CHAPTER FIRST IN THE SPOTLIGHT OF THE DIGITAL WORLD OF THE ECONOMY

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1.1. The game of energies of digitalization of the economy: content and meanings

The latest changes in the economy and society are causing changes in world economy. Today's economic concepts and categories are being replaced by new ones, which can be summarized as the emergence of new economy in the world – digital with its specific definitions, laws, models of world development, economic development as a science, as an industry that is gaining new momentum in history (*Kolyadenko, 2016*). In 21st century the interest of scientists and economists in digital transformation has increased significantly in economic research. After all, digitalization offers real opportunities for the growth of the economy of state.

Today, there is a wide field of innovation of companies in all sectors of the economy, through active work through dialogue with the state, intersectoral interaction and joint development of large projects on the basis of "deep" digitalization. In the last two years, global hype surrounding Blockchain and crypto-assets has not subsided, and financial regulators in the most developed countries are barely managing to respond on new challenges. Mobile high-speed Internet has flooded world with its "invisible web", expanding the banking market and challenging traditional approaches. Organizations become "deserted", which minimizes staff costs and speeds up service.

In addition, the fact that digital economy is dramatically changing the nature of labor and its remuneration should not be overlooked. If our planet became de-energized, world would be plunged into universal insanity and global chaos. We are so accustomed to technology that we are more willing to refrain from eating food than from viewing the message bar on a mobile phone screen. We have adapted and learned to live with technology by fully digitizing our lifestyle.

For successful development of digital economy in Ukraine, it is necessary to ensure:

- Development of on-line services (social services, public services);
- Transition to digital technology by government agencies and agencies;

• Development of Internet of things in Individual Consumer (IoT) and Industry (IIoT) sectors;

• Creation of domestic software, modern and perspective information and telecommunication technologies for substitution of foreign production products (*Yefimushkin et al., 2017*).

Program document "Ukraine 2030: Doctrine of Balanced Development" (*Kalvariia, 2017*) states that "for national economy, large-scale borrowing of new technologies is able to accelerate development of the services sector, to reduce transaction costs (on-line financial services, drone delivery), improve overall efficiency and effectively combat corruption (digital payment for administrative services), and improve access to education (on-line courses)". Doctrine states that following areas of digital development are important for Ukraine: additive technologies, new nano and biomaterials, renewable energy sources, highly automated industries; robotics (artificial intelligence and intelligent systems technology); informatics (cloud technology, mobile communications, new generation laptops); humanization (genetic engineering, nano- and biopharmacology, synthetic biology); greening (low carbon wastes, ecosystem restoration technology, pollution control).

Main components of digital infrastructure are:

• Applications (services, analytics, application software, data management);

• Data centers (servers, storage centers, data centers, backup);

• Information and communication networks (Internet, broadband, sensor networks, data networks, Wi-Fi);

• Information gathering systems (sensors, gadgets, smart video surveillance systems, terminals).

The relationship between "soft" and "hard" digital infrastructure and electronic business operations comes from hardware, software, telecommunications. Interaction in the course of business process implemented through computer networks in the framework of virtual interactions between the subjects of virtual market structures e-commerce and e-trade.

In implementing Digital Transformation Model, comprehensive adaptive capabilities that respond to inevitable change must be considered. These opportunities provide the resources to bring all structural layers together to deliver continuous improvement and innovation as digital entrepreneurship develops; to be able to constantly adapt to changing needs of customers and new opportunities in global digital market (*Kupriyanovskyi et al., 2017[a]*).

Digital age of society is changing the way we do business, requires the use of information technology and modern communication tools.

Fundamental in building digital economic relationships is the use of ICT and Internet by business entities to maximize the automation of business processes within the enterprise and build relationships with other business representatives, consumers and government agencies through the use of modern ICT.

Today, Ukraine's advantage lies in highly qualified personnel, especially in the field of technology, the demand for which is constantly growing. Investment is needed to stimulate economic growth and provide long-term opportunities for professional realization to prevent the outflow of labor resources. Country will benefit both from natural chernozems and from its close geographical location to Europe, as well as the potential for the development of an integrated transport network and port infrastructure.

However, this requires significant investment, which, in turn, requires a stable economic environment and access to capital at reasonable interest rates. Ukraine's oil and gas industry also has a chance to become a major player in the market, but years without investment, corruption schemes and fears of being seen in attempts to "distribute" country's resources have historically hindered investment in this area. If the IMF and EU financing continues, and structural reforms and market liberalization are implemented, Ukraine will be able to offer both Ukrainian and foreign investors a wide range of investment opportunities in the coming years.

Today in Ukraine investments in innovative technologies determine:

• The importance of understanding the balance between general and specialized high-quality IT services;

• The level and quality of thinking through the prism of IT to find the right place for information technology in the organization – the holy grail of transformation;

• Models of IT system maturity (reactive model against dynamic; cooperation with the provider of IT solutions or tools, business partnership based on understanding the key role of IT);

• Changes in the understanding of the ratio of value produced and costs;

• Implementing solutions such as Office 365 strengthens and elevates IT equipment.

In the context of economics, innovation is a set of tools that can significantly increase efficiency and create added value. In other words, a person working on a tractor can generate much more added value than a person with a shovel. And all this applies not only to the individual business or company, but also to the country as a whole. There are two simple parameters that are extremely relevant in Ukraine in the context

of innovation. The first is the so-called “basic hygiene”. Physical and legal security of the business, the ability to work quietly and produce a product/service, without fear that at any time may unreasonably take away the business or block the work of the enterprise.

The second is investment. Unfortunately, the institution of venture investment, which at least in some form existed in Ukraine three years ago, is now completely destroyed. And it is impossible to build a business without financial investments – it is porridge from an ax (*Special Edition Kyiv International Economic Forum “Destinations”, 2018*). It is also worth emphasizing the fact that it is not the state that creates innovations, but universities, active and progressive youth, and entrepreneurs. Sectors of Ukraine’s economy that are currently drivers of its growth are presented in Figure 1.

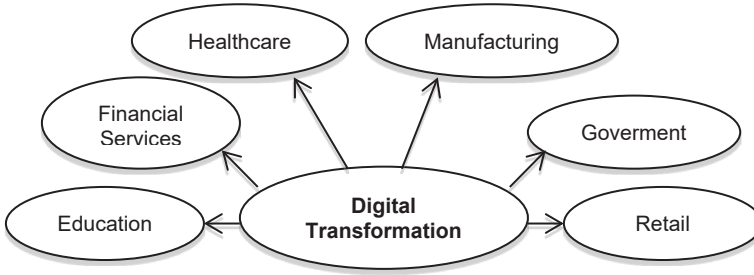


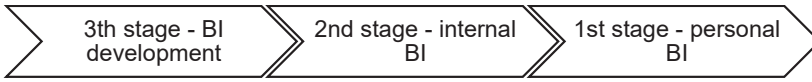
Figure 1 – Sectors that are drivers of economic growth

The industries that will give a new impetus to the growth of Ukraine's economy are the following:

• Hi-tech, R&D, IT solutions for B2B, finance (stock market, ICO), fintech, bioengineering, nanomedicine;

• Basic areas due to production growth: energy, infrastructure, processing industry, education (*Kraus et al., 2018*[d]).

But the development of all these sectors of the Ukrainian economy is impossible without high-quality business intelligence, which is a process of transforming data into knowledge, and knowledge – in business action for profit. The evolution of Business Intelligence (BI) has the following chain:



Opportunities for the economy of business intelligence are as follows: data integration (ERP: 1C, Navision, SAP; CRM: Dynamics,

AMO, BPM, SalesForce; PM: Teams, Trello, Jira, Slack; SM: Google Analytics, Facebook, Twitter; File:.xls,.csv; Payments: Privat24, PayPal, Payoneer; Services: MailChimp, Binotell, GitLab), data model creation, custom visualizations, real-time dashbods, integration with applications, automation.

Turnkey business intelligence as a service is implemented through the practical implementation of the following stages: interviews and analysis of CRI, study of data sources and connection methods, implementation of reporting, refinement and updating, 365/7/24 1ts technical support. Generation Supply Chain is shown in Figure 2.

The quality of business depends directly on strategic thinking, business intelligence and communications. In turn, the quality of technology determines the level of improvement of knowledge and expertise and thinking ecosystem, the development of attention economy (Figure 3).

Figure 3 shows that the amount of input exceeds cognitive capabilities. In addition, efficiency is the ratio between the result obtained and the cost of achieving it.

Efficiency = minimum effort

As for skills, they are also equal to the minimum effort. From this it becomes clear that efficiency is in balance with skills. A visual representation of the place of Attention economics in the coordinate system is given in Figure 4.

Attention economics is an approach to the management of information that treats human attention as a scarce commodity and applies economic theory to solve various information management problems. Characteristic features of individuals in Attention economics are presented in Table 1.

As a result, we note that the current development of Ukraine's economy in the context of innovation and digital transformation should be seen as a factor in increasing productivity, economic growth, job creation and improving the quality of life of Ukrainians. In digital society, citizens must have equal and free access to services, information and knowledge provided through the use of quality information and communication technologies. Ukraine's new progressive economy in the context of innovation-digital transformations and structural changes, which takes into account European values – is about digital skills for the future digital generation, changes in business models and quality cooperation between universities, government and companies in developing interesting innovative ideas.

The institutional environment of Ukraine's economy is characterized by a high level of instability and uncertainty. This is caused by a

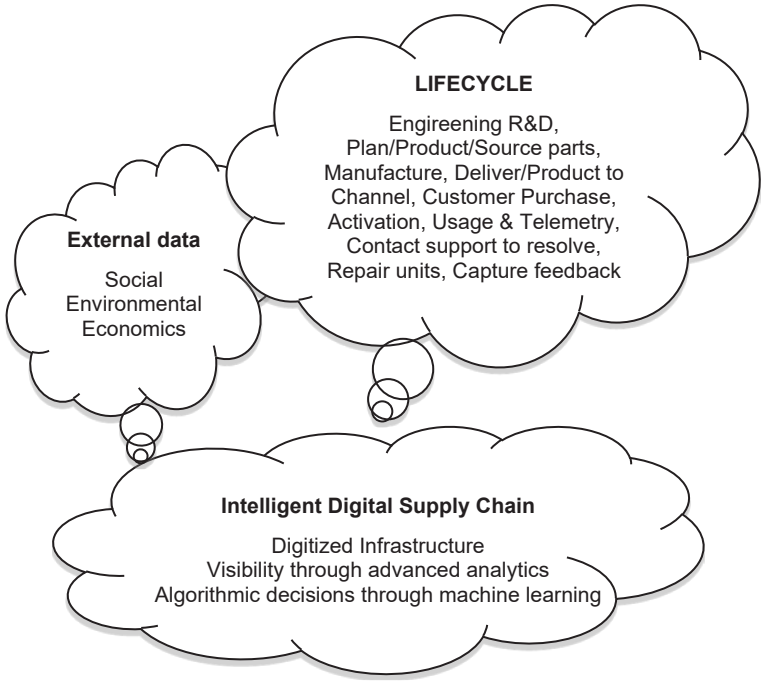


Figure 2 – Generation Supply Chain

special, very incorrect, in some cases even “shock” strategy to move the domestic economy from administrative-command to market form, and therefore fundamental changes in the institutional structure. Main causative mechanism of the development of all kinds of innovation is market competition. To achieve stable economic growth, the state must provide a balance of competition policy. Perspective competitiveness is ensured only by active innovation policy.

Innovative capacity and technological availability are integral components of the competitiveness of national economy in terms of institutional changes. The role of innovation in ensuring competitiveness will increase, because the structure of world industrial production will change in favor of high-tech industries, particularly under the influence of rapid development of nanotechnology, genetic engineering will appeared new production, at the same time ecological, climate threats will cause the activization of ecologically caring industry (*Varnaliy et al., 2013*).

