**FROM CYBERNETICS TO DIGITIZATION**

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Currently, the world is actively entering the era of digital globalization. Information technologies have become the key technologies of the 21st century, which will determine the scientific and technological process and economic growth of the state for the coming decades. The Internet, cloud computing, mobile and multimedia technologies, robots, virtual reality, working with big data - BigData and much more have become a mandatory attribute of countries with a “smart” economy. The time has come when the IT sector is considered as a second economy, because absolutely all industries, one way or another, depend and develop thanks to IT. In most countries, regardless of the development model, the state acts as an initiator and catalyst for the development of innovation and digitalization; Kazakhstan is no exception. According to experts, Kazakhstan is the leader in digitalization among the countries of the Eurasian Economic Union.

The President of the country, Kassym-Jomart Tokayev, in his annual message to the people of Kazakhstan, “The unity of the people and systemic reforms are a solid foundation for the country’s prosperity,” noted: “Kazakhstan should become the center of digitalization in most of the Eurasian region.” Research by Kazakh scientists makes a significant contribution to the development and development of management theory, information and computing technologies and systems related to global trends. As you know, these areas of science are directly related to the emergence of such a science as cybernetics.

The basis for the emergence of cybernetics as a science was Norbert Wiener’s idea about the similarity of control processes in living and inanimate nature, in a living organism and a machine. As you know, cybernetics in Soviet times was considered a “pseudoscience”, therefore in the USSR there was no support for the development of this science at the ideological level. However, this new promising scientific direction has found its way, becoming the most popular branch of science and technology. Academic research in the field of cybernetics began 60 years ago. It developed within the framework of technical cybernetics, that is, as the automation of control of technical systems. At the end of the twentieth century, cybernetics received a new direction of development - it moved from technical systems to social and economic systems.

One of the luminaries of science, who stood at the origins of the emergence of promising trends in the field of management theory and information technology in the country, is Professor Ashimov Abdykappar Ashimovich - an outstanding scientist, Honored Scientist of the Republic of Kazakhstan, Academician of the National Academy of Sciences of the Republic of Kazakhstan, President of the International Academy of Informatization , Doctor of Technical Sciences.

This year, the deeply respected Abdykappar Ashimovich celebrates his 85th birthday. His formation as a scientist and the stages of his scientific activity can be traced as a logical chain of development of a promising, relatively new scientific direction: cybernetics - automation - informatization - digitalization.

Abdykappar Ashimovich Ashimov was born on January 1, 1937 in the village of Berlik, Kokterek district, Dzhambul region. Some events in life can greatly change or influence the development of a person’s character and, thereby, change his entire destiny. He experienced a difficult childhood, very great difficulties in the pre-war, war and post-war years, he was left without parents early - his mother died when he was 3 years old, and 2 years later his father was repressed. The young man’s desire to pay tribute to the memory of his untimely departed parents was expressed in excellent academic achievements and a serious attitude to work, relying only on himself, which shaped him as a purposeful and strong-willed person, later determining his entire life path. Having successfully completed school in 1954 , he easily entered the metallurgical faculty of the Kazakh Mining and Metallurgical Institute (now the Kazakh National Research Technical University named after K.I. Satpayev) with a specialty in “Metallurgy, non-ferrous, rare and precious metals”, and with such characteristic He became passionately involved in academic and social work. In 1959, a group was first formed from graduates of the faculty to continue their studies in the course “Automation of Metallurgical Processes,” which included A. Ashimov, who had proven himself to be a capable student. Abdykappar Ashimovich associates the most important period of his final scientific development with his postgraduate studies at the Moscow Institute of Steel and Alloys (MISiS). In 1960, he entered full-time graduate school at MISiS on the recommendation of Vice-Rector for Academic Affairs E.A. Buketov. This institute at that time was one of the leading institutes in the field of automation of technological processes. Abdykappar Ashimovich studied at the department of “Automation of Non-Ferrous and Rare Metals”, which was headed by a prominent scientist, Doctor of Technical Sciences, Professor D.I. Lisovsky. Formation of A.A. Ashimov as a young scientist was influenced by the well-known scientific schools of the Moscow Institute of Steel and Alloys and the Institute of Control Problems of the USSR Academy of Sciences. The development of the scientific interests of the future researcher was influenced by the authority of outstanding scientists - academicians
S.V. Emelyanova, V.A. Ivanova, A.A. Krasovsky, G.S. Pospelova,
Ya.Z. Tsypkin and others. Abdykappar Ashimovich was the first Kazakh scientist to defend his dissertation for the degree of Candidate of Technical Sciences in this specialty, opening the way for future scientists of our country. Including under the leadership of Professor V.A. Ivanov, I successfully completed a two-year research internship, which was of great importance in my development as a scientist.

