level of development of productive forces with the advantage of the socialist economic system, establish accounting and control over the measure of labor and the measure of consumption in the interests of each individual, collective and the whole society. Only these measures can give great scope to the action of the enormous creative forces inherent in our

economy.

These are the results that are presented in my theses, and over time, re-reading the OGAS draft design of 1980, the desire to convey the conclusions of my research to the intended followers of V.M. Glushkov becomes clear. Indeed, in various chapters of the draft design it was directly stated that:

(1) For OGAS, the sectoral and territorial principles of construction were laid. The economic system of the USSR was considered as a socialist form of ownership of the means of production, combined the natural and price aspects of functioning and development <sup>[7]</sup>;

(2) OGAS was considered as the data-processing base of the system of planned management of the national economy. Its functioning should have been carried out on the basis of socialist control and management methods [7, p. 47].

(3) The functions of the OGAS should cover not only the economy, but also all spheres of public life. For example, it was planned to informatize medical records of the population, utility bills, labor relations, and even a complete transition to a non-cash form of payment by citizens for the purchase of goods and services [7, p. 84].

(4) It was declared that program-targeted planning is the basis of the OGAS. And on this basis it was supposed to achieve full satisfaction of the material and cultural needs of citizens through the introduction of such a management system.

These provisions of the OGAS and their implementation have been questioned in my empirical studies. And the most important thing: for the first time, sorting through various options for improving the relationship between production, wholesale and retail trade, and improving trade itself in order to reduce the circulation time of goods, it was concluded: the growing imbalance could be eliminated only if economic, technological, technical and organizational conditions for the integration of production were created and trade within the region, territory, district. And all this could be successfully solved using an intersectoral automated control system (since automated control systems were then widely used) by the production and sale of consumer goods on a computer basis. This would allow, as I argued, to move in the future from studying the demand of the population of a particular region and drawing up applications and orders for the production of goods for an unknown consumer to studying and identifying needs and drawing up orders for the production of specific goods for specific customers. Then the time spent by the goods in the sphere of circulation would be reduced to a reasonable minimum. The imbalance in the time of production and the time of circulation of goods and money

would be eliminated. Consequently, the very root cause of the crisis would have been eliminated. However, the interests of various departments and various scientists were stronger than the interests of the end-user. The question arose: how to coordinate the whole diversity of interests? The system was becoming more and more inefficient. The ideas of perestroika and economic reforms have already loomed ahead. The collapse of the USSR was predetermined, because for this, economic prerequisites have ripened. In the future, all this was confirmed. The result is known. State power did not overcome the crisis, and the USSR ceased to exist.

Nevertheless, the result of the empirical stage of research was as follows: in order to eliminate the imbalance that has arisen, production should be carried out by order of a specific person, bypassing the production of anything superfluous. All the components for the transition to such a new model of future life management were then already available, however, in its infancy. But there were still no answers to many questions. For example, what methodological toolkit should be used or a new one should be developed in order to confirm or refute the results of empirical studies. The political and economic search for answers to this question has begun.

The political and economic stage of research has led to the understanding that time should be taken as a general indicator that characterizes a positive or negative movement relative to a goal. But for this it was necessary to determine the purpose of the development of society.

In the draft design of the OGAS a clear unequivocal understanding of the goal was not formulated. When reading a project, you can find a variety of goals systematically not united by one goal. It says that the OGAS is created with the aim of collecting and processing information for accounting, planning and managing the national economy on the basis of the State Network of Computing Centers (GSVC) and the State Data Transfer System (OGSPD). And if it was a question of OGAS subsystems, for example, a forecasting subsystem, then there were already other goals. For example, the main objectives of the forecasting subsystem were determined by compiling options for long-term forecasts of interrelated indicators of national economic development and making forecasts for some of the most important national economic problems [7, p. 97].

Another subsystem of the OGAS - the automated system of planned calculations (ASPC) had a different purpose. It was created to develop promising, long-term, medium-term (five-year) and current (annual) plans. ASPC was to provide:

(1) determination of a system of indicators for long-term, medium-term and current national economic plans



that meet the requirements for the state planning and management system in terms of receipt and quality of information;

(2) finding the most effective options for the planned development of the national economy, optimization of planned designs;

(3) monitoring the implementation of planned targets, making adjustments aimed at eliminating the emerging imbalances in the national economy, implementing the functions of planned regulation in accordance with the emerging internal and external conditions;

(4) analysis of economic and social problems of the growth of social production [7, p.141-142].