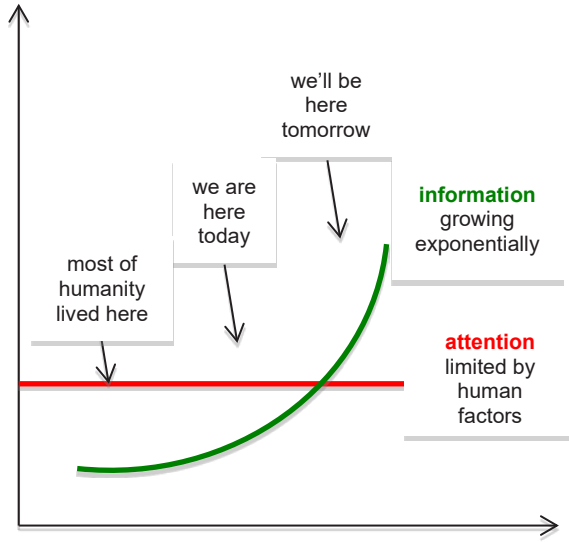


Figure 3 – Graphic interpretation of the development of Attention economy as a result of regular "information booms and explosions"

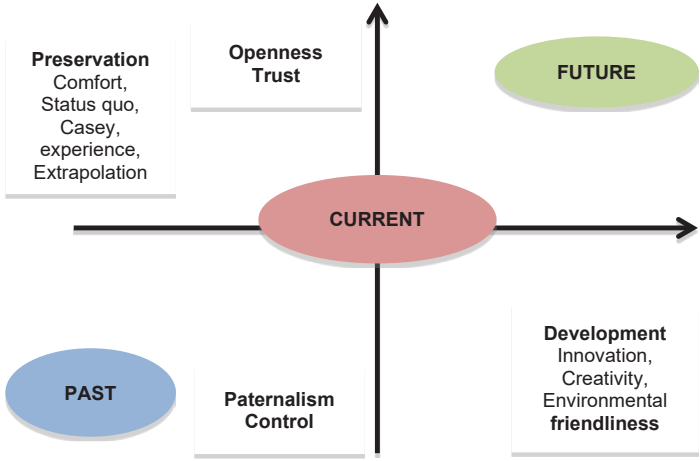


Figure 4 – Visual representation of the place of Attention economics in the coordinate system

Table 1 – Characteristic features of individuals in Attention economics

Born Digital (born digital leaders)	Going Digital (digital emigrants)
1	2
What are they characterized by?	
1. Deep expertise 2. Unidirectional roles 3. Motivates independence	1. Empathy, sociality, cooperation 2. Team building, motivation and development 3. Motivate difficult tasks, need training, growth
Higher	
Adaptive, learn from experience, overcome uncertainty	Impact skills
Lower	
Skills of interaction with other people	Innovation

Competitiveness interpret as the ability to attract and use intellectual capital. Stimulation of the development of innovative entrepreneurship and science and education supporting the experts of EU chose as the most important directions of improvement of the quality of economic growth of its grouping. In most cases, taking into account national features, these should become the foundation for construction of a new Ukrainian competitive economy (*Andrushkiv, 2012*).

According to the Law of Ukraine "On the innovative activity", innovative infrastructure is a "set of enterprises, organizations, institutions, its unions, associations of any form of property, which provide services to support innovative activity" (financial, consulting, legal, educational, etc.) (*Information of Parliament of Ukraine, 2002*).

The definition of innovative infrastructure of T. Ismailova is interesting, because it offers to understand innovative infrastructure as a set of interrelated, complementary industrial and technical systems, organizations, firms and relevant organizational and management systems, necessary for realization of innovative activity and implementation of innovations.

Proceeding from the existing definitions of innovative infrastructure, we can conclude, that undeniably important is the process of institutionalization of the innovative economy in stage of its formation and clarification factors of forming the competitiveness of domestic innovation infrastructure.

Ukrainian scientist L. Mikhailov considers the structure of innovative economy through the prism of types of markets and identifies two components:

• The market of innovations that form the scientific organizations, universities, scientific associations and other entities. On this market the key commodity is a product of intellectual activity that is subject of copyrights, which are decorated in accordance with applicable international, national, corporate and other legislative and normative acts;

– Capital market (investments). This market is a sphere rotation of capital, where, on the one hand, organizations and individuals engaged in the scientific field, and on the other hand – organizations and individuals who invest are the subjects (*Mykhailova et al., 2007*). Main influence on the market of investments exert macroeconomic policy of the state, legislation, securities market, information provision.

However, in our opinion, no full is the consideration of the structure of the innovative economy through the prism of types of markets without market of goods and services. This market gives the answer, by sales of innovative products, to the question: "Was innovative activity successful?". In the market of goods and services, failure can befall even the product that has high scientific and practical value, but does not meet interests of the buyer. For example, it may be high price on innovative product.

An important trend in the creation of innovative products/services is the convergence of new products. Convergence (from the Latin "Convergo" – "rapprochement", "ascent") is seen as rapprochement, assimilation of economies, their economic (institutional) mechanisms and economic structures, and is the inevitable consequence of a glut of product markets of innovations and large variety of product offering of innovations. Under the influence of institutionalization of the innovative economy and the convergence of new products in the market of innovations are forming:

• Novelties that combine products and technology;
• Grocery platforms;
• Co-branding novelties;
• Wellness-products;
• Novelties that bear innovation value or forgotten old;
• nnovations of business models that based on convergence of products, technologies and services (*Markova, 2010*).

The frequency of "exit" on the market with small innovations promotes accumulation of information about consumer preferences, which is a source of knowledge for the next upgrade. However, individual consumer

is not socially isolated person. His behavior is explained not only desires and needs.

Firstly, needs are always institutionally indirect.

Secondly, there are clear folded "chains" of interconnections of goods through technological processes and market agents, which is difficult to track mutual benefits for their individual consumers.

Thirdly, the market of innovations is a complex structure that cannot be reduced only to negotiate between sellers and buyers. When there are a number of producers and consumers appear no-exchange institutional relations. This is so called "horizontal relationships" between different buyers and sellers that are either in a state of competition or in secret collusion. This is also confirms that the market of innovations is characterized by exchange and competition processes (*Apatova, 2004*).

Institutional conditions of raising the competitiveness of Ukraine economy at the expense of innovative factors should be considered as a set of necessary institutions that directly or indirectly contribute to revitalization of innovation processes in the country. As the institutional conditions of forming Ukrainian, innovative economy has not provided yet, so we can understand the institutional changes during the process of transformation of some institutes or transition of institutional system from one state to another.

Determinants, which caused the need for institutional changes during the formation of competitive innovative economy, are:

– Improper development of some institutions and subsystems, which reduces the efficiency of the economic system as a whole;

– Institutional vacuum, that is the absence of some formal institutions, that should promote innovative development and ensure competitiveness.

Competition does not have to be perfect in a theoretical sense, sufficient that it would produce the necessary incentives and be more effectively as a bureaucracy that is not difficult. However, of course, today the competition should be enhanced in order to keep acceptable for the market economy trends of concentration and monopolization (*Yasin, 2007*).

Experience of leading enterprises in the market shows, that innovations are inevitable. A small number of companies are capable to implement radical innovations. The competitiveness of most enterprises is provided with the help of imitation, modification, implementation of existing and those that have proven themselves in the market of innovations. Last theses testify data, gotby scientists as Booz, Allen and Hamilton during researching of 700 firms and 1 300 new industrial and consumer products (only 10% of innovations has a world novelty,

while most of them 70% – additions to the range of existing products or their modifications) (*Andrushkiv, 2012*).

Innovative activity is the main source of the process of expanded reproduction. Innovative activity is primarily directed to overcome technological backwardness, reorientation of production potential for creating competitive industrial enterprises, whose development depends on the susceptibility enterprises to innovations (*Kasich et al., 2008*).

Competition creates incentives for innovations in order to upgrade products, to increase productivity and reduce costs that allow getting revenue some time, until it increases the attractiveness of the market and do not attract competitors. Equal conditions of competition has basic value, that it was impossible to gain a competitive advantages by other methods, than the implementation of the most effective innovations, that their selection was carried out, not because of connections and privilege, but only on economic criteria (*Yasin, 2007*).

Experience shows, that small enterprises are considered more innovative for three reasons: lack of entrenched bureaucracy, more competitive markets and stronger personal incentives to entrepreneurs, who are also owners of firms. In current economy, small enterprises play an important role as innovators and often they are technology leaders. Enterprises can implement technological and organizational innovations through to strategies, chosen by management, and be critical to the success of modern innovation-oriented economy (*Isakov, 2011*).

Implementation of innovative technologies in Ukraine enterprises plays very crucial value in economic development of the country, in its competitiveness in global innovative space. The means to create a competitive economy are close cooperation between scientific advances and using of new technologies of production. Today the dominant way of development has to be the way, which based on the using of strategies to increasing innovative capacity, predefined state priority areas of science and technology progress (*Onipko, 2011*).

Innovative activity of enterprises has a significant positive impact on their economic outcomes. Thanks to the growing volume of production and sales, profitability and competitiveness are increasing, and acceleration of market providing qualitatively new kinds of products. Enterprises, that implement innovations can increase product, improve competitiveness and expand markets (*Kasich et al., 2008*).

For the forming strategy of entrepreneurship development need to define the basic framework of economic activity and the determinants of entrepreneurial behavior, that are determined by society, because the three aspects, that form the “golden triangle”, which is needed to create

a business strategy are prediction or intuition and social processes (*Govorin, 2012*).

In general, the effective functioning of domestic innovative system depends on how effectively participants of the innovative process interact as elements of a collective system of knowledge creation and their use for technological progress and providing competitiveness of the domestic economy. In international practice, different indicators of efficiency of functioning of innovative economy are used.

Summing up the experience of the world theory and practice Z. Varnaliy and O. Garmashova consider, that the effective indicators of a national innovative system may be the volume of innovative products, on which these determinants of development of competitiveness of innovative economy affect:

• Availability of financial security of innovative processes, that is the ability to attract investments in process of providing innovations in production;

• Scientific and technical potential of the country, the result of which is fundamental, applied researches – innovations;

• Development of innovative infrastructure, that contributes to formalization of relationships between science and production, completeness of the innovative process (*Varnaliy et al., 2013*).

In this connection, there is a need for a practical application of some tools from the complex of institutional changes, needed to improve the competitiveness of domestic innovative economy. Among them are development and implementation of programs of modernization of domestic production; setting priorities and introduction of mechanisms to encourage innovative activity; optimization of system of management in the innovative economy through the creation of the Ministry of Education, Science and Innovations of Ukraine (*Kraus, 2017[a]; Kryvoruchko et al., 2017*).

The reorientation to an innovative way of ensuring the competitiveness of the Ukrainian economy will require significant institutional changes in different spheres of social life. Particular attention should be paid to improve the institutions that are involved in innovative processes. An open economy will also contribute the competition, the maximum reduction of program barriers. Only institutional transformation at the making of the innovation model of economic development in Ukraine will enable adaption to the requirements of the global information world society and continuously improve the economic behavior of economic entities and the mechanisms of market self-production production and industrial complex of Ukraine, small and medium enterprises.

This can be achieved by creating an effective institutional framework defined hierarchy of values of the dominant traditions and laws (formal and informal rules) and moral standards. These aspects of the psychology entrepreneurial structures must be based on practices creation, study and formal restructuring, including economic institutions. Good institutional hierarchical system allows for effective governance and regulation of innovative entrepreneurship, social functions and public institutions, providing communication between subjects of by risk enterprise, government, business and society.

The era of information economics, which manifested itself in the transition to the third millennium, influenced on all aspects of economic and public life of man, including social and spiritual. The global development of innovation-information economy can be seen as the expansion of the base of post-industrial society. This allows us to quite confidently characterize the processes taking place in global economy and in world society, as a manifestation of a "paradigm shift".

In an institutional sense, the complexity of the construction of innovation-informational economies related to the birth of a new method of coordination of communications and harmonization of interests. Thus, in the industrial era (industrial paradigm), the world community was based on two methods of coordination:

• The hierarchical order with the system of vertical subordination and the center of administrative management (a rigid model of coordination);

• A market system with price signals, as some deviation from a rigid and clear hierarchy (flexible, but rather atomic).

