Digital Economy: Formation, Development and Implementation*

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In the article the author approaches to the formation, development and implementation of the 'Digital Economy' from the perspective of the existence of goal-setting, purposefulness, systemic and complex properties. Thus, it would be possible to understand the nature of human relations we need – i.e., what model of life organization must emerge in order to assess it comprehensively and to use as fully as possible the opening creative potentials of the 'digital economy'. The main point is to find the most relevant mechanism for functioning of this model so that to prevent the possible risks for each individual and the society as a whole. Hence DE should be viewed as an economy of agreed interests between the state, society, business and the interests of a particular person in real time, in which everything is aimed at achieving an objectively defined goal while reducing the costs of all types of resources.

Keywords: *digital economy (DE), worldview, methodology of cognition, goal, time, development regularities, particular human individual, mechanism for accommodation of interests, life organization model.*

In December 2016, the President of Russia signed the decree on the development and approval of the Digital Economy Program which provides for measures for formation of legal, technical, organizational and financial conditions for development of digital economy in the Russian Federation. On December 13, 2016, speaking at the World Economic Forum in Moscow, the Minister of Communications and Mass Media of the Russian Federation Nikolay Nikiforov informed the audience that the 'Digital Economy' program would be developed by May 2017 in accordance with the instructions received from President and the Government of Russia. On April 3, 2017 in compliance with executive order, the structure of the working group in the Digital Economy at the Economic Council under the RF President was approved. The functions of this working group are as follows: to draft proposals for the RF President on such issues as development and implementation of the digital economy development program in the Russian Federation; to determine approaches to digital transformation of markets and economic sectors of the Russian Federation; to realize projects for building, development and modernization of the digital-economy infrastructure that would provide for collection, storage, processing and transmission of data; to form the R&D and engineering potential for further progress of digital economy; to enhance the RF laws on technical regulation that provide for the development

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of digital economy in the Russian Federation; to form a unified digital space in the Russian Federation territory and to integrate such space in the global digital space; and, to coordinate activities for realization of the projects aiming at the development of digital economy in the Russian Federation and being implemented in compliance with the orders and tasks issued by President of the Russian Federation (Executive Order of the President … 2017). As evidenced by the afore-cited information, the process of formation of 'Digital Economy' in Russia is in the focus of the growing attention and accelerating efforts. On the other hand, so far there is a clear definition and understanding of the essence and aim of the 'Digital Economy', of its constructive potentials, the practical mechanism of its functioning and of the related risks for a human individual and the society at large.

In Russia's official circles some of the key goals of the digital economy are identified as a throughout automation of all basic production and economic processes, development of the personified production and consumption market, growth of the aggregate efficiency of economic actors, mobilization of knowledge through exchange, and job creation in high-tech sectors. In the US the emphasis is made on open and unlimited access to the Internet, while in China the main emphasis is made on the shared use of data by government and commercial organizations. At present, there is a broad range of definitions of 'digital economy'. For instance, Tatiana Eferina, Head of Department for Monitoring of the Analytical Center under the RF Government, has specified the 'digital economy' as economic activities based on digital technologies and providing the introduction of information technologies in all sectors and spheres of activities, as well as for the transfer of business processes into the digital space.

In the draft Strategy for Information Society Development up to 2030, in different versions of the draft 'Digital Economy' Program as well as in other documents and publications, the 'Digital Economy' as such is considered as increasing efficiency of the contemporary economy mainly through automation of all data-processing procedures and technologies.

Many years' search for the regularities in the human community development and in the formation of information society helped the author of this paper to understand that 'Digital Economy' is neither a technical, socio-cultural or philosophic problem, nor an economic or political-economic task. 'Digital Economy' is a task or problem of social science and worldview, and it should be resolved at the cross-disciplinary level, on the basis of all unified sciences and spiritual knowledge that aim at cognition of regularities in the human community development and identification of its objective goal. This statement is based on the fact that in her research work the author has passed through all stages of such research (Formation... 1991: 49–55; Bondarenko 2000; Information Society... 2001; Bondarenko 2008, 2009; 2015a: 65–69; 2012: 7–22; 2015b: 8–24). Hence, 'Digital Economy' is an integral, systemic and comprehensive problem of finding the model of human relations that would be compatible with the technologies of the fourth industrial revolution, that is, with digital and other high technologies of the 21st century, and via its elaboration, development and implementation such model must promote the attainment of the objectively set goal.

In order to achieve the worldview level, the author developed a new methodology for cognition of regularities of the human community development. The main provisions of such methodology are as follows:

✧ irrespectively of our wish, the human community development proceeds for the purpose of attaining of the common and objectively set ultimate goal – to satisfy the whole

range of every human individual's needs, including becoming physically, intellectually, and spiritually perfect and reaching the high level of consciousness;

✧ to reach the systemic, comprehensive and integral stage in development;

✧ to be able to measure all processes and phenomena by means of a uniform index – time;

✧ to set a single criterion of development efficiency for the whole human system and any of its subsystems in any section (civilization, country-based, regional, socio-economic, *etc*.). This criterion is the time between the attainment of the objectively set goal and our reality. If this 'time between' reduces irreversibly, it means that development proceeds along the objectively set direction.