All the provisions that reveal the content of this goal indicate that the USSR, even when implementing the OGAS, was not immune from imbalances and problems in the social and economic growth of social production. And this, despite the fact that the important point in fulfilling the functions of the OGAS was the determination that the system of economic-mathematical models was the theoretical basis of the functional structure of the OGAS. Such basic modeling methods were adopted as “brainstorming”, extrapolation method, options for multivariate regression and correlation models and others. All these methods, in the absence of an unambiguously accepted goal, contributed to the fact that the development of the USSR was planned to be carried out and was carried out by the “trial and error” method.

In the political and economic literature of that time, the goal is formulated by the basic economic law - the law of satisfying ever-increasing human needs, or the law of goal-setting. With such a goal, the governing political and economic law of exaltation of needs indicates that mankind creates a consumer society, since one satisfied need gives birth to a new one and so on endlessly until all resources are exhausted, but the goal is not achieved<sup>[8]</sup>. But, if we take a specific person as the primary unit of society in all the diversity of his needs, then the goal will be achieved only in that form of production relations in which a direct relationship between production and a specific person is established. The production of goods is carried out at the request (order) of a specific individual subject to equal and free access to spiritual and material goods and their maximum diversity. This excludes the possibility of producing excess goods, in which case the resources are used efficiently, and the released time and resources can go to human development. And already on this fundamental basis it is possible to fully form an objective understanding of that model of human relations that does not conflict with the achievements of scientific and technological progress and can ensure development

without crises on the way to achieving the identified goal.

#### **4. Vision of The Future from The Future**

Since 2000, the era of building the information society begins. And now - building a digital economy. And they are considered mainly as a technical and technological problem for processing at an incredible speed increasing data arrays (BIG DATA) and within the same paradigm of the development of the human community with all the negative consequences that are described above.<sup>[9,10]</sup>. In a comprehensive, holistic, systemic and multidisciplinary understanding and taking into account the finding of a common development goal, no one is considering this problem. There are many goals and they are very different.

It is right to recall here that back in the late 60s of the 20th century, International Non-Governmental Organization the Club of Rome, which arose on the initiative of the Italian economist Aurelio Peccei, put forward a program to study global problems and set a goal: to give society a method by which one could reliably analyze all the “difficulties of mankind”. In total, more than forty reports have been issued on behalf of the Club of Rome since 1968 - almost all of them are positioned as works addressed to the Club and supported by it.

A new report by the Club of Rome “Come on!” was released at the end of 2017. The concepts expressed by E. Weizsacker and A. Wijkman on 220 pages of the book text are anti-globalist in nature and de facto require a change in the entire mode of production and consumption of modern humanity, but do not answer the question of how to do this.<sup>[11]</sup>

Currently, the World Economic Forum in Davos is considered, along with the Club of Rome, the most advanced “factory of thought”. In January 2018, a report was announced at this forum in which the most likely risks for the global economy were identified. These included: (1) extreme weather phenomena; (2) natural disasters; (3) cyber-attacks; (4) data fraud or theft; (5) inability to cope with the adverse effects of climate change; (6) large-scale forced migration; (7) man-made natural disasters; (8) terrorist attacks; (9) illegal trade; (10) bubbles in the asset markets of key economies<sup>[12]</sup>. Last January the International Economic Forum presented a new report on global risks of 2019. The general thing in these reports is that they analyze statistical and empirical information of the past with the help of various mathematical models, ascertain the fact of increasing risks and, using surveys, try to understand what to do in the future. So, the report presents the results of the latest Global Risk Perception Survey, in which nearly 1,000 decision makers from the public sec-

tor, private sector, academia and civil society assess the risks that the world faces. Nine out of 10 respondents expect aggravation of economic and political confrontations between the major powers this year.<sup>[13]</sup> But despite such a detailed analysis, from their point of view, the global society of people still seems to be a probabilistic society, not strictly predicted and controlled, and is characterized by a high level of uncertainty in the future with the rapidly growing other risks.

At one time, Academician N.N. Moiseev wrote that "at a certain stage in the development of civilization, humanity will have to take responsibility for its further evolution." But in his book "To be, or not to be - humanity's dilemma?" there are two mutually exclusive phrases. The first - "If a person does not find the right key to his relationship with nature, then he is doomed to death" and the second phrase - "I want to warn the readers of this book in advance that they will not find specific recipes in it to save humanity. Yes, such recipes cannot exist, for the future is unpredictable"<sup>[14]</sup>.