Post-industrial paradigm is characterized by a non-hierarchical order or the so-called network coordination mechanism. Gobal economy and all its subsystems are stratified in cluster-network structures with horizontal links and a collaborative mechanism (a hybrid model is flexible and simultaneously integrated). As for Ukraine, the transition to an innovation-information model of development on principles of digitalisation is modern, conscious of its choice. In addition, this is required by globalization process, which involves all the countries of the world and which did not escape Ukraine.

With the advent of new technologies there have been significant changes in all spheres of economic life of society. This refers to changes in the mechanism and trajectory of economic progress, based on an increase in the share of innovation and information sector, which has become a powerful source of socio-economic development, its dynamics and growth. Information has become an independent resource with a peculiar value.

It should also be noted that it is the American scientist-economist R. Solou, who is one of the founders of the theory of technological change, in his model of growth proved that the influence of technological progress is manifested in marginal indicators of capital and labor productivity, which are the parameters of the efficiency of national production, and the main factor of economic growth, in the long run, is the development of technology.

Somewhat similar were the studies of French sociologists J. Elliul. The basis of the concept of "technological society" scientist considered the technique which prevails over society and man, develops in accordance with its own laws and is not subordinate to man. It is autonomous with respect to the economy and politics. The technique, in its understanding, is not limited to machines and technologies, but covers all spheres of human activity.

The sociologist distinguished the following types of technology:

• Economic technology (related to production);

– Engineering organization (includes commercial and industrial activities, state, police, military affairs);

• Human technology (covering medicine, propaganda).

The concept of the post-industrial society of American sociologist D. Bell gives an idea of the impact of technological progress on social change. "A post-industrial society is based on a "game between people", in which, based on machine technology is raised intellectual technology based on information... The methodological basis of each society is different and, importantly, there are qualitatively different axial principles, around which the institutional and organizational attributes of one or another society are concentrated".

According to the American sociologist M. Castells, "the information and technological revolution will reveal its transformational potential. 21 century will be marked by completion of global information superhighways, mobile telecommunications... For the first time, person will be able to make significant manipulations with living matter... However, new genetic technologies are permeable, their mutational effects are under-controlled, and institutional control over them is largely decentralized... The way we go depends on social institutions, on human values... The share of wealth that goes to individuals will depend on their access to education, and society as a whole – from its innovation system" (*Maslov et al., 2021*).

We can already see the actual confirmation of M. Castells forecasts today by revealing the directions and problems what are solved and possible variants of sales products of VI and VII technological processes in Table 2 and Table 3.

Table 2 – The core of VI-th technological developments through the prizm of innovation and digitalization

Direction	Solved problems	Possible implementation options
1	*2*	*3*
Unconventional power engineering	Reducing the burden on the environment, saving natural resources	Hydrogen power, synthetic fuel, solar energy converters, AES with a closed cycle, fast reactors, vortex heat generators
Information systems	Globalization of the world economy on the basis of partnership	Bioenergetics, optics, quantum-vacuum computers, artificial intelligence, torsion communication systems
Biotechnology	New level of well-being	Water purification, desalination of sea mode, modified agroculture, treatment of diseases, cloning
Transport	Environmental safety, speed, efficiency	Underwater superliners, string transport, electric vehicles, aerospace transport systems
Ecology	Sustainable development	Non-waste and locking technological "circuits"
Materials	Durability, safety, reliability, efficiency	Nanotechnologies, amorphous metals, memory materials, high-temperature superconductivity, torsion technology of materials processing

Source: compiled from (Krasnoshchekov, 2008) and author's development

Table 3 – The core of VII-th technological developments through the prizm of innovation and digitalization

Direction	Solved problems	Possible implementation options
1	*2*	*3*
Cognitive and socio-humanitarian technologies. Main productive factor is creative intelligence	"Global vacuum capture". New forms of life on the planet. Constructing a new social reality	Technologies of "thermonuclear fusion", psi-technologies, bioenergy, technology related to morality and responsibility. This method is implemented by means of hyperintellectual, hyper-knowledge, hyperinformation, hypercommunication. "Games with the subconscious mind". The availability of 5 cognitive technologies is projected: neuroimaging, cognotropic drugs, cognitive assistants, Brain-Machine interfaces, artificial sensory organs.

Source: compiled from (Krasnoshchekov, 2008) and author's development

American futurists F. Fukuyama and A. Toffler emphasized that “with the technical development of communication tools, reliable information would supplant the unreliable... the information revolution will lead to widespread changes... but the era of large hierarchical organizations has not yet ended... even in telecommunication, fiber optic technology is better able to work when its exploitation is dealt with by one giant and geographically dispersed company” (*Maslov et al., 2021*).

In Table 4 and 5, we provided information infrastructure services and security and cloud-based business transformation based on Microsoft Azure through deep digitization, which today are in demand by medium and large Ukrainian businesses.

Table 4 – Information infrastructure services and digital based security

Areas of activity	Features of application and/or content of activities
1	***2***
Personal data management	User account control. The only point of the system authorization. Formation of user identification within an organization, in all LOB applications, workflows and data repositories. Managing role-based access.
Backup/ Data recovery	Back up for all applications, workloads and data. Independent service and data retrieval on request based on reliable SLA. Restore the work of critically important SLA-based applications with the most effective RPO and RTO.
Configuration management	Manage PCs and servers. Software update. Configuration settings and security policy. Patching, installing updates, password rotation. Verification of service quality, optimization of resources.
Cyber security services	Security audit. Protection testing, vulnerability assessment. Operational safety center (SOC). Business continuity planning. Information risk management. Infopulse Standards Compliance Manager
Monitoring	Round-the-clock support for infrastructure and applications at the levels L1, L2 and L3. Infopulse Service Management: – Cloud Service Desk; – Monitoring solution; – Report management tools.

Source: author’s development

Table 5 – Cloud transformation of business through innovation on the basis of Microsoft Azure

Solutions based on Azure IoT Suite	*Migrate to Azure*	*Solutions based on Azure Cognitive Services*
– Smart cities of homes; – Adaptive logistics; – Agriculture; – Industry 4.0; – Health care: diagnosis and monitoring of vital indicators; – Smart office, convenience and safety; – Automotive industry: smart parking, traffic monitoring, vehicle tracking.	– Strategy for the development of cloud solutions; – Transformation of architecture: public, private or hybrid cloud solution; – Assessment of migration process into the cloud; – Transfer of existing infrastructure to the cloud; – Migrate solutions to Microsoft and other providers.	– Development of chat rooms on Azure; – Artificial intelligence (AI) and self-learning machine (ML); – Decision Computer Vision and Face Recognition; – NLP and language understanding (LUIS); – Development of products based on Cortana; – Data-driven marketing; – Detection of anomalies, forecasting.
Office 365, BI, Dynamics 365, SharePoint Online – Implementation of solutions for business process automation and data management (CRM, ERP, CMS, business applications, etc.); – Ensuring compliance with requirements with on-line, local and hybrid implementation; – Integration from any BI platform; – Fast migration from outdated systems to modern technology.	*DevOps on Azure* – Continuous Integration (CI), Delivery (CD) and Release Management (RM) in Azure Repository: improve quality and reduce deployment time; – Automation of testing processes; – Optimization of the development process.	*SAP on Azure* – Deployment SAP on Azure; – SAP implementation of dev-test and development scenarios; – Assessment of migration in SAP; – SAP Architecture for Azure, including SAP HANA, SAP S / 4HANA, SAP SCP and SAP Activate; – Determining the optimal size and consumption of Azure SAP; – Consultancy, licensing, and support from the official supplier of SAP in Ukraine.

Source: author's development

It should also be noted that solutions for modern business are: departmental interaction, document flow, analytics and reporting (BI), customer service management (CRM), resource planning (ERP), data security, support service, corporate content management, virtualization and data storage, mobility.

For innovation-digital development expansion of intellectual space is necessary, which provides a “technological corridor” for promoting innovation. The basis of the mechanism of its expansion is fundamental interaction of knowledge flows and information, which determine the ultimate result of the expansion. If the mass of information in society manages to “crystallize” in the knowledge necessary for an innovative breakthrough, the above mechanism works. “Crystallization” is provided by the formation “content attractors”, the core of which is investment.

The construction of such mechanisms, the formation of new content (in which “packed” knowledge) laid the foundation for post-industrial modernization of society. Development of such mechanisms and an understanding of the philosophy of their action, gives a chance “to escape from the impasse of overcoming development” (*Poleshchenko, 2010*). Today the problem of correlation of social and intellectual spaces is traced, which is closely connected with the underestimation of innovative practice of using resource opportunities in the “information – knowledge” dichotomy. Precisely because of the lack of cognitive tools, such opportunities are practically not used to create new content essential for the development of society as the most important products of the knowledge economy.

According to the Ukrainian scientist O. Parkhomenko, the dialectic system of innovation economy “information – knowledge”, in which the role of “creative practice” of knowledge production is performed by a person (transforming information into knowledge), built on the application of natural principle of “unification of opportunities”, is manageable, and information and knowledge in it operate in an inextricable interconnection.

This principle is based on the innovation-informational economy, because in the process of human creativity, using the dialectical system “information – knowledge”, there is a stage of scientific knowledge and it is possible to compare it with “the creative factory of creation of new knowledge and product, the properties of which are larger than the sum of components” (*Parkhomenko et al., 2011*), as the “takes out, is born” new idea. Appropriate from the position of the studied system will be consideration and synergistic effect. The connection existing between parts of the whole, in itself, is part of the whole. The synergetic nature of innovation activity is due to the complex nature of innovation needs.

First, they are not primary, that is, in the multilevel system, the need arises directly for the necessity of solving a set of contradictions between the needs and the possibilities of their satisfaction, and secondly, they are of an integrative nature. According to Ukrainian scientists N. Ryabtseva and O. Alsufeva, innovative needs integrate

creative-cognitive and economic needs. The dialectical unity of these types of needs can be systematically represented by means of the "double helix" model, when the satisfaction of one kind of needs causes an actualization of another kind, but at a higher level of satisfaction. Innovative needs have an objective basis, but they are subjective in their own way (*Ryabtseva et al., 2013*).

In our opinion, the growing expectations of consumer-clients in the 21 century as a result of the formation of information economy in the course of accelerated innovation and digitalisation include:

- Instant access to information and options;
- A new rate of innovation;
- Channel change (transition to mobile and video technologies);
- Democratization of communications (simple and understandable);
- Rethinking the notion of trust (the crisis of confidence in institutions and the need for a guarantee of confidentiality);
- "Death" complicated (simplicity of advanced products and services);
- Consumer power (consumers form and define rules of the game on market).

Consumers demand high-quality services – understandable, fast, simple – that meet expectations, demonstrate honesty and authenticity, provide solutions to problems, are empathic and personalized.

We agree with O. Parkhomenko, which compares synergy with the rule of "leverage" that operates between efforts and the result of creative work of the subject of the innovation process. The change in consciousness at the expense of synergy shifts the point of resistance of the system closer to the result of labor. The greater the synergy, the easier it is to achieve a better result (Figure 5). The effectiveness of the system "information – knowledge" depends on the joint activities of the individual and social environment.

There are two key issues in innovation process: what should a person do? and as? The first question answers philosophy, the second – methodology. Philosophy is the foundation of methodology of innovation and related processes and systems. Innovations are born

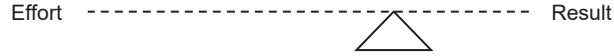


Figure 5 – Model of synergistic influence on the efficiency of creative work of the subject of innovation-information process by O. Parkhomenko

Source: compiled from (Parkhomenko et al., 2011; Parkhomenko, 2009) and author's development

as a result of virtual mental conclusions about objects that do not exist. The more radical innovation, the more it is virtual, and the stronger its philosophical foundation. On the other hand, philosophy of innovation is an accelerator of the development of society, which seeks to successfully solve economic, social and political problems (*Zavadovskyi, 2011*).