It should be noted that since a very long time ago, scholars representing various disciplines and spiritual knowledge sought to cognize the goal of mankind's and human individual's development on the Earth. For example, in 1784, at the juncture of the two epochs of the Enlightenment and Romanticism, Immanuel Kant, a German philosopher and the founding father of German classical philosophy, in his article 'The Idea for Universal History on a Cosmopolitical Plan' considered the world history as a purpose-oriented process. Trying to find a way to subordinate history to law, he believed that such a law of history by all means must be a developmental law. He suggested that it would be good to try to discover a natural goal in the meaningless course of human affairs, as on the basis of such goal the creatures acting without their own plan might still have history in compliance with a certain plan of the nature. Kant saw the ultimate goal of the world existence in attaining a full development of human reasonable natural abilities (Kant 1963–1966).

The authors of the reports to the Club of Rome also sought to formulate the goal of the global society's general and sustainable development and proceeding therefrom, to articulate new proposals for reorganization of international order (RIO) and to find a new perfect social organization for people (Tinbergen 1976). This issue was given special attention in the fifth report to the Club of Rome entitled as 'Goals for Mankind', in which global problems were analyzed through the prism of the goals-and-values system and thus the crucial shift took place from the qualitative to quantitative analysis. But according to the authors of the report led by Ervin Laszlo (world-known Professor of Philosophy, Systemic Sciences and Political Sciences, Honorary Doctor at a number of universities, Program Director at the UN Institute for Training and Research, and President of the Vienna Academy of Futurology), it was necessary to formulate the global development goals and to introduce the latter to the world public (Laszlo *et al.* 1977). This team identified a number of goals and offered several scenarios of the 'world solidarity revolution' for their attainment. Their hope was that scholars, religious figures and representatives of business circles of some country would be able to render influence on their counterparts in other countries and after that it would be possible 'altogether' to consider critical problems and work out shared ways of their resolution. Unfortunately, as evidenced by the systemic approach to the human-community development, simultaneous setting of different goals may result and usually results in the fact that none of them is attained.

The system of changing human goals and values, their evolution and influence on socio-political, economic and cultural environment was also analyzed through the global network of sociologists led by Ronald Inglehart, an American scholar specializing in sociology and political science. Currently this research project entitled the World Values Survey (WVS) unifies hundreds of scholars from all over the world. This project appears most

valuable for understanding of the global situation and the whole range of global changes taking place in different countries at the present moment. However, *first,* this survey is too much 'stretched' in time since the empirical data and subjective human judgments use to be collected and processed once in four or five years. By the moment when the conclusions are published, the world situation may change, and with the current rates the changes may be critical. That is, today, in the age of IT technologies, information received in this way may become outdated faster than it is transmitted and processed, and before the results are published. Hence, the value of such information would be reduced to negative values. *Second*, the poll is conducted within different groups of population, varying by the level of poverty and wealth, education level, *etc.* Then the responses are compared and the conclusions made show that all respondents have different goals and different values. Quite regrettably, the data collected this way and based on the poll of different population strata being at different development levels do not help to identify the common and universally shared objectively set goal (value) of development.

In 2000, the world leaders within the UN framework adopted a universally shared concept to eliminate poverty in all its forms, and this concept was embodied in eight Millennium Development Goals: 1) to eradicate extreme poverty and hunger; 2) to achieve universal primary education; 3) to promote gender equality and empower women; 4) to reduce infant mortality; 5) to improve maternal health; 6) to combat HIV/AIDS, malaria and other diseases; 7) to ensure environmental sustainability; and, 8) to develop a global partnership for development. By now, the UN has published its final 'Millennium Development Goals: Report for 2015', noting that 'despite the positive outputs, none of the Goals was attained without the found systemic problems – such as multiple military conflicts and crises, which were undermining the attained progress tangibly, and the inequality in citizens' access to basic services. This resulted in rapid deterioration of living conditions and in the enormous numbers of refugees and internally displaced persons recorded in the world after World War II (60 million people) (Ovcharova 2015). It should be noted that today, after 15 years from the UN adopted the Millennium Development Goals, and has recently approved new goals for the next 15 years, the search for a new concept of sustainable development and a path to its realization is underway.

Therefore, the essence and scientific novelty of the new methodological tool-kit consist in the fact that its basis is the discovered objective predetermination of the human-community development. To make such a conclusion, it was required not only to identify the goal of the human-community development, but the ultimate goal as well, which cannot be a sub-goal of a higher objective within the framework of human existence in this world. So it was necessary to define the objective reason for the human-system development, and to understand that each individual does not live for the purpose of providing for the GDP growth or manufacturing the maximal possible amount of weapons for his / her own annihilation. The human individual must and can only live for the sake of the maximum development and realization of his / her spiritual and intellectual potential, accompanied by the simultaneous growth of the level of consciousness and physical perfection. Otherwise the development may proceed along the opposite direction of the blind alley and retrogression, and then everything has to be started again, or come to a catastrophic end, the apocalypse. Even now, the technologies are devised which can operate without human interference so the level of human development does not matter. Many corporations – such as CISCO and others – are working on the projects of 'Reasonable City',

'Smart City', *etc.*, which, basing on the 'Internet of Things' and other technologies, provide interaction among intellectual systems of municipal services without human participation.

Today, for example, R&D of new and more powerful and dangerous weapons is underway, mainly, in the sphere of nano-technologies, where scientists work to build the microscopic robots that would be able to perform any actions and to reproduce their clones by the same principle as living cells are proliferating. On the other hand, today, when superpowers are in confrontation, another threat – terrorism – is arising. Criminal groups, closely connected with terrorists, also use the latest science-tech achievements including the digital technologies in their activities. The currently developed biological computers can cause human cells to communicate with one another independently so that such communication would pave the way to the creation of complex constructions from the given cells.