But if we look at this problem with the help of a new methodological toolkit and with the understanding on its basis of a vision of the future from the future, and not from the past and the present, as is customary in traditional scientific knowledge, it turns out that a person can, having understood the laws of his development, understand his future. And on this basis, society can choose only that development model that allows accelerating evolutionarily (without returns, and therefore without crises) to bring this future closer.

In the context of the technological revolution of Industry 4.0 and the rapid implementation of various digital devices, artificial intelligence, the Internet of things, bio-, neuro- and other technologies of 21st century generated by it, different countries can have different relations between the state (government), society, business and a specific person, depending on the choice of development goal<sup>[15-17]</sup>. Studies through the prism of new methodological toolkit have shown that three models of the development of the human system are possible. Only one of them suggests that development will not proceed by trial and error, but consciously, with an understanding of the future from the future and its ultimate goal.<sup>[18]</sup> Orientation to the interests of a particular person through the implementation of digital technology at his request will allow not to produce anything superfluous. It will also help to keep resources in pristine condition and find free time for human development. All this will be the only possible condition that can motivate each individual, especially a young one, to ensure accelerated and sustainable development in relation to the goal. As a result, in this model, the technological

(digital) singularity is synchronized with the singularity of the formation of new relationships between people and their awareness of the need for evolutionary, without returns, to bring closer the moment of achieving the goal of global development in a conscious and understandable future.

Now the world is between the first and second model. But the rapid implementation of various technologies, digital devices, artificial intelligence, bio-, neuro- and other technologies of the 21st century with the aggravation of international relations, migration processes, sanctions, trade, diplomatic wars and other negative phenomena around Russia, between the United States and China, USA and Europe, etc. accelerate bringing the world closer to the second development model. The ultimate goal is control over the whole world and every person. The consequences have already been written above. Risks will increase, and the states themselves may disappear.

Consequently, it becomes critically important that states and their leaders, for their own preservation and preservation of their peoples, for ensuring universal security and transition to sustainable development, take care, first of all, of solving the problem of forming a third development model and strategy for achieving it in a future that is understood and accepted by all.

To make this transition to the third development model becomes possible only with the help of digital and other high technologies of the 21st century. The adequacy of the new form of production relations and new productive forces ensures the achievement of the global goal with minimal resources, ever-decreasing expenses of working time and increasing expenses of free time for one's own excellence in the physical, intellectual, spiritual plan.

## 5. Conclusion

Thus, a vision of the future from the future gives us the understanding that new productive forces, such as digital and other high technologies of the 21st century, must correspond to completely new production relations between people that are not in conflict with them. This feature was noted in a speech by President of Russia V.V. Putin at the meeting of the Council for Strategic Development and Priority Projects in July 2017: "the digital economy is not a separate industry, in fact it is a way of life, a new basis for the development of public administration, the economy, business, the social sphere and the whole society"<sup>[19]</sup>. Only such relations become the basis for the formation of institutional, financial mechanisms and infrastructure projects for the development of the digital economy, and not vice versa. A prerequisite is the transition at the local level to a new model of life management with the simultaneous

development of a mechanism for its implementation. Such a mechanism, as described above, is a mechanism for reconciling interests between the state, society, business with the interests of each individual in real time and the entire digital communication infrastructure between them. And this mechanism is the mechanism of becoming a digital economy safe for humans.

It seems that a tool that can fully realize the mechanism of coordination of interests is blockchain technology. The platforms for conducting an operation between equal partners acting without intermediaries are based on this technology, and in which decentralized storage of information is used to display all data on operations to coordinate interests separately at each local level. After all, technologically, blockchain systems do not need either intermediaries or centralized management. Contradictions are resolved on the basis of the “bee swarm” principle, that is, based on the collective opinion of all parties involved, they are governed by their own laws and operate almost autonomously.

Now the digital economy can really be seen as an economy of coordinated interests between the state, society, business and the interests of a particular person in real time at each local level, in which everything is aimed at achieving a given goal. And that means it is aimed at approaching the future. The main role of states will be that the government realizes the need to redistribute its functions and budgets from the upper, sometimes rigidly centralized level, to the local level.

Such a management model is extremely flexible, because it does not adapt to what is happening today in a rapidly developing and changing world, but is based on a unique understanding (vision) of the future from the future and the mechanism for its achievement.

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