Essentially important for understanding the mechanism of functioning of a single innovation field is that all three components (intellectual, informational and material production) of the chain of innovation process do not exist without one. Their development is interdependent. Taken together, these types of production form a single technological chain of production and use of knowledge gained in the process of knowledge.

The production of innovation begins with intellectual production, namely the creation of perfect individual and collective knowledge that gives birth to the idea. The next step is the production of information. It takes place by encoding and distributing innovative ideas. The final stage is the reduction of ideas received in innovative product. A deeper and more understandable innovation field in which company is transformed into an innovation through using of digital technologies is presented in Figure 6.

We agree with Yu. Zaitsev's opinion that "the rapid development of scientific and technological revolution, which covers all spheres of economic and social activity of an individual, a separate state, humanity as a whole and leads to the emergence of "informational", "innovative" and "communicative" rights" (*Zaitsev, 2013*). Information and society are the environment in which a person functions. It is a creative organizational and unifying element in combination of the information environment with society (*Parkhomenko, 2009*).

Economic and institutional contours play an important role in innovation processes. They are based on the system "people – information – knowledge – idea – innovation", in which the transformation of information into an innovative product. The antagonistic tasks of man and society combine to achieve economic benefits. Creating the conditions for the dialectical unity of economic contradictions of man and society is a key point in building an innovation-informational economy (*Parkhomenko, 2009*). Innovative and digital activities need to organize and stimulate, while human behavior is motivated not only by the incentives for maximum personal well-being, but also by psychological and cultural factors. Quality and aimed at a positive result targeted system of information and knowledge preparation of individuals for life and work in an innovative economy and society is needed. Society should be characterized by susceptibility to innovations. This acceptability can be developed in

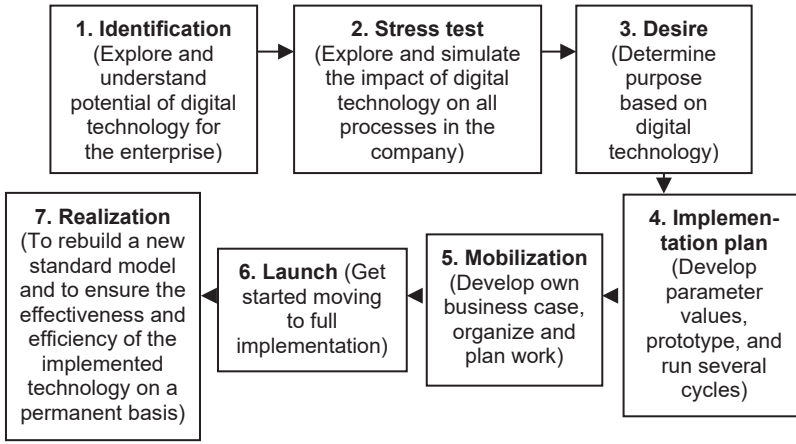


Figure 6 – Enterprise transformation into innovation through using of digital technologies

Source: author's development

two directions: reduction of barriers (forces) of exclusion, rejection and increase of forces for perception, introduction of innovations.

In the end, it should be noted that the transformational processes under the influence of information and technological revolution embraced all aspects of society, transforming it from industrial to post-industrial, innovation-informational, and digital. Already, "young" companies with innovative solutions and approaches easily compete with powerful and long-term corporations. The audience almost completely turned the attention of the TV screens on the display of personal devices. Money transactions and circulation of goods completely lost their borders.

Company that is not represented on Web is not able to locate its customers. If it does not have a single business analysis system, it will not be able to build an effective strategy for competition and development. There is no automation of production – there is no cost savings and product quality improvement. Therefore, for successful business digital transformation is a vital necessity. To do it, you need the right IT tools, verified by time and great data, with excellent user feedback and a diligent professional support service. In spite of the scale of scientific achievements that are already available, it is still important, in future, to conduct research aimed at disclosing an understanding of information

and knowledge in the theory of a "new wave" of growth with endogenous technological progress. It is useful in practice to analyze the dynamic theory of the creation and management of organizational knowledge.

1.2. Digital vector of the management component of economic activity

21st century can safely be called as digital time in management of economic systems, changing the approach to doing business, as well as the requirements for used information technology: marketing, sales and service management systems; telephony and messengers; systems of document circulation and personnel management; accounting systems and many other corporate applications (*Transparency International Ukraine, 2019; Deloitte, 2019; Europa.eu, 2017*).

Newest digital technology in management today is called GovTech. GovTech includes all IT products; solutions; development; services that help solve the problems of coordination and management of public sector. GovTech solve such problems:

1. Participation. Creating platforms for citizens' co-operation, electronic petitions, crowdsourcing. Enhancing e-identification capabilities. These technologies are more commonly known as CivicTech.
2. Infrastructure (digital sensors, control sensors).
3. Provision of services in education, health care.
4. Regulation (decision for the assessment of objects, conducting inspections).
5. Administration – licensing, cloud management, software management (*Tapscott et al., 2016*).

Digitization of Ukrainian economy is a complex of mechanisms, motivations and incentives for the development of digital technologies in management of national economic system, and hence the extensive domestic digital infrastructure, in order to take advantage of country's capabilities, enhance its competitiveness and the well-being of society.

The concept of digital technology development involves the implementation of a series of activities aimed at overcoming "digital divide" by introducing and using the newest communication and data transmission technologies, as well as the comprehensive introduction of digital technologies – from the introduction of digital jobs to digital agenda of modern world and managing them.

The first in the world of Blockchain smart-assets (*Yakushenko, 2017; Efimushkin et al., 2017; Kupriyanovskyi et al., 2017*[c]), built from scratch for productive management of national economic system is NEM. Blockchain NEM technology provides a world-class platform for

practical management of any type of asset of economic system: supply chains, currencies, notarial certifications, registration of ownership, etc.

Regardless of whether a new, better mobile application is being built, or whether Blockchain is being implemented in the existing business infrastructure, NEM makes Blockchain the one that works with maximum efficiency. Blockchain NEM provides an open and self-developed platform for developers, and access to all capabilities is realized through digital simple API NEM. The benefits of using NEM in business management are given in Table 6.

NEM is built from scratch to be easy to use for developers. Regardless of whether consumer wants to build something over NEM using his favorite programming language or interact with NEM core using Java (soon C++), Blockchain NEM has many proposals in power, scalability and ease of use. If an entity is newbie in Blockchain area, NEM can be point of entry into this industry for a new business entity.

If an entity is experienced, NEM has power required to create the most advanced applications on Blockchain. To get started with NEM, only the client will need to access network.

Table 6 – Advantages of using NEM in business management

NEM advantages	Features of NEM in business management
1	***2***
High efficiency management	1. Reducing infrastructure costs up to 90%, which is confirmed by the real Proof of Concept cases. Easy and understandable integration of NEM into business. Full functionality thanks to API, which can be used with any programming language.
Easy to use and manage	2. Maximum flexibility in setup. With the smart-assets system, NEM allows you to focus as closely as possible on the design of what you need: FinTech systems, logistics tracking, ISO, notarization, decentralized authentication.
Enhanced flexibility	3. Speed of work. Blockchain NEM platform is designed, programmed from a clean sheet to achieve some of highest transaction speed and uncompromising performance stability indicators, by consensus proof of the importance of proof-of-importance.
Reliability and safety	4. Reliable protection. Using a unique reputation management algorithm for Eigentrust++ nodes, which provides exceptional protection against malicious attacks and ensures stable operation of all Blockchain NEMs.

Source: author's development

NanoWallet is a client-based browser that will use all features of digital technology NEM with ease. To do this, just download NanoWallet with nem.io., the extended features shown in Figure 7.

Blockchain NEM's own currency is XEM, which can be considered "fuel" for the entire ecosystem. It is used to pay for a transaction and as an incentive for a network of public nodes. This means that XEM has a real fundamental value as the currency of a functioning economy.

Harvesting is a process similar to that of other cryptographic trades, but it uses unique methods of evidence validation and delegated chartering to determine reward recipients (*Pogosyan, 2017*) (Figure 8).

NEM is the first Blokchain that implements delegated harvesting without revealing private keys. To do this, you must connect the account to existing network node and use its resources to complete blocks on its own behalf. Areas of use of harvesting in management of national economic system are presented in Figure 9.

Blockchain is optimized for business data management. For example, Catapult is a full-featured Blockchain engine that can provide both private and public networks with its unique smart contract plugins and manage them. These plugins allow you to create secured digital assets, decentralized swaps, advanced account systems, and business logic modelling. At the next stage, the Catapult will become the core engine of NEM platform.

In addition to offering great improvements in speed and scalability, Catapult offers aggregated transactions and multi-level multi-signature accounts. All this gives you new uses that were not previously available to any of the existing Blockchain.

Aggregated transactions combine many transactions into one, allowing for unwanted swaps, automatic Cross Chain transactions, and other advanced logic. Catapult does this by generating one-time smart-contract. Once all the parties have approved the transaction, all its structural components are immediately executed. Today Catapult is only Blockchain with this functionality.

Another new feature of Catapult is multi-tier multi-signature accounts. For the first time on any Blockchain, it adds a "and/or" logic to multiparty transactions. You can also think of this as a "signed signatures". This allows us to use a wide range of quality business logic management. This example shows how a high-security account can be made easier to use.

Transactions are only confirmed by hardware wallet or phone and an artificial intelligence system to detect fraud (*Karcheva et al., 2017*). This allows protocol-level security configuration kits to protect customers from hacker attacks. You can set up your account so that it can only be

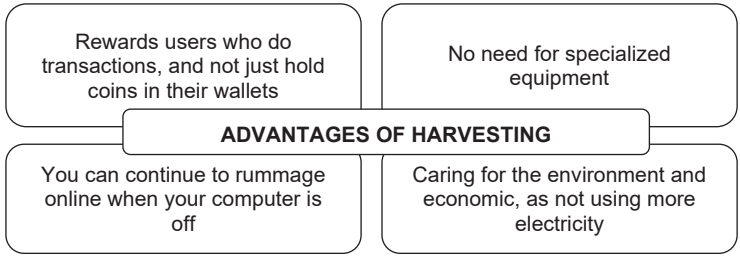


Figure 7 – Advanced Features of Nanowallet

Source: author's development

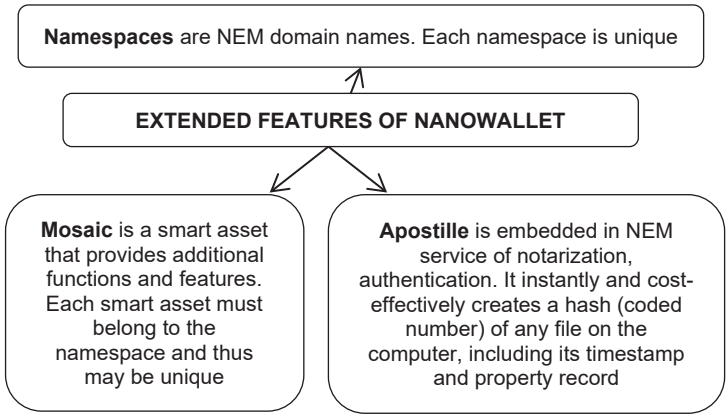


Figure 8 – Advantages of practical application of harvesting in management of economic system

Source: author's development

restored through approval of signatures from special accounts, such as friends or family accounts.

Catapult accounts can be much larger than sending currencies. They are able to send any digital data such as certificates and reports. Multi-level multi-signature Catapult can interact with items such as delivery scanners and automated devices in production.