Hence, in order to form, develop and implement the 'Digital Economy', to disclose its constructive potentials, as well as to minimize or, rather, to prevent the possible risks for people and society, and to resolve the tasks facing the governments, business, and society it is essential that all solutions ultimately provide a continuous, evolutional and irreversible progress toward the attainment of the development goal.

So, whether we like it or not, societies must develop in such a way which would create a habitation area for every individual with proper conditions created for free and equal access to the maximal diversity of all the civilization benefits. This, however, should not be done for the sake of achieving a new level of consumption or superiority of technologies over people, but rather for no other purpose than attainment of the final objective – a perfect human being. This is the earthy mission of the humanity and humanity must fulfil it!

Integral, systemic and cross-disciplinary approaches proceed from the idea that the world is unified and presents an integral system so that the laws of nature and society are unified, and the world can be only cognized if and when all sciences and spiritual knowledge are combined into unified systemic and integral knowledge. The possibility to integrate all disciplines and spiritual knowledge in a systemic complex was attained via identification of the objective development goal of the whole system any in any section (civilization-related, formational, national, confessional, territorial, scientific, socio-economic, socio-engineering, socio-cultural, political, organizational, *etc.*) – irrespectively of what particular development model (neo-liberal, Keynesian, totalitarian, or their mixture) prevails. Only through such knowledge, one can understand that the global financial, economic, social, organizational, scientific-technical and, in general, systemic crisis as well as all negative phenomena are the links in a chain. Hence, the solution must be integral, systemic and uniform for the entire world.

As for the index to measure and juxtapose all processes and phenomena, which cannot be measured and juxtaposed by other indices, it should be noted that the Nobel Prize winners J. Stiglitz and A. Sen as well as J.-P. Fitoussi have proved that GDP does not take into account economic inequality and economic implications of decisions made, and that the criticism of GDP as an index of any state's successful performance is growing throughout the world. On the one hand, the indices of GDP, GNP, human development potential index, *etc.,* do not allow a researcher to identify the regularity, essence, objectivity and direction of the whole variety of processes, as the change rate of economic reality is higher than the rate of its study. On other hand, as noted by contemporary analysts, the validity of

the global statistic data (serving the basis for building the so-called Big Data) raises strong doubts. The cases of statistical data falsification are observed throughout the world. In Russia, for example, '…bureaucrats discovered a new kind of art – the ever more sophisticated forms of statistical write-ups, manipulations, and drawings of beautiful reality with the evidently deteriorating or evidently depressive crisis situation in the country. While in 2015 the economic decline rate, even with all write-ups, was estimated as 3.7 per cent, then by the later revised data, the slide-down rate amounted to only 2.8 per cent. In 2016, instead of economic decline by 0.8–1 per cent, the quoted figure was already 0.2 per cent, while in December 2016, after another reassessment of industrial production, the real sector of the economy even turned out as growing' (Zhukovskiy 2017). Since such statistical data are employed in studies of economic processes and represent some interpolation of major parameters based on certain models, they cannot relevantly represent the contemporary economic situation – at least, since the change rates as typical of the latter extend beyond these models' band of errors as connected with untruthful data. As noted even by the authors of the reports to the Club of Rome, the computer modeling showed that the model would inevitably reflect the views, ideas and preferences of its designer, and this becomes evident in selection of the data downloaded in the model. It is easy to imagine what happens if these data are untruthful: a model would hardly help to cognize the objective processes and their cause-and-effect relations. In view of their growing complexity and acceleration of all processes, the cognizability of economic systems is also limited by cognitive restrictions. Therefore, we identified the only possible index, by which all processes and phenomena can be measured and juxtaposed – *i.e.,* time. By applying this index, it is possible to juxtapose all things that cannot be juxtaposed by means of other indices and what is most important, to juxtapose absolutely all facets of people's and society's life and to identify, what stage of human progress they have achieved with respect to the goal.

After identification of the human-system development goal and the uniform index, enabling the researchers to measure and juxtapose all processes and phenomena, the uniform efficiency criteria for the human-system development was naturally identified – that is, the 'the time-gap between' the emerging need to approach realization of the single development objective, on the one hand, and the reality, in which society and each human individual are found at every given moment of time in relation to the objective.

If the 'time between' the emergence and satisfaction of an individual's need tends to reduce continuously and in the evolutional mode towards the zero, then – as far as the objective is concerned – the human system develops successfully in the proper direction. This provides us with the entirely new understanding of the human-system development. Application of such criteria makes it possible to control time between emergence and satisfaction of any specific individual's need. To control time means to control development and thus, to provide evolutional, irreversible and continuous approximation to the criteria value equal to zero. Only in this case the human system, in relation to the goal, would start developing sustainably, efficiently and in the interests of each particular human individual.

A noteworthy point is that the potential of the new methodology is unlimited, as it can be applied in many spheres of the currently existing paradigm of thinking and scientific knowledge, which face the tasks irresolvable in their respective frameworks.

