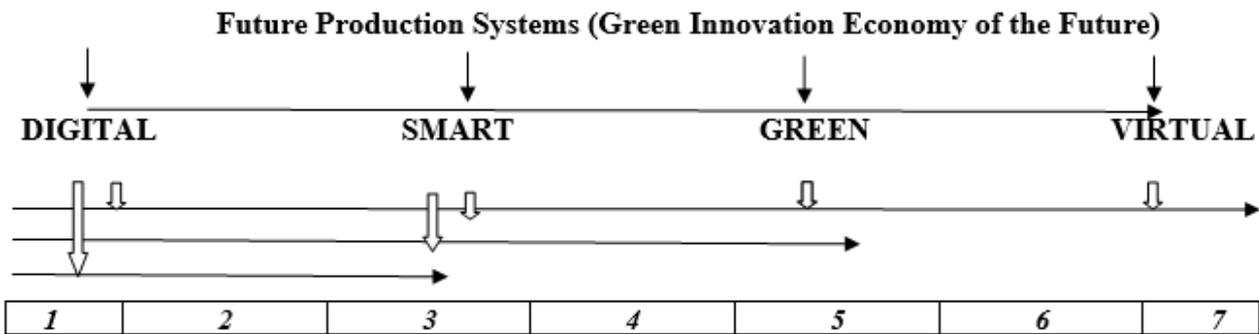




Dear Readers and Authors of Journal!

Let me congratulate all the readers of this first edition of the ACCESS Journal.

Over the last years, the world has undergone major geopolitical, economic and social changes. The modern paradigm of the global community's transition from a systemic crisis and the transition to a secure and sustainable development is, first and foremost, an innovative way of development based on modern innovative, information and convergent technologies, based on new knowledge as the main resources of development, based on socio-humanitarian technologies, as well as on the basis of active transition according to the 6th, and then to the 7th technological way of development and "Industry 4.0".



The concept of «Production Systems of the Future» and the Product Life Cycle (Interconnection): 1-Product, 2- Planning, 3- Product Design, 4- Production Planning, 5- Ramp Up, 6- Production, 7- Use of Product, 8- Service.

Some urgent problems of designing promising and resilient control and forecasting systems in an unstable environment: analysis and synthesis of systems of the type:

“X”- type systems, Integrated Models, Models of the "NMSSD" Type, Systems of the Type "SEEHS", Converged technologies: NBIC and NBIC + SH - technologies, Industry 4.0., Digitalization: DE, E-government, etc.

Green Technologies and the Green Economy (“greening”), Intellectualization, Smart Technologies (“Smart Technologies”) and Innovative Technologies. Innovative economy and innovative society of the future. "Society 5.0". Hybrid models and systems. Hybridization of the world: "RW + VW".

The general scheme of sustainable and socio-humanitarian development integral model of global (world) system, which the authors call the noosphere model of development, can be represented as an integrator:

$$S = \langle E_c, E_n, S_o, H_u; ESIT \rangle \quad \text{or} \quad S = E_c \oplus E_n \oplus S_o \oplus H_u \oplus ESIT$$

Today, the most important scientific, technical and technological problem is the design and implementation of complex systems with the desired properties based on Integrated systems such as "SEEHS" and Converged technologies such as NBIC and, in particular,



NBIC + SH, i.e. Integrated intelligent and hybrid systems such as

$$[S = \langle E_c, E_n, S_o, H_u; ESIT \rangle] \cup [\text{NBIC} + \text{SH}].$$

Necessary properties of the designed integrated and hybrid systems and technologies:

- o Integrality and intellectuality (systems type "X");
- o Sustainable and safe development; sustainable and biologically sustainable development;
- o The possibility and accessibility of assessing and predicting unstable situations (crises, epidemics, disasters, and other critical events.);
- o Innovation and smart technologies;
- o Hybridization (RW + VW) - digitalization and virtualization;
- o Green (Green) - technology (or "Clean" technology; "greening").

The solution to this problem can be implemented only on the basis of systemic, synergetic and interdisciplinary studies, i.e. the wills of multidisciplinary and multidisciplinary scientists.

Mankind is facing the biggest challenge during its existence. Humanity enters into "Industry 4.0" (Schwab, 2016), where the physical world is connected to the virtual world. Information technology, telecommunications and production are merging, and at the same time, the means of production are becoming more independent. It is still impossible to say exactly what the "smart factories" of the future will look like.

Scientists from all over the world and specialists from all scientific fields are called upon to find answers to thousands of challenges of the new world in the conditions of Industry 4.0 and the digital economy. The term "digital economy" appeared in the scientific literature not so long ago, at the end of the 20th century, and became widespread. Digital technologies at the beginning of the XXI century, are developing rapidly and have a major impact not only on the economy, but also on the development of society.

The favorites of "Industry 4.0" will be biotechnology, nanotechnology, robotics and mechatronics, new medicine and new environmental management, development and use of personality and team capabilities at a new, higher level. About development, reforms, modernization, innovative technologies and what the world is transitioning today, moving to the sixth technological way, that is, to the NBIC (*nanotechnology, biotechnology, information technology, cognitive technologies*). And socio-humanitarian technologies (SHT) refer to a person, to practice, to society ... to of moral, morality, to of culture. And this is more of a philosophical problem. That is, now we have to focus on NBIC + SH - technology. From here it is clear which executives we need, what personnel we need to prepare. Yes, those who can organize and secure this breakthrough in the future.

We are on the threshold of a new revival in science and technology, based on a comprehensive understanding of the structure and behavior of matter from the nanoscale to the most complex of open systems, the human brain. The unification of science, based on the unity of nature and its holistic study, will lead to technological convergence and a more effective social structure to achieve human goals. The phrase "convergent technologies" refers to a synergistic combination of the four major "NBIC" (*nano-bio-info-cogni*) fields of science and technology, each of which is currently progressing rapidly.

Thus, on the basis of a synergistic approach, the issue of exacerbation of global crises generated by technogenic civilization is considered, and the question arises: is it possible to overcome these crises without changing the basic system of values of technogenic culture? This value system will have to change that overcoming global crises will require a change in the goals of human activity and its ethical regulations. *Humanity has a chance to find a way out of global crises, but it will have to go through an era of spiritual reformation and the development of a new value system.*



HYBRID NONLINEAR WORLD – HNW

(symbolism of the development of the modern complex nonlinear world)



*Real / Physical
World: (R/W)*

*Virtual / Digital or
E-world:
(VW / DW or EW)*

*CONTINUITY
(Cycle / Fractality)*

The hybrid world is integration and merger / acquisition

Physical and Virtual Worlds:

HW:=PhW & VW → INDUSTRY - 4.0 & DE

The main objective of the present volume is to analyze and to identify the contemporary challenges facing development in the context of the priorities of sustainable development, intelligent and inclusive growth; to outline and to present good practices, to investigate and to propose new tools and recommendations for future development.

The first volume of the journal is presented in a completed form, fulfilling the intended objective and related tasks, but poses many questions and ideas for future scientific research. It can be used by a wide range of users - in the scientific work of collective monograph researchers and academics, in the training of students, in the work of state institutions and non-governmental organizations, etc.

Special acknowledgments should also be rendered to the publishing house “ACCESS”, Bulgaria which made the journal true and assisted its publishing.

We hope that through the involvement of academics and practitioners from many institutions of high international standing as well as through the peer review process the editors will be able to ensure continuous high standard of this journal.

I hope that the publishers will find ways to reach wider audience.

With best regards,

Chairman of the Scientific Council

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