In this case, the manufacturer delivers product as a pharmaceutical preparation. Product receives a quality certificate only when its record in Blockchain shows its production date, information from safety

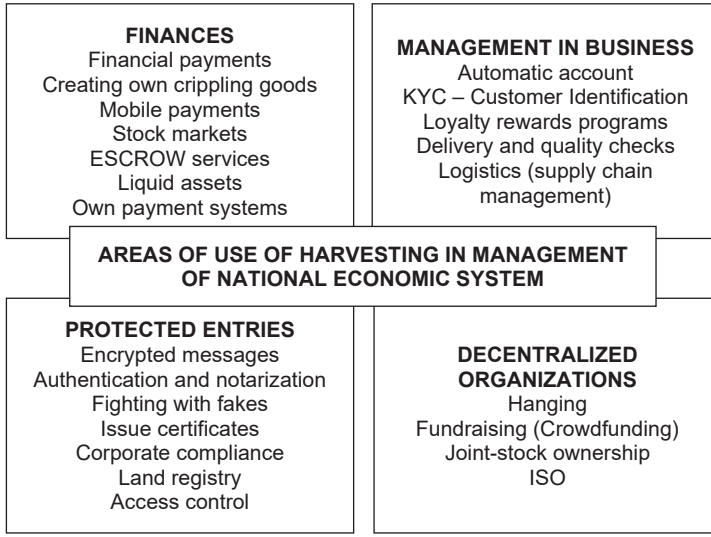


Figure 9 – Areas of application harvesting in management of national economic system

Source: author's development

inspections and the fact that product has been delivered at correct temperature. Sensors in the delivery container notify the temperature data every 5 minutes and collect it in a daily report.

Catapult is fast, because it is built on a four-layer architecture (Figure 10). This allows each layer to be protected from slowing down the influence of other layers so that ARI calls and data requests can respond quickly even at high traffic information. It also allows developers to update any of these layers without interrupting others, improving security and enhancing security.

The positive effects and convenience of multi-level multi-signature Catapult, as newest digital technology, are as follows:

1. Escrow transactions with lots of assets. If a buyer purchases tickets for a concert with payment in XEM, he makes a purchase during a promotional campaign, then he receives a voucher for a live t-shirt. On other Blockchain, these types of combined transactions that don't need trust are quite impractical. Catapult makes them simple and safe.

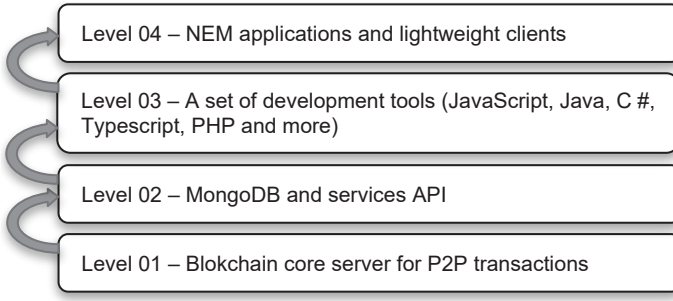


Figure 10 – Four-layer architecture as the advantage of the productivity of newest digital technology Catapult in management of economic system

Source: author's development

2. Decentralized swaps. In the case when buyer wants to purchase a license (for example, media usage rights) for 3000 XEM. The license is for sale on stock exchange, but buyer wants to keep all private keys outside the exchanges. The Catapult automatically creates three remittances required for the implementation of trust a swap:

– 3000 XEMs are passed to seller.

– The license is transferred to buyer.

– Exchange Commission in the amount of 6 XEM is transferred to stock exchange.

3. Automatic commission fee per transaction. If buyer sends $ 50 to seller using a bill for payment, but does not have any XEM to pay for the transaction commission in Blockchain, then Catapult can automatically convert USB to XEM to pay for the commission.

As a result, buyer and seller can use Blockchain Catapult without even having to buy or maintain an XEM. From the moment an account developer can place his own branding on an account for open source payments, buyer and seller may not even know that they are using Catapult. Today there are many options for use Catapult in economic system and they a re presented in Figure 11.

Proof of importance (POI) is one of major innovations in Blockchain industry (Figure 12). This is newest consensus algorithm and reward calculation that uses network data to assign a ranking of the importance of each online account.

Protocols of consensus POI are as follows:

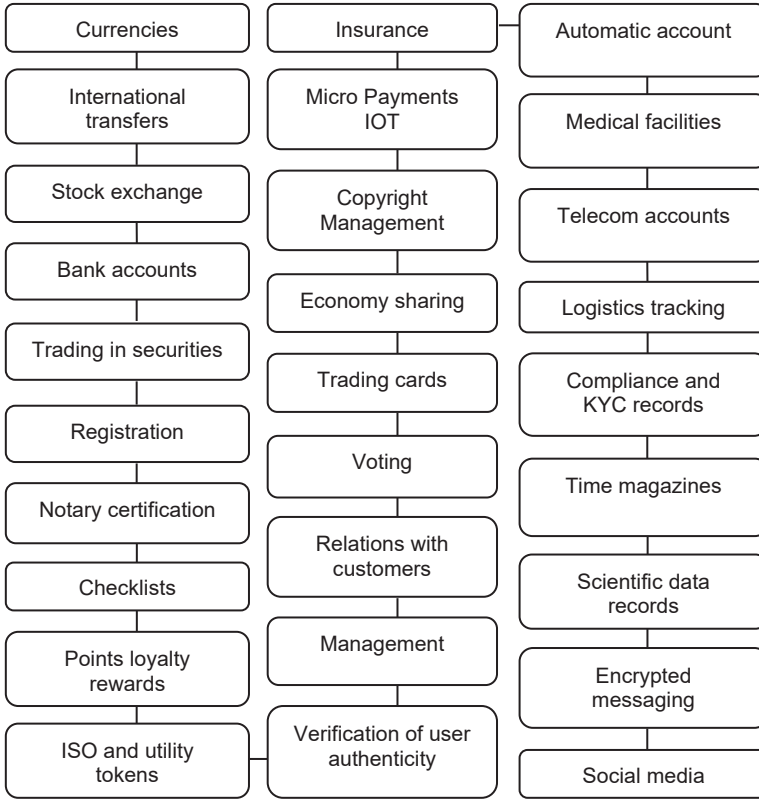


Figure 11 – Options for using Catapult in management of national economic system

Source: author's development

1. PoI is the mechanism of consensus Blockchain presented by NEM. Its function is similar to the proof of the particle, where nodes need to accumulate and keep amount of currency in order to have the right to create blocks. However, in PoI, the importance of users is determined by number of tokens they have and number of transactions carried out with them and their wallet. In POI, and the volume of transactions is also a factor as one of the components of network support and trust.

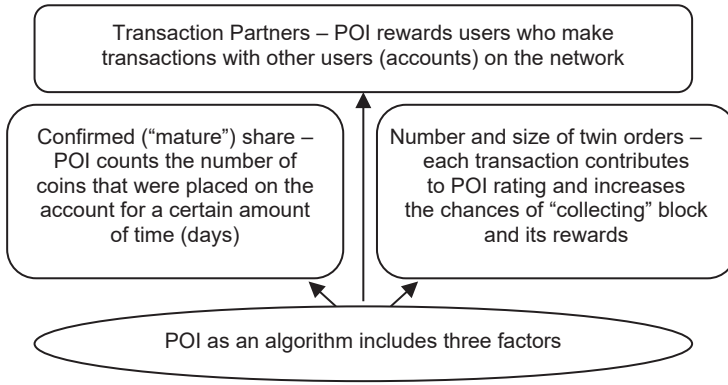


Figure 12 – POI factors for the work of newest digital technologies

Source: author’s development

2. Proof of storages (PoSt) is proof of capacity, a method in which a single node allocates a nontrivial amount of disk space to solve a task that service provider puts in place. PoSt is very similar to proof of work (PoW), the difference is that instead of computing, you use a computer repository. The storage proof is relevant, but differs significantly from functions associated with memory and proof of possibility of their recovery.

3. Proof of bandwidth (PoB) – ProximaX will use several proxy validation mechanisms to report and check the contribution of P2P nodes to network.

Mijin’s newest digital technology is a private Blockchain that addresses the issue of keeping confidential information in business, and combines all the power of NEM platform functionality. Developed by its technological and innovative giant Tech Bureau Corp, and tested by more than 300 companies in real economy sector in Japan.

Main benefits of using Mijin digital technology are:

- Low infrastructure costs;
- Management of access rights;
- High speed;
- Low development costs;
- Lack of idle time;
- Lack of commissions and transactions.

ProximaX's Information and Digital Technology is a decentralized valuable Blockchain-based repository as well as a content delivery network. It is developed by the same creators-innovators that create Blockchain platform NEM. ProximaX is a scientific and technological "leap forward", providing a holistic solution that combines on-chine and off-chan protocols and services.

ProximaX's Information and Digital Technology is specifically designed for real-world use, it is a suitable substitute for traditionally centralized technology architectures that gradually change each other as a result of dynamic development of new digital technologies. ProximaX is a revolutionary Blockchain modification that has been redefined and evolved.

Blockchain 3.0 ProximaX protocol is a thorough extension of distributed registry technology and Blockchain with rich functionality of services and protocols (Figure 13). Business, enterprises and innovators can avoid costly, unsustainable centralized management architecture crashes by using an all-in-one rack platform that provides content delivery, complementary security, repository and streaming media.

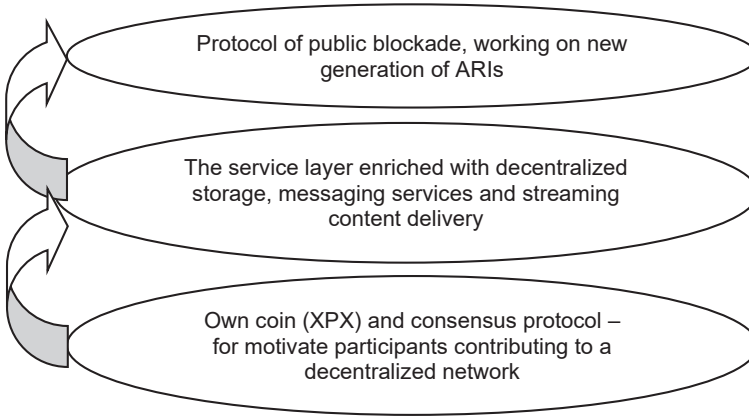


Figure 13 – Blockchain 3.0 Protocols

Source: author's development

ProximaX expands traditional Blockchain protocols by integrating the number of off-chains, peer-to-peer service components, such as Content Delivery Network (CDN) and cloud storage offerings. Primary services include messaging, storage and media streaming – all based on reliable consensus protocols to ensure network integrity. In the future,

services will allow measuring, confirming and stimulating decentralized workforce to prosperity and growth on a scale.

ProximaH is designed to provide solutions to the problems of the past by creating a new platform on Blockchain, which consists of the following on-chains and off-chains protocols, forming a wide range of decentralized services with infinite capabilities (Figure 14).

ProximaX Projections: KYC Policy Processes; ensuring business continuity; management of medical, accounting, IoT records; Big Data application; recording and reporting systems; registers; data tracking; legal and notarial services; video streaming; corporate co-operations and messaging; supply chain management. The components of ProximaX's digital technology are presented in Figure 15.

Following examples of the use of digital technologies in management at macro and macro levels indicate a new high quality in customer acquisition of services/products, thus it becomes obvious that the development of digital technologies for Ukraine has a fundamental and priority character, because stopping economic downturn, accelerating social development on the basis of innovation can only be conditional on digital transformation in part of new quality management of national economic system.

Priority should be given to harmonizing and managing business rules, eliminating barriers to entry into the innovation market for newly created enterprises, new quality management of education systems and training on the basis of digitalisation, overcoming institutional barriers that impede comprehensive implementation of newest digital technologies in management of Ukrainian economy at different levels of economic aggregation.

Blockchain is a multifunctional and multilevel information and communication technology that aims to make the accounting of various assets reliable and instantly accessible. Reliable storage technology for keeping records of all transactions that have not taken place. Blockchain is a chain of data blocks that is steadily increasing as new blocks are added with records of recent transactions. It is a chronological database, that is, a database in which the time when the record was made is inextricably linked to the data itself, making it non-commutative.

One of the major benefits of Blockchain technology comes from being able to speed up processes and reduce transaction complexity and risk. New advantages will emerge as this technology can be integrated with outdated IT, legal laws and existing assets such as currencies, stocks, bonds. For this reason, existing financial services can be strengthened by blockchain systems, enabling financial institutions to come up with potentially lower costs, better products and accelerate time to market.