Upon returning to his native Kazakh Polytechnic Institute (KazPTI), the young scientist A.A. Ashimov begins to fruitfully engage in scientific work, conducts a number of studies on solving problems of forecasting and optimization of metallurgical processes using methods of mathematical modeling, identification and adaptive control of technological processes in non-ferrous metallurgy. During this period, Abdykappar Ashimovich headed the department of “Automation of metallurgical processes.”

In 1971, for the first time in the country, under his leadership, the Department of Technical Cybernetics was created. The backbone of the department was formed by young graduates and postgraduate students of Moscow and Leningrad universities. In 1972, he defended his dissertation at the Moscow Institute of Steel and Alloys for the degree of Doctor of Technical Sciences. In a short period of time, the department’s staff has achieved a leading position in the institute. For the first time in Kazakhstan under the leadership of A.A. Ashimov, a Kazakh scientific school was created to develop the theoretical foundations of models and methods of automatic and automated systems in non-ferrous metallurgy. An automated control system was developed and implemented at such large industrial enterprises as the Ust-Kamenogorsk Lead-Zinc Plant, the Chimkent Lead Plant, the Balkhash Mining and Metallurgical Plant, the Aktobe Aktyubrentgen, Aktyubselmash plants and other facilities of the national economy of the Kazakh SSR. At this time, the young scientist, with his characteristic persistence, actually begins to create the basis of the future Kazakhstan scientific school in modern management theory.

In 1976, Abdykappar Ashimovich was appointed rector of the Kazakh Polytechnic Institute named after. IN AND. Lenin , as a promising and sought-after organizer and manager of science and education.

In this position, he makes a significant contribution to the development of the institute. Under his leadership, a regulatory and methodological framework is being introduced into practice - an Integrated Quality Management System for the training of specialists with higher education. In 1985, this work was awarded a silver medal at VDNKh in Moscow. Being a talented teacher, he pays a lot of attention to the training and development of young scientists. Under his scientific leadership, 10 doctors of science and 44 candidates of science were successfully defended. With the direct participation of Professor A.A. Ashimov and his students K.Sh. Asaubaeva, B.A. Japarova, G.Z. Kazieva, K.S. Sagyngalieva, D.Zh. Syzdykova, S.P. Sokolova, G.M. Tokhtabaeva, U.A. Tukeeva, D.N. Shukaev, D.K. Suleev and others carried out fundamental and applied scientific research in the field of modern theory of automatic control and organizational systems. For the creation and implementation of automated process control systems for the gas path and dust collection at the Zhezkazgan copper smelter in 1989, he was awarded the title of laureate of the Prize of the Council of Ministers of the Kazakh SSR in the field of science and technology.

During the period of his leadership at KazPTI, its infrastructure was significantly expanded, the largest educational buildings were erected: the main building (completed with finishing work), the buildings of the petroleum faculty, the military department and the canteen of the institute, the usable area of which amounted to more than 80% of the total area of the institute ­. In 1984, KazPTI was awarded the Order of the Red Banner of Labor for its services in training highly qualified specialists and the development of scientific research.