For the time being, this methodology for cognition of regularities in the human-system development made it possible:

✧ to formulate the new paradigm of forecasting the future from the future;

✧ to identify theoretically and to prove in practice the objective regularities in the human-system development, which have not been known in science before, and which now are confirmed by the author's certificate of scientific discovery.[1]

In 2008, the book 'Forecasting the Future: A New Paradigm' was published by the 'Ekonomika' Publishing. Therefore, there is no reason to mention the fundamental principles of the new methodology for forecasting the future from the future in this article (Fetisov and Bondarenko 2008: 229–270). However, the two points are worth pointing:

(1) Today, the specialists consider the 'Foresight' as the major method to forecast the future, which connects the algorithms of qualitative forecasting (the Delphi method, scenario approaches, *etc*.) with the general approaches and interests of the state in managing socio-economic development of the society and with interests of the national business. Meanwhile, however, the interests of those, who order and appraise the forecast, would cause an impact on the forecasters' vision of the future, but the interests of a human individual and his/her needs of attaining the objectively set development goal would be totally disregarded.

(2) Due to the opportunity to forecast the future of Russia and the world from the future when the objectively set goal is attained, and the 'time between' is reducing to zero, we get a unique opportunity to form the strategy for development of 'Digital Economy' not only in Russia, but in the entire global space, and to do that not just in a long-term perspective, but in the entire perspective of the human-system development in the course of its earthly existence. However, we will only receive such opportunity, if today, here and now we will purposefully start forming the model of socio-economic, political, organizational and science-tech development of Russia and the world, which will be relevant to such future. That is, we should lay down only those projects and solutions in the strategy for development of 'Digital Economy' in Russia and the world, which would evolutionally and irreversibly reduce the time between the appearance and satisfaction of the need to attain the objectively set development goal.

So, by means of the cognition methodology, devised by the author, we obtain the worldview vision of the regularities in the societal development. More than that, we obtain knowledge, which tends to be ahead of the reality. By knowing the future, the society would be able to resolve the urgent issues on the base of the set goal for the human-system development, and such a resolution would require minimal spending of funds and resources, and would be taken within the shortest time.

The results of studies in cognition of regularities of the human-system development have been published multiply in Russia and abroad – for example, in the *World Futures* journal (Bondarenko 2014: 93–119) – a reviewed world periodical, indexed in the Scopus system. These research works provided the basis for making the conclusion that the new methodological tool-kit made it possible:

✧ to go beyond the limits of the whole human system and to view the 'past – present – future' as a single whole in relation to the objectively set development goal ;

✧ not to rely upon empirical and subjective data of the past and present;

✧ to understand the objective picture of the human system development depending on reduction (positive trend) or extension (negative trend) of the time, which is necessary to attain the single goal.

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[1] Diploma № 66–S for discovery 'Regularities of the Societal System Development', registered by the International Academy of the Authors of Scientific Discoveries and Inventions, and issued to Valentina M. Bondarenko on December 26, 2016.

This methodological tool-kit shows that in the in the centuries-long course of the human community development there have been and are only the two paradigms of the human system development, namely:

✧ the first paradigm is featured by the direct connection between production and consumption; and,

✧ the second paradigm is featured by the indirect connection between production and consumption.

Fig. 1 presents the conventional scheme of the human-community development showing, in compliance with the identified regularities, as when, how and which development paradigm formed, is forming and may form in future along or around the zero axis of time between the appearance and satisfaction of a need.

According to this scheme, the entire history of human development can be divided into three phases.

The first stage is featured by the prevalence of the first development paradigm expressed in the direct interconnection between production and consumption.

Everything that was manufactured at that level of manual labor was consumed by the mankind. Hence the time between the appearance and satisfaction of a particular individual's need was minimal.

That was the pre-industrial type of production 'for oneself' and, by orders – for a specific consumer at the level of households (handicraftsmen). However, as the goal was not understood, while the production potentials were limited and the rage of human needs was very narrow, underdeveloped, and unavailable for the majority of population, the development passed through all sorts of troublous times, rebels of starving crowds, epidemics, uprisings and wars, deaths of population masses, demographic and environmental catastrophes, destruction and desolation of many cities, decline of handicrafts and trade, *etc.* The human community was developing in relation to the goal in the elemental mode.

The emergence of such factors as The appearance labor division, market, class of brokers (merchants) and money, the general equivalent of exchange of results of such labor plus the gradual territorial expansion and development of foreign trade led to the transformation of the direct into the indirect connection between production and consumption, and hence to the formation of the second development paradigm. Its development in time and space accelerated the transition to the industrial mode of development.

The industrial revolution as well as the epoch of steam, railroads, steel, electricity, heavy industries, oil, automobiles and mass commodity production led to the development of infrastructure for connection with consumers – that is, the network of roads, ports and shops (beginning from small outlets to large trade centers and highly mechanized warehouses), as well as radio, electric and information networks, *etc.* These were the main landmarks. The mass industrial production was formed in parallel with the development of domestic and foreign trade, territorial expansion up to the global scale, and mass consumption. Production and trade, focused on the mass consumer, pursued just one goal – to earn the maximum profit. This type of production is oriented at satisfaction of the demand and needs of an abstract final consumer through an unregulated, archaic market form of connection with a particular individual by prolongation of time and space.