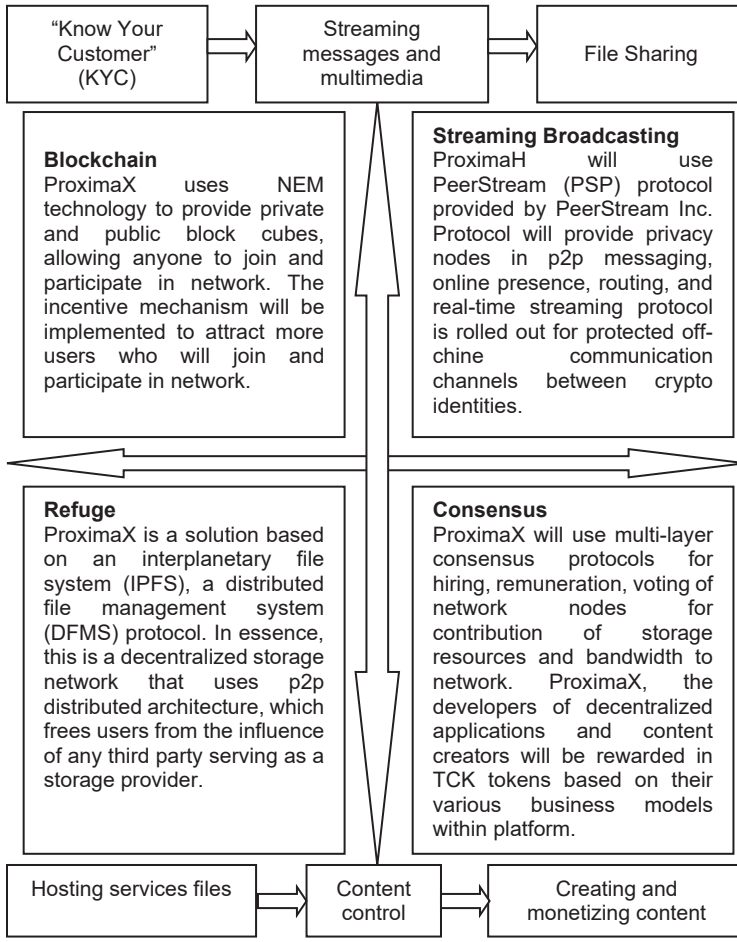


Figure 14 – Protocols and layers of service, on-chine and off-chin protocols, decentralized use

Source: author's development

Blockchain is a global distributed ledger that facilitates the movement of assets worldwide in seconds, with a minimal transaction fee. These assets are different in value and can be represented in digital form.

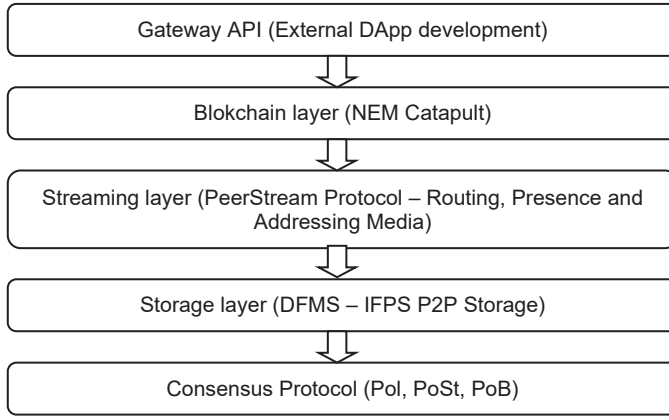


Figure 15 – Components of Proxima X's Digital Technology

Source: author's development

The use of Blockchain technology has great potential in terms of simplifying and improving efficiency in various fields of activity, primarily financial, through the creation of a fundamentally new financial services infrastructure. However, transition to new technology will not succeed so quickly, for a number of reasons. First of all, due to uncertainty in the legal and regulatory spheres. In addition, large-scale implementation of Blockchain requires considerable investment and efforts in terms of standardization and unification. Blockchain multilevel infrastructure needs to be built and consumers and regulators have confidence in this technology. At the same time, Blockchain's capabilities and growing interest in it testify to its great potential and ample opportunity to develop and improve performance across industries.

In the light of global changes in doing business, Ukrainian entrepreneurs have faced a number of challenges that need to be urgently addressed in terms of a new quality of business management and the emergence of Smart-business. The problem of this issue lies in the solution of a number of following issues, namely:

- Optimization of personnel management processes;
- The cost of hiring a new employee should not exceed the cost of his maintenance;
- Elimination of the fact that company incurs losses during the search for a replacement;

• Understanding real reasons for dismissal of employees;
• Strengthening the involvement of employees;
• Reduction of time spent on the evaluation process and training;
• Periodic feedback;
• Reduction of staff turnover;
• Possibility of predictive influence on employee retention;
• Development of reports on results of evaluation, training and history of the results of employees, a single database of employees, modern tools for training, involvement and evaluation of results (*Osetskyi et al., 2020*).

As part of the publication problem, we consider it necessary to mention, for example, the content, advantages and benefits of the latest digital technologies, which are aimed at creating a new quality of business management of the business entity. Thus, the advantages of Teams can be called:

• Single tool for communication between all employees of the company, which makes management transparent;
• Completely safe communication (the effect of security of the internal control system);
• More features than regular messengers;
• The entire corporate structure and contacts of colleagues in the palm of your hand (instant level of communication and increasing the level of the institution of trust, both interpersonal and institutional);
• Joint work on documents (formation of effective teamwork through the work of the institute of coordination and dialogue and elimination of the institute of conflict), the presence of video calls (up to 250 people through Zoom, Google Meet).

The advantages of PowerBI are:

• A single place for all possible sources of information of the business entity;
• Clear presentation of information (graphs, maps, charts, etc.);
• Ability to analyze 3600 information and simple administration;
• Access to information anywhere and from any device owned by the company.

It is necessary to use Teams by the enterprise for the purpose of strengthening of quality of management it is necessary in part of creation of uniform channels of communications where each manager always has access to all information necessary for work (price lists, templates of contracts, technical documentation, etc.); holding “here and now” urgent online meetings (no need to gather people, send them invitations); creation of “information banks” in various fields (updating 1C, updating

sales rules, instructions, etc.); automation of some management processes with the help of bots.

The use of PowerBI in practice of business management allows:

• To quickly and efficiently carry out weekly detailing of the entire business by size and number of criteria;

• To provide assistance in planning and forecasting sales growth;

• To conduct an in-depth analysis of contractors and their needs;

• To increase the speed of decision-making;

• To identify scarce products on the market;

• To control the work of representative offices for the implementation of their sales plan.

Smart-business can be used in the practice of managing an innovative enterprise, namely in the part of:

• HR • automation of internal HR-processes;

• T&D • corporate training center management;

• Sale • training of clients/partners.

Today, the features of Smart-business are inherent in large and growing companies; companies in the field of small and medium business; international companies or companies with offices and branches in the country; companies with a high level of staff turnover; companies with goods and services that need specialized training; organizations interested in automation and structuring of HR-processes.

Functional modules of Smart-business in terms of the formation of a new quality of enterprise management can be called recruitment, work with employees, event management, distance learning, development of skills and competencies, gamification, employee evaluation, AI functionality. In general, all functional modules are aimed at Employee journey as a basis for HR processes, talent search, human capital management, training, development, attracting creative human capital. The content of each of them is presented in more detail in Table 7.

At the same time, the use of outsourcing has a positive effect on improving the quality of the enterprise management system. The benefits for business are as follows:

– Time savings: +240 additional hours per year; tools of “my time”; mobile applications; speed of decision making;

– IT cost savings: flexibility in quality and content; opportunity to try; instant readiness for work; integration of services “out of the box”; always the latest versions;

– Optimization of business processes: teamwork; automation; visualization; Artificial Intelligence.

Formation of a new quality of business management is possible with the related (parallel) use of new ways of doing business, such as:

Deliver personalization; Drive omnichannel customer engagement; Enable collaboration with workplace mobility; Run microservices on a secure cloud platform; Be agile with a connected supply chain; Leverage artificial intelligence across the value chain; Capitalize on service-based revenue streams; Delight with augmented and virtual reality.

Table 7 – General characteristics and content of functional modules Smart-business in terms of the formation of a new quality of enterprise management

Type of functional module	The content and characteristics of functional modules of Smart-business in terms of the formation of a new quality of enterprise management
1	*2*
Recruitment	Integration with employment sites to post vacancies and receive feedback. Vacancy and feedback management. Database of potential job seekers. Setting requirements for positions. Management of the funnel of selection of employees and fixing of results at each its stage. Visualization of hiring results in the form of reports and indicator monitoring panels. Preservation of the full history of communication after hiring a candidate. Marketing HR-activities: a list of companies to attract talent, grouped by customized parameters; list of actions during the campaign.
Work with employees	Adaptation: automatic installation of the adaptation plan and control over its implementation; online testing, distance learning, list of tasks; mentor management; Feedback. Appointment of administrative and functional managers and mentors. Employee profiles. Management of contracts, insurance policies and instructions of each employee. Flexible tools for filtering and visualizing an employee profile. Consideration of the company's projects in which the employee participates. Recording progress in work and projects. Inventory accounting.

(Continuation of Table 7)

1	*2*
Event management	List of corporate events. Management of event participants: waiting list, registration, rejection of applications for participation; presence; collecting feedback through questionnaires. Distribution of roles during the events: organizer, speaker, participant, responsible person. Drawing up an action plan. Automated message by mail or chatbot.
Employee evaluation	Evaluation procedure: 90, 270, 360. Assessment: key performance indicators, competencies and skills, feedback, questionnaires, questionnaires. Creating forms of assessment in accordance with the rules and requirements: immediate supervisor, functional manager, mentor, colleague, employee.
Employee evaluation – KPI	Identification of key employee performance indicators. Procedure for approval of key performance indicators. Monitoring the implementation of key performance indicators. Guide to the categories of key performance indicators. Estimation of key efficiency indicators, calculation of average labor productivity taking into account the coefficient of significance. Key performance indicators in real time.
AI functionality: outflow of personnel	Forecasting the risk of dismissal. Questionnaires on employee values. Analysis of the factors influencing the dismissal of employees. Create an ideal candidate profile for each position. Distribution of employees by risk areas on the main factors influencing the dismissal. Distribution of workload between recruiters for effective planning of hiring campaigns.
AI functionality: chatbot	Channels: Telegram, Teams, Viber, Facebook Messenger. Familiar and user-friendly interface. Authorization via AD. Access to HCM LMS information: knowledge base, my tasks, my competencies. Receiving messages from the system: messages, reminders, mass mailing. Integration with corporate systems (payroll, internal portal).
AI functionality: face recognition	Easy search of photos of employees on all corporate storages and photo albums. Identification of employees added to the corporate photo repository.

(End of Table 7)

1	*2*
AI functionality: face recognition	Post found photos on social media in one click, right from the app. Ability to track employee attendance at corporate events, meetings, trainings without registration forms.
Customer Engagement & Loyalty	In-store customer service and engagement. Digital engagement (Social/Local/Mobile engagement). Digital coupons and integration with digital wallet. Coalitions for services (e.g. shipping) and data-sharing. AI driven digital assistants.
Workforce empowerment	Digital front-line enablement tools. Preventive retention. Dynamic team allocation and task assignment. Dynamic customer service mgmt. Real-time perfomance tracking and personalized incentives.
Intelligent supply chain and optimized fulfilment	Data-driven demand prediction. ML-based assortment optimization. Smart routing orders, logistics, pick, pack and ship (ML-based). Digitally-enabled quality monitoring and management. Intelligent warehouses.

In conclusion, the leading factors of transformation in business and its management are: the need for continuous development (focus on more comprehensive transformation instead of developing such aspects as re-equipment of production facilities, strengthening the sales unit or developing a long-term strategy); new productivity formula (productivity = people + processes + tools); maturing the need for change in the internal culture of the enterprise (deep "employee involvement"; monitoring the working climate of the entity based on feedback from employees; support for bottom-up work initiative in decision-making).

