

Study "Emerging Technologies in Oltenia - Present and Perspectives": Review

Professor Emeritus PhD Constantin FOTA
Self-referencing Memo

The Study was developed by participants in the informal multidisciplinary Group of senior professors and doctorship advisers of the University of Craiova, established in 2016 on the initiative of Professor Emeritus Constantin Fota, benefiting from the direct patronage of the Rector. The group aims to organize academic debates and develop studies on current issues and economic and social perspective of Oltenia and the country, carrying out its activity on the basis of dedication and strict volunteering.

A first such Study, entitled "Vision Oltenia 2050", published in 2018, finding unsatisfactory decrease in the country's gaps compared to the European Union average, while the unacceptable increase in gaps Oltenia compared to other regions in the country, brought to public attention an image desirable of our region at the level of 2050, as well as the ways and means to achieve it. At that time, the Institute of World Economy considered that, by the proposed purpose, as well as by the method used, the paper is a unique one among the many attempts to establish a vision at the country level.

Meanwhile, the world is evolving at a gallop. Through their explosive appearance and exponential and increasingly diversified application, emerging technologies tend to become one of the most extensive and profound contemporary developments that radically change people's work and daily lives, even their general way of being. The objectives of the study "Emerging technologies in Oltenia - present and perspectives", finalized by an academic Symposium held at the University House of Craiova on 23 09 2021 and honored by the Rector of UCV, Professor Cezar Ionuț Spînu through a substantial message, are the dissemination of relevant knowledge about this planetary phenomenon, detached from the overabundant amalgam of information, warning that, taking the title of a recent and robust book in the field, the future is faster than we think, and also critical evaluation of the internalization of new technologies in our region, identifying areas where research, development and technology it must urgently come to the fore in order not to lose the "trend". In this context, the press reported that. Recently, a superconducting quantum computer with 66 functional qubits was tested, solving a complex task in 72 minutes, which the most powerful existing computer solves in 8 years.

The Study begins with a substantial Chapter I, author Professor Emeritus Constantin Fota, of conceptual, methodological and applicative delimitations, important not only from a theoretical point of view, but also applicative, practical, starting with the definition of the term Emerging Technology. as well as the qualification criteria as such and the technologies thus determined, respectively: Artificial Intelligence (AI), Robotic Automation Process (RPA), Internet of Things (IoT), Enterprise Resource Planning (ERP), Distributed Ledger Technology (DLT), continuing with the treatment of the methodologies used in the study, respectively the approach of the development region, in our case Oltenia, as a Complex Adaptive System (Complexity Theory and systemic research) and the realization of the structured Questionnaire (Delphi Method), finalizing with the analysis of main technologies used in essential fields: energy, agriculture, industry. The second chapter presents in extenso the exercise carried out according to the Delphi Method, namely the Group of experts (25 guests, of which 5 academics, 5 representatives of Oltenia prefectures, 10 representatives of economic units in the region and 5 representatives of research and similar units), the 10 questions in the Questionnaire and the commonly agreed answers after the second round of the exercise.