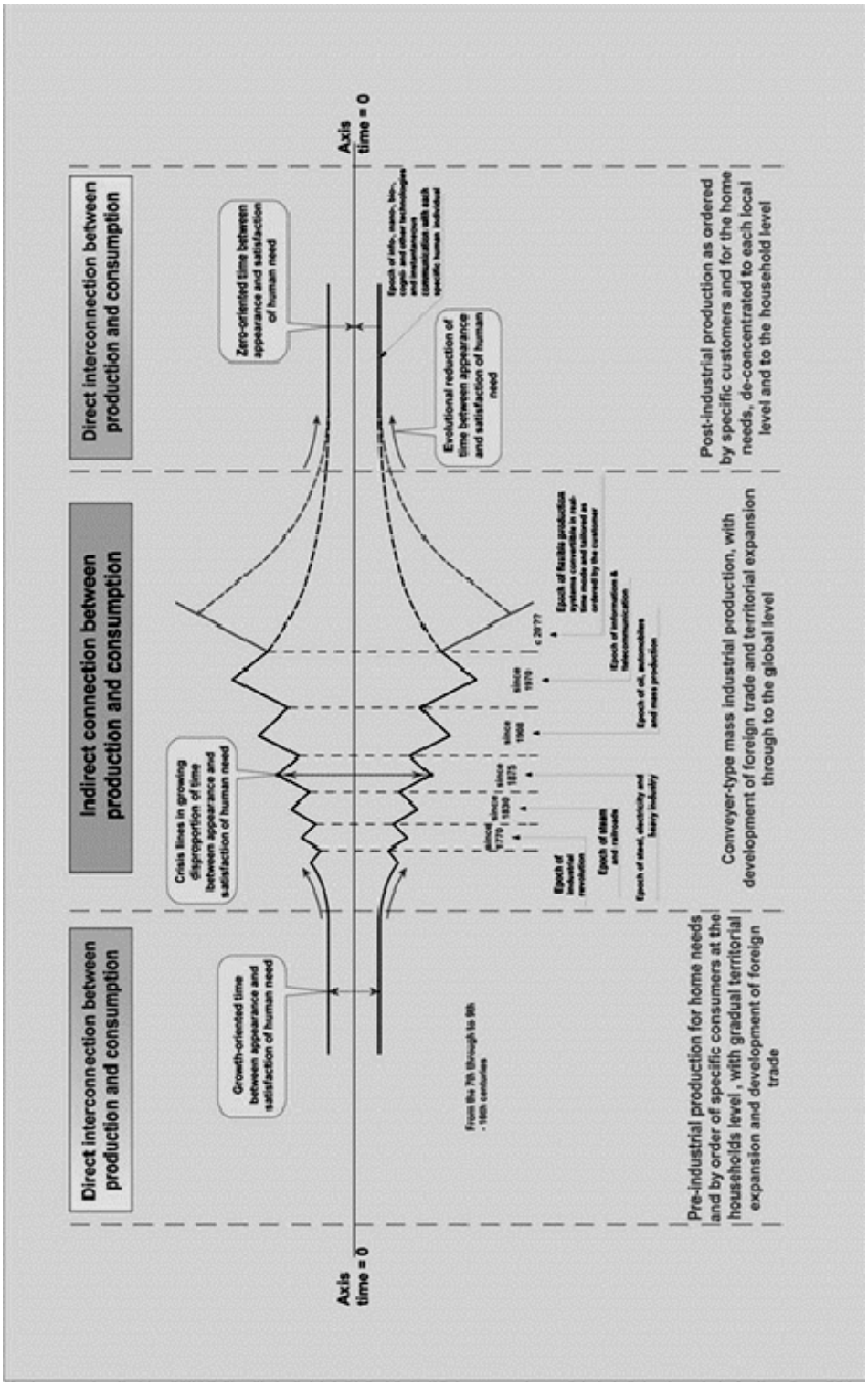

Fig. 1. Conventional scheme of the human society development

In such conditions, the uncertainty of consumption generated the appearance and later the global growth of disproportion between the time of production and the time of circulation of commodities and money, as well as their complete desynchronization. The time for circulation significantly exceeded the time for production. Despite the significant grown volume of material factors of production, the dynamics of their movement greatly departed from their monetary form, both the real one and, especially the virtual one. Development in relation to the goal became elemental, evolution replaced involution, and vice versa. Therefore the cycles and crises, as well as all other negative phenomena in the human-community development, are being reproduced already as a product of this development paradigm, but this time in the global scale, and with the even bigger chance for the catastrophic finale. Moreover, the growth of time for circulation of commodities and money as compared to the time for manufacturing thereof is the fundamental reason of the inefficient use of all, including human resources, or irrecoverable losses.

The struggle with the financial crisis by means of monetary policy just increases this disparity in the circulation of real products and money and contributes to the even greater growth of the found disproportion. Money as such has become a special commodity and can self-grow, *i.e.,* bring profit to its owners without going through the real commodity production. The financial crisis the ever more rapidly, in the chain-like way, takes the form of the economic, political, and, eventually, systemic crises. Therefore, it becomes clear why philosophers, economists and political figures, proceeding from the works written on the basis of empirical information on the already occurred events of the past, start stating that the complexity, nonlinearity, chaos, cycles and crises are the inescapable condition for development. This would be correct unless we understand that all these phenomena are a natural product of the second development paradigm.

Diogenes of Sinope, who lived in 300 B.C., was right when stating that it had been a disservice for the mankind to invent the plough which enabled people to harvest products in the amounts larger than it was needed for their own survival. So the current crisis of the life style model, featured by indirect interconnection in time and space between production and consumption, started long ago, since the inception of this model.

The information technologies and flexible production systems that appeared in the 1970s did not change this paradigm of development and did not consolidate the ever more clearly outlined opportunity to establish a direct connection as well to coordinate interests between production and consumption. Information technologies became a goal as such and a means to create global markets. The similar situation is observed today in the field of digital technologies, which are also considered mainly as a means to increase the efficiency of contemporary economy through automatization of all processes, as well as through data processing technologies for obtaining the new knowledge and forming new markets.