1.3. How digital rules work and how it works in a digital world?

The formation and development of the digital economy depends on the implementation of such advanced technologies as nanotechnology, biotechnology, technology of complex energy systems, quantum technologies. At the same time, it is difficult to further development of the digital economy without the widespread

adoption of information and communications (ICT) technologies, including cloud computing, big data, mobile technology, Internet of things technologies, geolocation technologies, distribution networking, etc. (*Efimushkin et al., 2017*).

Digital technologies are evolving at an exponential rate, radically changing the essence of business, dematerializing, demonetizing and democratizing every industry. Augmented Pixels (known for developing augmented reality technologies and applications) are born of a simple idea; Paymentwall (provides over 120 payment methods worldwide); Kwambio (3D Design Online Store) (*Deloitte, 2019*).

The latest Blockchain technology, which focuses on financial asset trading, is potentially the most interesting for both the transactional banking and payment domain, and for processes within and between organizations. But, in fact, the needs of the market have led to new terms. For example, the term “Value Web” for Blockchain technologies was coined to Fintech by Chris Skinner, but the idea is also known as “Internet values” for other applications. It is worth saying that “Internet Values” refers to the next mass evolution of the Internet, which is expected to be characterized by a combination of different technologies, and Blockchain will be the key. The “world of finance” is expected to be different (*Kupriyanovskyi et al., 2017*[b]).

To give an example from FinTech, we add that the advent of Blockchain and financial record sharing technologies, which offer new opportunities for decentralized identity systems, may be beyond the control of any company or government, ultimately relying on massively used devices. FinTech 2.0 is already considering a product design focused on the support of the following solutions, which is highly dependent on personal requests of users.

Blockchain is able to transform the payments ecosystem by improving the efficiency of financial transactions around the world. Banks and other financial institutions have the opportunity to improve operational efficiencies in cross-border transfers in real time, but as transactions grow, Blockchain algorithms will be exposed to multiple participants, which increase the risk. In the future, the realization of the potential will require significant investment from participants to ensure security and transparency of all agreements (*Pogosyan, 2017*) (Table 8).

Blockchain's innovative technology will determine the trend of the 21st century's global economy, according to expert estimates, Blockchain will completely or partially change the industries that generate a fifth of GDP of USA (about $ 3.6 trillion) (*Shin, 2016*).

Table 8 – Stages of Blockchain technologies development in the context of time

Number of stage	Time period	Contents of the stage of development Blockchain technologies
1	*2*	*3*
Stage 1	2014–2016	Analysis of Blockchain implementation opportunities for the financial services industry.
Stage 2	2017–2018	Review of concepts that can influence business and Blockchain decisions to secure the activities of financial institutions. Today, experts identify seven promising areas of implementation of Blockchain technologies, namely: documentary transactions, syndicated borrowings, clearing and mutual settlement, digital personal identity, lending, contracts.
Stage 3	2019–2020	The appearance of shared infrastructure, APIs and interfaces to extend the scope of Blockchain
Stage 4	2021–2025	Active development of Blockchain networks, completion of formation and approval of standards of interoperability and communication channels.

In essence, Blockchain technology provides a close link between the financial, logistical and commercial components of trade and economic transactions with the ability to unify the payments and delivery. Blockchain algorithm is called the sequence of operations by which the information content of multiple data structures in distributed peer systems is consistent with each other like the system of democratic voting (*Drescher, 2017*).

There is also a separate subtype of P2P systems that is “centralized peering systems”, which have a central node that facilitates interaction between system members, maintains directories describing the services provided by system nodes, or searches and identifies system nodes (*Tanenbaum et al., 2007*).

Blockchain is a multifunctional and multilevel information and communication technology that aims to make the accounting of various assets reliable and instantly accessible. Reliable storage technology for keeping records of all transactions that have been taken place. Blockchain is a chain of data blocks that is steadily increasing by adding new blocks with recent transaction records. It is a chronological database, that is, a database in which the time when the record was made is inextricably linked to the data itself, making it non-commutative (*Pryanikov et al., 2017*).

Data is represented by a sequence of records that can be supplemented. The records together with the supporting information are stored in blocks. The blocks are stored as a single list. Each participant is represented by a node (node), which stores all the actual array of data and communicates with other nodes. Nodes can add new entries at the end of the list, and notify each other of changes to the list.

Each member of the network, upon registration in it and installed the necessary software, receives a set of two cryptographic keys to the workstation: the closed one – for encryption of the transaction, and the open one – for verification of the transaction.

Each regular participant, sending the transaction to the next one, signs the hash of the previous transaction and the public key of the next and adds this information at the end of the transaction. In this way, the recipient can check the entire transaction chain by checking all signatures of previous participants in the transaction.

The hash in this scheme is a data array transformed with the hash function. In the case of crypto currency, this is transaction information; in more complicated systems is information about smart contracts and the current status of Blockchain code. As a result of the transformation, we get a virtually unique, except in the case of hash collisions, alphanumeric string that characterizes the initial element, but cannot be converted in the opposite direction. Cryptographic hash functions have the following properties: rapid calculation of hash values for any data type, determinism, pseudorandomness, irreversibility, resistance to contradictions (*Rogaway etal., 2004*). The combination of public and private keys together with hashes gives Blockchain technology a high level of data security (*Tanenbaum et al., 2007*). A summary of principles of Blockchain construction and operation is presented in Table 9.

Table 9 – Principles of Blockchain construction and operation

Principle	Content of the principle of Blockchain construction and operation
1	***2***
Network integrity	The purpose of having confidence within the system is pursued and, in essence, the participants' consensus, their equality, is mentioned.
Intensity partition	Energy costs are distributed throughout the peering network.
Value as an incentive	The system aligns the incentives of all stakeholders, means that participants are interested in developing technology and maintaining its stability.

(End of Table 9)

1	*2*
Principle	Content of the principle of Blockchain construction and operation.
Privacy and protection of rights	One of the principles of Blockchain is trust. Having this principle eliminates the need to identify others to interact with them.
Security	In addition to the fact that each member of the network must use encryption, security measures are built into the network and provide privacy and authentication of the print. Each user also has two keys: one for encryption, the other for decryption.

Source: compiled on the basis of sources (Tapscott et al., 2016; Shevchenko et al., 2013)

One of the major benefits of Blockchain technology comes from the ability to speed up processes and reduce transaction complexity and risk. New benefits will appear as this technology can be integrated with outdated IT, legal laws and existing assets such as currencies, stocks, bonds. For this reason, existing financial services can be strengthened by blockchain systems, enabling financial institutions to enter into potentially lower costs, better products and accelerate time to appear in the market (*Kupriyanovskyi, 2017c*).

Researcher and founder of the Blockchain Research Institute, Melanie Swan, identifies three conventional areas of application of this technology:

• Blockchain 1.0 is currency (crypto currency is used in various applications related to financial transactions, such as wire transfers and digital payments);

• Blockchain 2.0 is the contracts (applications in the fields of economics, markets and finance that deal with different types of instruments: stocks, bonds, futures, mortgages, legal documents, assets and contracts);

• Blockchain 3.0 is applications whose scope extends beyond financial transactions and markets (extending to branches of government, health, science, education, etc.);

• Blockchain 4.0 is so-called industry infrastructure based Blockchain ecosystem.

Main advantage of Blockchain technologies from an economic point of view is that it is a transparent, fast, cheap and secure way of conducting transactions with electronic money. E-commerce models (e-commerce,

e-trade), which use Blockchain technology in particular, are gaining popularity not only in the world but also in Ukraine, presented in Table 10. E-commerce or electronic commerce is an intangible business platform which enables the individuals, business entities and companies to sell their products or services and carry out various commercial activities, through an electronic network.

The B2B model is the typical basis for the creation of a digital platform that provides the opportunity to buy goods, services and works online from one business to another. Another example of using this model is digital platforms that provide logistics, for example, for the optimization of marine transport using “smart ships”.

Table 10 – E-Commerce models (E-commerce, E-trade) using Blockchain technology

The subject (manufacturer of goods and services)	The object (consumers of goods and services)		
	Business	**Consumers (households)**	**Government**
1	***2***	***3***	***4***
Business	Business-tobusiness (B2B) model. Electronic government procurement	Business-to-customer (B2C) model. Online Stores (ex: Alibaba, Amazon)	Business-to-Government (B2G) model. Electronic government procurement
Consumers (households)	Model Customers to Business (Customer-tobusiness: C2B). Contextual Business Advertising and Electronic Job Exchanges (ex: Google AdSense; Work.ua)	Model Customer to Customers (Customer-to-Customer: C2C). Digital sharing platforms (for example: blablacar; Airbnb; eBay)	Model Customer to Government (Customer-to-Government: C2G). Digital petition platforms)
Government	Model Government to Business (Government-to-Business: G2B). Public services for business.	Model Government to Customers (Government-to-Customer: G2C). Government services for citizens.	Model Government to Government (Government-to-Government: G2G). E-government.

The B2C model is most often embodied in digital platforms that follow the logic of an online store. The most well-known and capitalized digital venues of this type are Amazon and Alibaba Group.

The B2G model implements digital procurement platforms.

The C2B model is about creating customer value for business. One example of this model could be contextual advertising on consumer blogs and online resources (such as Google AdSense). However, households are a provider of workforce resources for businesses, and accordingly digital platforms that aggregate jobseekers 'and employers' registers can be seen as embodying a model of reconciling business and household needs.

The C2C model is represented by digital sharing platforms (such as Airbnb) as well as customers' sales to one another (eg, eBay37).

The C2G model involves the interaction of households with public authorities, for example, to get information on attitudes to particular initiatives (eg, e-petition platforms).

The G2B model is implemented through digital public service delivery platforms for business (tax collection, permitting and miscellaneous information, etc.).

The G2C model involves the interaction of households with public authorities, for example, to pay taxes online or to obtain information in the form of certificates (extracts) from state registers.

The G2G model involves communication between government agencies and is often implemented in the context of e-government. In this case, the positive effect on the national economy is due to the reduction of public spending on public administration.

Information and communication technologies transform all subsystems of society and the state, affecting the growth of all sectors of the economy. To determine the current stage of development of society and economy should use a system of categories: information society, digital economy.

The basic components of digital economy that are evolving through its digitalization today are infrastructure, e-business and e-commerce. The digital economy is the result of the transformational effects of new general-purpose technologies in information and communication. Digital technologies are rapidly transforming society, business relationships, and are an integral part of an innovative, nationally oriented economy of the future. In the "old" economy, or the so-called "traditional economy," the flow of information was physical: cash, checks, invoices, way bills, reports, faceto-face meetings, phone calls, in the new one – information in all its forms is reduced to bits (*Tapscott, 1995*).

In digital economy, e-products/services, produced by e-business and ecommerce, dominate. Payments for services/products in the digital economy are most often due to the use of electronic money.

Due to Blockchain technology, if used comprehensively, it can lead to the transition to a digital person (personality), which will be the result from all transactions involving the individual from the beginning of their birth recorded in the Blockchain type (*Kraus, 2019[a]*).

Digitalization is a significant factor in technological evolution that will help manufacturers to overcome territorial constraints, reduce transaction costs of decisionmaking transactions and formation of contracts, develop new business models based on network effects, engage the customer in the process of creating benefits.

Development of digital entrepreneurship in the conditions of virtual reality is one of the most relevant in connection with the need to ensure the growth and renewal of the economy of modern Ukraine. With each passing year, competition in world markets is only growing, and quarantine restrictions have been added. The question arises about the secret of successful sale of products and services produced by national producers. The principles that ensure digital direction of strategic development of entrepreneurship is the complexity of providing digital technologies in the implementation of business processes; adaptability to the requirements of the digital consumer. We consider it necessary to note that the principles of ensuring the social direction of the strategic development of digital entrepreneurship are accountability, humanity, social responsibility.

Today, companies and entire industries are choosing the path of digitalization of development as the only way to meet the ever-changing conditions of the world around them. Due to this, digital transformation of industry, retail, public sector and other areas is already changing the lives of every person and every enterprise.