Most of the chapters, III - VI, of the study are dedicated to the sectorial analyzes in Oltenia, in which the acute and specific perspective problems are highlighted, through the application of the most appropriate emerging technologies. Thus, in Chapter III allocated to the creative or disruptive effects on the labor market of emerging technologies, Professors Dumitru Otovescu and Dinica Ciobodin, together with Engineer Constantin Popeci conclude that imbalances in the that market are both quantitative, rather mote qualitative, in the sense that it is more and more difficult to find on the needed competent offer, especially for new jobs, which highlights even more the overwhelming role of the education system. In Cap. IV dedicated to energy, a subject that has become explosive all over the world, due to climate problems, but also to those of a technological nature, Professor Gheorghe Manolea pleads for a soft transition of the country, implicitly of Oltenia, to a new energy mix focused on renewable and nonpolluting resources , and the Head of works Laurențiu Ionel Alboteanu and the Doctoral student Gina Mihaela Luna presents two interesting IoT type applications of the photovoltaic systems in Oltenia's energy. In Chap. V Professor Romulus Mocanu addresses agriculture through his steadfast mentor and supporter, who bases with the arguments of science and practice the directly proportional correlation between organic agriculture, healthy eating and longevity, being convinced that Oltenia, having the advantage of relative abundance of high quality land and still unaltered, through a clever management and intelligent technologies, it can become a leading producer and exporter of natural and processed agricultural products, with a multiplier effect in the region's GDP. Adopting on the fly the field of "Industry" and joining it to the one which consecrated him, "Financial Industry", as he likes to call it, Professor Emeritus Marin Opreșcu, after doing in Chap. VI a SWOT analysis of Oltenia's industry, concludes that the region will be within an acceptable time horizon together with all regions that successfully will face the challenges of the 4th Industrial Revolution, by assimilating emerging technologies and, without underestimating the importance of SMEs, considers that key sectors, such as aeronautics, shipbuilding, the automotive industry, in general those that incorporate emerging technologies, can only develop within complex structures, specific to large industrial conglomerates.

Chapter VII and VIII, in the writing of which I participated, address two social issues no less important than the previous ones, especially in these bad times, Health and Education. Together with my Group colleague Professor Petre Rotaru and with our distinguished guests at the Application of the Delphi Method, Seminar and Study, Professors Mihai Ioana, Vice-Rector of UMF Craiova, Director of the Genetics Center, Dolj and Assistant Professor Michael Schenker, Director of the St. Nectarie Oncology Center, Craiova , we highlight in Chap. VII Health that, against the background of emerging technologies, every step in medical treatment is reinvented, medicine itself is transformed, the literature outlining two major paradigm shifts in progress, the first - from treating the disease to health care, the second - from a retrospective, reactive and generic system, to a prospective and personalized one, a first big step in these directions being the earliest diagnosis, a process stimulated by the involvement in medicine of the big technological companies. Together with the other Group colleagues, Professor Emeritus Constantin Niculescu and Professor Emeritus Emilia Parpala - Afana, after several debates we notice in Chap. VIII, as in Health, in Education there is more and more the problem of paradigm shift - from profession to portfolio of skills and competences These include the ability to solve complex problems, critical thinking, the ability to think logically and coherently, creativity, the ability to collaborate, emotional intelligence, the ability to quickly analyze and make correct decisions, algorithmic, programming and digitized reasoning, flexibility cognitive, the ability to act simultaneously with several concepts. The learning system will also be radically changed, through the widespread use of virtual and augmented reality technologies as components of AI,

The last two concluding chapters of the Study Volume are brief and are presented by their very title: Chap. IX Brief Conclusions and Future Research Projects, Chap. X Group membership of Senior Professors and Impressions. Instead, I give a last impression of a former colleague, John Gionea, currently a retired Professor at the University of Melbourne: "To tell you the truth, the discussions we had about Emerging Technologies in Oltenia seemed to me, without considering myself a specialist in the field, a little ... airy fairy. But the recent news about electric locomotives from Craiova to Sweden and other countries has brought back my optimism about the technological future of Oltenia". Speaking only of the case in this case, what my colleague no longer knows, but finds out now, is that one of the directors of Softronic (not Electroputere), the current Oltenian manufacturer of electric locomotives, Eng. Ion Girnita was an active participant in our Questionnaire by Method Delphi, on this occasion informing us that the factory uses emerging technologies in the production of locomotives, respectively the technology Robotic Process Automation (RPA) - 3D Printing in the fabrication of the metal body of locomotives.

The Volume "Emerging technologies in Oltenia - present and perspectives" will be published at "Universitaria" with the sponsorship of the "Constantin Botea" Foundation in 150 copies, which will be distributed free of charge to legal and natural persons interested, through the FEAA Secretariat.