Meanwhile, it is only with the advent of digital and other technologies of the 21st century that production, again, can be oriented to satisfaction of the needs of each particular human individual without manufacturing any redundant products, as well as to providing the conditions of digital equality in the access to all the variety of goods and benefits. Nothing but the digital equality of particular individuals, their equal access to the goods of civilization and coordination of their interests at each local level in the self-governance regime would help to eliminate all systemic drawbacks in the economic development of Russia and each country of the world.

The following information firmly supports our theoretical conclusions. Fig. 2 shows the unsold cars. There are many parking lots, like this one, densely packed by new cars. Plants manufacture dozens of thousands cars per week, but the sales are almost nil. There are probably more cars on the Earth than people.

Fig. 2. Conveyor production of cars

Fig. 3. Digital production of cars

The unsold cars get stockpiled throughout the world. Their number is growing, and there is no end in sight.

This problem, however, can be solved by the use of digital production. Fig. 3 shows the first small car assembled from the parts printed on the 3D-printer. The inventor of this car firmly believes that his project is a precursor to the real revolution in the car-building industry, and the future of the automobile industry will belong to smaller independent companies, developing original projects, and such companies can be located at any local level. Manufacturing of parts at 3D printers would enable them to start producing cars of diversified models.

According to the experts, in future t3D technologies will be no longer unique and become as usual as mobile phones. Even now, foods, clothes, shoes, sports appliances, automobile parts, music instruments and even houses are being printed by 3D-printers. Along with cars, the motorcycles can also be printed by 3D-printers (e.g. Airbus APWorks built a fully functional 3D printed motorcycle, see Fig. 4).

Fig. 4. Motorcycle, printed by 3D-printer

The frame and the battery pack were printed by 3D printer for this model. The motorcycle, named the Light rider, weighs only 35 kg and is equipped with the 6-kW electric motor. With the once-charged battery, the Light Rider can ride 60 km and reach the maximal speed of up to 80 km/hour (Olenkova 2016).

The similar examples can be found in nearly all fields of human activity. By means of the advanced digital technologies one can almost immediately manufacture any things of the material world. And, a broad access to digital technologies in production already poses a challenge to the traditional business models within the indirect development model, because the main factor at the basis of digital production is personalization – that is, manufacturing of products for the individualized 'market'!

All these examples show that the model of human relations based on the belt-line mass production and its indirect connection with consumption has completely exhausted itself since it is cost-ineffective and has brought negative consequences we face today. It means that the objective regularities of the human-community development identified at the theoretical level via the worldview approach find the confirmation in real life.

At the same time, the digital revolution in production and other spheres prolongs the time between the need of attaining the objectively set development goal and the reality which is dictated by the currently applied life-organization model, and in which the human individuals find themselves now. In other words, the transition to the new, direct development paradigm will take place sooner or later, but as such it does not yet guarantee that it will occur in the interests of a particular human individual and for the purpose of his/her attainment of perfection.

For example, in the current conditions of crisis and reduced purchasing power of population, the modern retail as one of the major spheres typical of the indirect development paradigm is looking for new opportunities to expand its influence and impact on buyers. While in the past, in order to increase the level of sales and profits, retailers applied the NLP technologies, today they pursue the same purposes by means of digital technologies. The latter include, among others, the interactive digital consultants assisting in the sphere of marketing. As one of the options, this includes use of 3D-printers in the online trade for printing of commodities right on the way to consumers, in the specially equipped delivery trailer; or, proliferation of virtual reality technologies, body technologies, and technologies for transfer of one's physical presence into the virtual world by means of sensor mirror screens.

Printing of commodities right 'on the wheels' is reasoned by the suggestion that 'the lag between receiving the order and delivery of the ordered goods to the buyer can reduce the customers' satisfaction and cause a negative impact on the received revenues' (Quirk 2015).

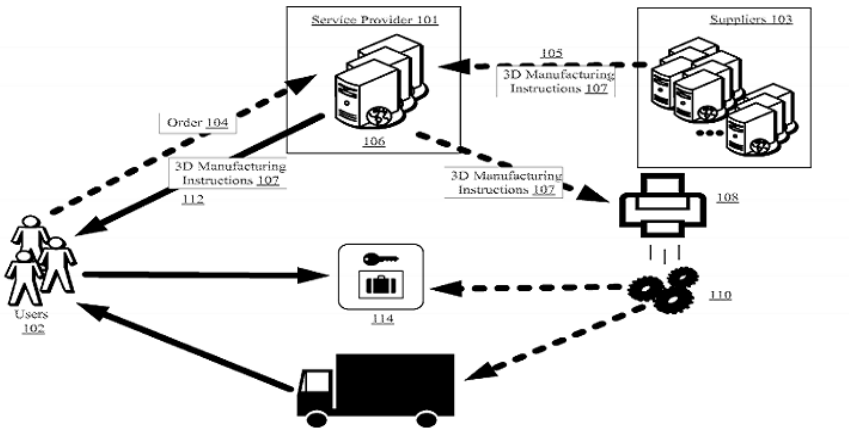

Fig. 5. Pattern of 3D-printing of goods in the specially equipped trailer on the way to the customer

On the one hand, this means that the demand for warehouse premises would be reducing, but on the other hand, the warehouse stock of commodities would become inexhaustible. That is, the conveyor production of commodities would be relocated to the sphere of trade, and thus the indirect development paradigm would obtain new resources for its survival.