The high-tech industry is by nature restless. Leading companies need to make a double effort to defend their positions, because if they lag behind, it will be difficult to catch up with competitors. As a result, in order to stay ahead, they have to constantly develop and implement innovative approaches. The intensity of the competition for the first places is evidenced by the list of 15 most expensive technology companies in the world, which in the period from 1999 to 2009 was updated by about half, and from 2009 to 2019 – by 40%. Only four companies were able to remain on the list for 20 years: Microsoft, Intel, Cisco, Oracle.

The situation is further complicated by the fact that regulatory control is increasing around the world. After all, if earlier the largest companies almost did not enter the “foreign field”, then in the last five

years they are increasingly “encroaching” on each other’s business activities. For example, Amazon.com has challenged Facebook and Google in online advertising, and Microsoft and Google are vying with Amazon for leadership in cloud infrastructure as a service. On the one hand, this makes it difficult to control the acquisitions of some companies by others, and on the other hand, it can threaten innovation and the associated benefits for consumers from scaling up new concepts (*Andrusiak et al., 2020*).

At the same time, newcomers who did not belong to it before are catching up with the technological sector. For example, Walmart challenges Amazon in online commerce, and Disney competes with Netflix, Amazon and Apple in the streaming video niche.

Paul Silverglight, deputy chairman of Deloitte Audit and Consulting, has compiled a list of key strategic opportunities for overcoming the coronary crisis and successful future development, including:

1. Redoubled efforts on digital transformation with a focus on improving cloud infrastructure, data and analytics capabilities, cybersecurity and business model transformation. As many companies have already made significant progress in their efforts to digitize their operations, the pioneer’s advantage has been lost. The only way out for those who are not so advanced is to start right now.

2. Reorientation and retraining of the workforce to optimize remote work opportunities and make full use of advanced technologies such as artificial intelligence. Virtual work environments can also foster innovation and diversity in the workforce by enabling technology companies to leverage ideas and talent from wider geographic areas.

3. Study where and how production takes place, with an emphasis on improving transparency, flexibility and sustainability. Companies need to know how their supply chains are built to quickly adjust their course in the event of a failure. Leaders of technology companies should pay attention not only to changes in the regulatory framework, but do not ignore their most difficult challenges: to anticipate the needs and behavior of customers (in terms of technology implementation) and remain “paranoid” about competition.

A good example of digitization in the service sector is a secure video meeting system with the possibility of authorized voting with an electronic digital signature (EDS). The problem that caused the need is the need for a universal solution for secure video meetings with the ability to keep records and vote using CEP. The decisions that have been made are a course for the development of a modern and fully secure system that simultaneously supports video functions and the ability to work with documents.

The event, which took place using a secure video meeting system, is the G20 Summit in 2020. For the first time in history, the G20 meeting took place in a virtual format. The Cisco Meeting Server (CMS) solution was used as the “meeting place” for the virtual summit.

Among the opportunities provided by the video meeting system are:

- Registration and pre-registration of all participants;
- Preparation of documents;
- Scanning and recognition of document texts;
- Photo fixation of the voter;
- Formation of the schedule of scheduled meetings with date, time;
- Maintaining the voting threshold;
- Voting and displaying the results online;
- Logging decisions and generating reports;
- Flexible search of documents;
- The possibility of including the secretary of the discussion regime on the agenda;
- Registration of participants for a speech on a specific issue;
- Setting the rules of speeches leading;
- Sonducting and managing the queue of speakers;
- Presentation of the results of voting by voters, by groups or after the voting took place: for, against, abstained;
- Maintaining an archive of documents;
- Mupport and recording of audio and video conferences;
- The ability to lock the microphone;
- Formation of the agenda of the meeting;
- Authorization of the participant with the help of hardware keys;
- EDS / CEP voting (*SIEMENS, 2021*).

An example of a speaker’s / voter’s workplace using a secure video meeting system is as follows:

- Online voting results;
- Video speakers;
- The location of the participants is fixed;
- Information that the person is speaking and everyone sees and hears him;
- Voting buttons;
- The issue on which the voting takes place;
- Voting timer;
- Performance duration indicator;
- The speech application button is active when the speaker allows;
- The number of those who signed up for the performance;
- Number in the queue for the performance;
- The number of speakers in the queue for questions.

The Secretary's post is endowed with the following opportunities and access:

- Online voting results;
- Video of speakers;
- The location of the participants is fixed;
- Information on the speaker with timing and information that it is visible and audible;
- Voting timer with the possibility of starting;
- The issue on which the voting takes place;
- The ability to change the layout of the speakers;
- Opportunity for everyone to turn off the microphones;
- Display the current list of participants.

However, among the features of the video meeting system are: logging decisions and generating reports; notification; flexible search of documents; maintaining an archive of documents; recording of audio and video conferences; the ability to lock the microphone; support for audio and video conferences; administration and audit.

Scheduling a meeting takes place during the use of a secure video system by:

- Formation of the schedule of scheduled meetings with the date, time and place;
- Formation of the agenda of the meeting;
- Reservation of premises and video conferencing resources according to the schedule;
- Display in the calendar.

Preparation of documents for the meeting during the application of a secure video system is by:

- Opportunities to submit proposals on the agenda of the meeting and the list of speakers;
- Submission of proposals on inclusion of the draft decision in the meeting;
- Control of terms of preparation of the project of the decision and materials to it concerning each of questions;
- Formation of the list of guests to the meeting;
- Scanning and text recognition;
- Import of documents from external systems;
- Keeping a history of document preparation.

During the application of secure video system, voting takes place by:

- Conducting electronic voting of the meeting members by imposing QES on the draft decision;
- Logging decisions and generating reports;
- Reports are signed with an electronic signature;

• Video recording of voting is conducted;
• Automatic keeping of the minutes of the meeting (with the possibility of modification by the secretary);
• Visualization of the process of discussion of draft decisions and voting;
• Automatic formation of the voting protocol;
• Recording the results of voting with checking the legitimacy of the CEP and the possibility of revision;
• The ability to automatically publish the decision protocol on the website of the institution.

Administration and audit during the application of a secure video system allows all actions of users and administrators to be logged in the system, while the logs are unchanged and cannot be edited.

The general architecture of a secure video system is as follows:
• Construction of a fault-tolerant solution;
• Protection against external interference;
• Secure access using Cisco VPN;
• DataCenter (Rental of communication channels and equipment);
• "Private cloud" (Deployment of the System on the servers of the Organization, Construction of KSZI, Compliance with the requirements of DSTU-4145-2002, Authorization using EDS, Encryption of traffic according to DSTU).

If we consider successful practical examples of the use of innovative services, it is worth focusing scientific attention on the digitized work of Logitech enterprise, which is presented in Figure 16.

Key benefits that users of a secure video system receive:
• Open-source product code Megapolis.DocNet;
• Full-featured web-client – "thin client";
• Support for the use of multiple industrial DBMS Oracle, MS SQLServer, and free DBMS PostgreSQL;
• Support for Windows and Linux / Unix on client sites and servers;
• U-disk (collective work with documents and document library);
• Support for free LibreOffice, OnlyOffice;
• Support of parallel use of EDS of Ukrainian ASCC, EDS of RSA;
• Open API for integration with third-party information systems;
• Built-in document storage;
• Use of Cisco, the world's leading video conferencing system;
• Possibility of integration into the system of interdepartmental communication;
• The opportunity to involve third-party participants in video meetings, such as chairmen of the boards of commercial banks.

Table 11 – Innovative capabilities and solutions on the example of Logitech enterprise

Innovative opportunities, solutions	Contents and general characteristics
1	*2*
Simple portfolio for the entire work environment:	• Personal (BRIO, Zone Wireless) • Small (Tap, MeetUp, Computer) • Medium (Tap, Rally, Computer) • Large (Tap, Rally Plus, Computer)
Tap into better meetings:	• Constant user interface across all rooms • Ease of use • One easy to support architecture
Best-selling huddle room solution:	• View everyone in small rooms • Simple and compact form factor • Computer Vision based Automatic Auto-framing
Logitech solution for medium and large rooms	Logitech's Rally Portfolio delivers a modular design and RightSense proactive technologies for better meetings in mid- to large-size conference rooms. Rally Portfolio: • Premium AV components (Camera, Speakers, Mic Pods) • Wall mounting kits • Table, Display, and Mic Hubs
RightLight with Wide Dynamic Range (WDR) optimizes light balance to emphasize faces, even in dim or backlit conditions	*Without RightSight:* • Manual camera control • In-room participants don't want to change default camera settings • Remote participants can't see facial expressions • Low visual engagement *With RightSight:* • Automatic camera control • RightSight finds human figures in the room throughout meeting • Camera automatically pans, tilts, and zooms to center and comfortably frame participants • High visual engagement, no user action required *Without RightSound:* • Hard to understand: echo and reverb • Distracting background noise • Near voices too loud, far voices too soft *With RightSound:* • Automatic suppression of echo and reverb • Minimized background noise • Beamforming and automatic leveling make every voice comfortable to hear and understand

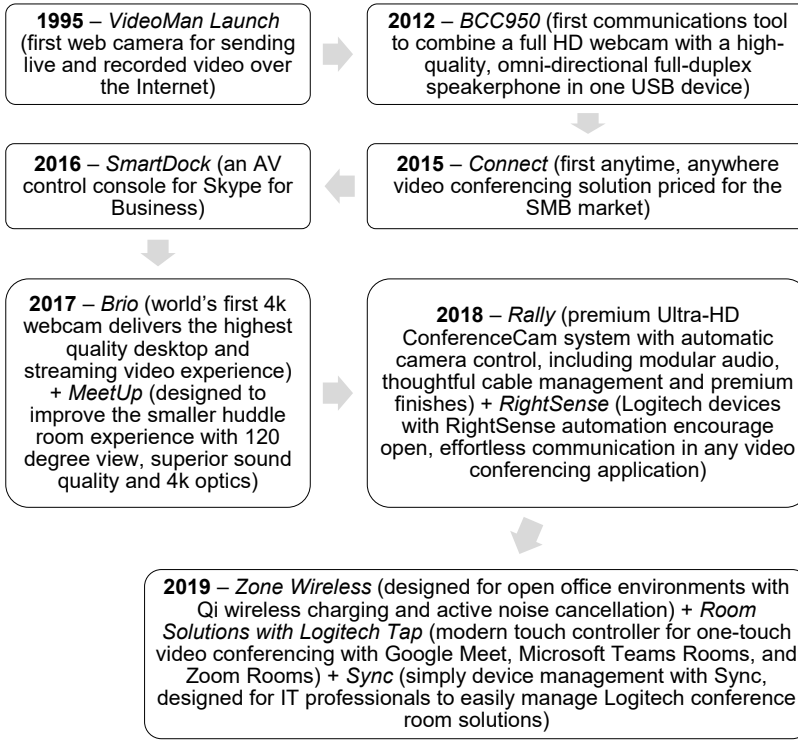


Figure 16 – History of Innovating Since 1995 Logitech enterprise

Source: author's development

A general description of innovation and digital capabilities, new solution protocol on the example of Logitech enterprise are given in Table 11.

Among the TOP 5 benefits of Logitech swytch are the following:

- Flexible: Join any meeting from every room;
- Easy on End Users: Combines simplicity with flexibility, even when changing services;
- Universal: Works with any laptop;
- Affordable: No apps or contracts;
- Capable: Differentiating features like 4K resolution and laptop charging deliver a superior solution.

As a result, we note that the concept of digital transformation of entrepreneurship has three main advantages relevant to any type of business: improving the efficiency of existing infrastructure; emergence of qualitatively new business models; increase revenue or reduce costs in existing business models.

Digital transformation of entrepreneurship goes far beyond information and communication technologies, it has an impact on the entire value chain. In addition, we are convinced that there are three key areas in which new digital technologies can be used in business, namely: customer search (firms can use digital information and social networks to attract their customers in new ways. For example, they can create digital user communities to add value); operational processes (digital technologies allow to achieve great results in operational activities at all stages of the value chain); business models (digital transformation allows you to develop completely new forms of creating and obtaining value).