The issues of creating an independent scientific institution on information and computing technologies at the Academy of Sciences of the Kazakh SSR have been raised more than once. It was planned to open a Computer Center as a large division, then an Institute of Cybernetics. Even earlier, a cybernetics sector was formed at the Institute of Mathematics and Mechanics. With the active participation of Professor A.A. Ashimov. The Institute of Informatics and Management Problems was organized, in which he became the first director. He has done a lot of work in organizing and establishing a new institute, developing its promising scientific program and orienting the team towards solving pressing problems of a fundamental and applied nature. As part of the new scientific institution, 15 laboratories were opened, with such promising areas as dynamic logic, advanced systems and networks, integrated intelligent and robotic systems, etc.

In the early 90s, due to the collapse of the USSR, many scientists working in the system of the USSR Academy of Sciences and industrial science began to lose creative connections and a sense of their need for the state and society, and in 1993, on the initiative of Russian scientists, the International Academy of Informatization was created. In 1994, the Kazakhstan branch was created, the president of which was elected academician of the National Academy of Sciences of the Republic of Kazakhstan, Doctor of Technical Sciences, Professor A.A. Ashimov is a leading scientist in the field of control systems theory and technical cybernetics, who still leads this organization to this day.

In 1994, by Resolution of the Cabinet of Ministers of the Republic of Kazakhstan A.A. Ashimov was appointed chairman of the Higher Attestation Commission of the Republic of Kazakhstan, where, under his leadership and direct participation, a normative and methodological base was created and the technology for examining certification cases of highly qualified scientific and scientific-pedagogical personnel was established. At the same time, Abdykappar Ashimovich was a scientific consultant at the Institute of Informatics and Management Problems.

In 2013, this institute was renamed the Institute of Information and Computing Technologies (IICT). Currently, Professor A.A. Ashimov is the head of the “Systems Analysis and Management” laboratory of this institute. Today, IIVT is the only leading research organization in Kazakhstan in the field of scientific developments: information security technologies, robotics, aerospace and intelligent systems, big data, machine learning, digitalization of economic sectors. The institute includes 17 laboratories, including 3 laboratories in the Nur-Sultan branch, 5 laboratories in the Alatau Information Technology Park. The research carried out by IIVT is implemented under the priority programs Digital Kazakhstan, Cybershield Kazakhstan, Industry 4.0, etc.

Under the guidance of Professor A.A. Ashimov. An important scientific project for the country, “The Theory of Parametric Regulation of the Development of a Market Economy,” is being developed. The results obtained are at the intersection of theories of dynamic systems, differentiable mappings, information technologies and macroeconomic theory. The relevance of the work lies both in the development of applied mathematics and macroeconomic theory, and in the development of effective world-class information technologies for macroeconomic analysis and development of recommendations in the field of optimal economic policy. This work was recommended for implementation by the Financial Supervision Agency of the Republic of Kazakhstan, the National Bank of the Republic of Kazakhstan, the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, the Ministry of Trade and Integration of the Republic of Kazakhstan.

Abdykappar Ashimovich is one of the most published and cited authors in the country. The results of the scientist’s many years of creative activity are reflected in more than 490 works, of which 25 are monographs and 14 patents. His published works are tracked in one of the largest publishing houses in the world Elsevier, the unified abstract database Scopus, search engines Scirus, Google Scholar, and the all-Russian mathematical portal Math-Net.ru and others.

Merits of Ashimov A.A. awarded the Order of Friendship of Peoples, Parasat and Barys, II degree .

On his anniversary year, the native team of IIVT congratulates him and wishes him good health, family well-being and creative success. Expresses special gratitude and appreciation to its first director - academician of the National Academy of Sciences of the Republic of Kazakhstan, Professor Abdykappar Ashimovich Ashimov , having made a great contribution to the establishment of the institute and to the development of management theory and information technology.