However, the main danger in the prolonged agony of the indirect development paradigm is seen in the fact that the retail trade is becoming the sphere for introduction of virtual-reality technologies and proliferation of body technologies as well as technologies for transfer of one's physical presence into the virtual world by means of sensor mirror screens (Sinha-Roy and Richwine 2015), and thus would be enabled to cause impact personally on the mentality of each customer. The Internet of things (in which things can communicate with one another without human participation and human mind) is proliferating actively.

These technologies are being devised in the retail for the same purpose of causing an impact on human mind so that to entice the given individual in the trade networks and to build up the volume of sales. The digital technologies make it possible to remember the customers' search inquiries and when used frequently become more personified (Bird 2015).

The contemporary world already offers all conditions for domination of the Internet of things rather than the Internet operating for human communication. As the developers of such systems believe, quite soon big data on the customers would shift to the range of 'super-data', and by means thereof the Internet-of-things technologies would be able to interpret information independently and send the conclusions directly to marketing experts. As we see, all prerequisites are being created for the prevalence of the artificial intelligence over the human mind.

So, looking at the retail sphere, one can note that at accelerating pace we move towards the technological 'singularity' – that is, the point, where the time between the need in some commodity and the offer of an opportunity to purchase it swiftly approaches the zero; where the physical and digital worlds of the retail trade merge together while the boundaries between them disappear entirely; where the traditional shops become as 'smart' as, or even 'smarter' than their Internet analogues; where the data and history of purchases are immediately memorized by the system, and where the artificial intelligence bewilders the customers everywhere irrespectively of the location where they decide to select or buy a commodity. Quite soon, there will be no borders between the offline and online trade as the 'retail singularity' or, rather, technological singularity in trade would sweep away everything on the way (Bird 2015). It seems that this was addressed in 1993 by Vernor Vinge, an American scholar, in his research work *The Coming Technological Singularity: How to Survive in the Post-Human Era*, as well as others (Vinge 1993; Hanson 1998), including Russian scholars (Novoselov 2001). According to Vinge, the advent of 'singularity' must be expected 'within thirty years' (*i.e.,* in 2023), in other words within thirty years we will have the technological means to create superhuman intelligence. Soon after that, Vinge concluded, the era of human domination would certainly end.

The outlines of the movement toward realization of the digital-revolution ideas are now the ever more visible in Russia. It is quite imaginable, what the threat to the mankind is posed by digital, nano-, bio- and cognitive technologies, virtual reality, progressing Internet of things, development of 'smart cities' and other technologies connected with creation of the artificial intelligence; if these technologies are applied widely within both the existing and the new development paradigm, and if the mankind fails to understand in

the timely manner the objectively set development goal, then the digital inequality of people will grow, *etc.*

It will be only possible to solve this problem, if the technological singularity is immediately supplemented by singularity in formation of the new life-organization model. The aggregate of these two singularities will help to attain the singularity – or, rather, the accelerated entry into the zone of singularity, where the 'time between' the attainment of the development goal and the reality, in which the society and each particular individual find themselves at the given moment, will be reducing towards zero. Most regrettably, so far there is neither a talk nor a discourse on the need to transform the basic foundations in the society development – that is, to form a new model of human relations and life organization that would be relevant to these new technologies of the 21st century.

Hence, the existing development paradigm represents the indirect human relations, which do not correspond to the current era of the outer-space speed in the change of economic, political and other realities, era of application of digital, nano-, cognitive, information and other technologies of the 21st century, the application of which is not yet aimed at realization of the objectively set goal of the human-community development.

This situation serves the objective reason, for which in the immense 'time between' the interests of the state, business and society come to differ strongly from one another, and none of those coincide with the interests of a particular human individual. Today, the world undergoes objectively the most difficult time, the period of transition from one to another development paradigm (see Fig. 1). According to Christopher Coker, Professor of International Relations at the London School of Economics and Political Science and an expert in the history and theory of wars, nobody wants to live in the epoch when the world order is failing, as such times are really dangerous (Coker 2015).

So, cognition of regularities of the human-community development helped to understand that the new development paradigm and the results of the digital revolution in industry and in all other spheres as well as in the everyday life, plus other high-tech attainments of the 21st century would only serve for the good of the mankind, if at the same time the model of direct human relations is formed, being oriented objectively to development for the good of any particular human individual and his / her attainment of the Supreme Reason. Otherwise, mankind will be hit by the apocalypse. Ervin László did have a reason to note in his article 'Global Bifurcation: the Decision Window' that '*We have reached a watershed in our social and cultural evolution. The sciences of systems tell us that when complex open systems, such as living organisms, and also ecologies and societies of organisms, approach a condition of critical instability, they face a moment of truth: they either transform, or break down*' (Laszlo 2011: 3–6). And, that with the change of the development paradigm it is necessary, at each local level (Fig. 5), to form the mechanism for coordination, in the real-time regime, of the state, society, and business community interests with interests of a particular human individual on the base of production by his/her demand, without manufacturing any redundant product.

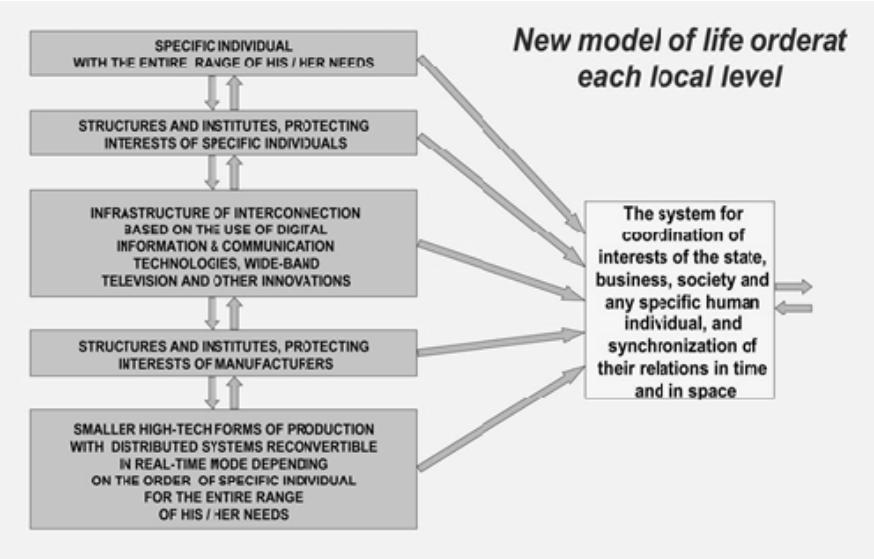

Fig. 5. Schematic illustration of a new model of life-organization

This is the only feasible condition that can motivate a human individual to increase the labor productivity for the purpose of his/her own sustainable development. Meanwhile, the mandatory condition for providing the balance of technological and socio-economic changes as the basis for elimination of the root cause of the crisis is the understanding and acceptance of the objective goal for the human-community development, *i.e.*, to provide conditions that would enable any human individual to attain his / her perfection.

Therefore, the need of transition to another development paradigm becomes a priority. But, such a new paradigm must provide conditions for the conscious movement toward the objective development goal by the method of evolutional, irreversible and continuous reduction of time between the appearance and full realization of the set goal. And the main point, we managed to understand is that such a goal would only be attained through coordination of interests among the state, society, business and each particular human individual. Such mechanism of coordination can and must be developed at each local level by means of digital and other high technologies of the 21st century.

For reference: The draft of Strategy for Information Society Development up to 2030 primarily refers to the prior realization of the state's interests when creating mechanisms of the digital economy.

Formation of the mechanism for coordination of interests among the state, society, business and each particular human individual is the only opportunity to:

- motivate each particular human individual to create rather than to destroy; and,
- select the least time- and resource-consuming as well as the shortest way of the human-community development in relation to the objectively set goal.

Thus, the *replacement of the development model by the model (or paradigm) that would be relevant to the digital technologies is an objective process.*

However, the results of the Digital Economy development may differ depending on which goal will prevail and be the first to reach singularity, and which model would dominate and reach the point of no return.

The first version of the model: Development would proceed in the conditions of the former model and be oriented to the interests of the narrow group of people and thereby selected development goal.

In this case, we can see the trend for appearance of technological singularity centered around the artificial intelligence and digital technologies for manipulation and control of human consciousness. The ultimate goal is to control the entire world and it does not coincide with the objectively set ultimate goal of development. Risks for any human individual and the whole society would grow.

The future, in which the time for attainment of the objectively set goal would be equal to zero, will never come. The mankind would be hit by the apocalypse.

The second version of the model: Intentionally or unintentionally, different goals would be selected and, in terms of their contents, might be sub-goals in relation to the higher, the objectively set goal.

Meanwhile, a narrow group of people sets its own goals.

These two sets of goals are of diverse orientation. Development in relation to the objectively set goal proceeds by the method of trials and errors.

Hence, in such a case the future is uncertain, *i.e.*, the time, equal to zero, for attaining the singularity in reaching the goal may either come or never come. But the process would be 'stretched' in time, and in this model the application of digital technologies operating in the acceleration regime, would be accompanied by big human and resource losses, and therefore also may result in the apocalypse.

The third version of the model: Conscious development, proceeding with good understanding of the objectively set ultimate objective and in the interests of each particular human individual living on the planet of Earth.

Orientation to the interests of any particular human individual and coordination of such interests in the real-time regime would be realized by means of digital technologies for production by the given customer's demand, without manufacturing any redundant goods – such is the only feasible condition, which would motivate the given individual for sustainable development in relation to the set goal.

In this case, the technological (digital) singularity would be synchronized with singularity of forming new human relations and with the human realization of the need to work for evolutional and irreversible reduction of time for attainment of the goal to the point of zero.

Only in the conditions of the third development model it will be possible, for example:

✧ to eliminate the information chaos and the progressively growing information slashes (*e.g.,* today the Big Data on some servers every second catastrophically increase their less demand volumes), *etc*.;

✧ to remove the fragmented and contradictory nature of the automated systems and to attain the desired transparency, coordination and synchronization in the operation of digital platforms and other similar systems;

✧ to ensure the innovative technological potential of the Internet, the 'Internet of things' and other similar networks would work for the good of human individuals.

Conclusion

It is only in the conditions of the third model that the new development paradigm and the results of the digital revolution in the industry, all other spheres and in daily life would be

synchronized in time and space. That is, the 'Digital Economy' would only work for the good of mankind, if its development proceeds along with formation of the human relations model, objectively oriented to development for the good of any particular human individual and attainment thereby of the Supreme Reason. Hence DE should be considered as an economy of agreed interests between the state, society, business and the interests of a particular individual in real time, in which everything is aimed at achieving an objectively set goal while reducing the costs of all types of resources.

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