



## INDUSTRY 4.0

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### Abstract

*In the last years we are witnessing major paradigm changes which will impose inevitable, soon or later, the redefinition of economical and political world power poles. As a consequence, we will assist at very important changes at the level of the most important human activity sectors, of the entire society, even of the entire planet, based on the newest evolutions of the science, technique and technologies defined by the fourth industrial revolution. This new revolution will be characterized by the exponentially development of the digital technologies which will redefined the majority of business, social and governmental models. The slogan under this revolution is acting is “THE WORLD WILL NEVER BE THE SAME AGAIN”, and the anticipated objective is the accomplishment of a cohesion and a multi and intercultural understanding through people interconnection which will transform the world into a more performing, prosperous and tolerant place.*

### Key words:

*business, emerging technologies, social and governmental models, cohesion, people interconnection*

### JEL Codes:

F2  
F4

## 1. INTRODUCTION

The founder of The World Economic Forum, Klaus Schwabs, professor of economy at Geneva University, the visionary who had identified the pre-eminent signs of a new industrial revolution and conceptualized the phenomenon in his work "The Fourth Industrial Revolution" (2016) followed by "Shaping the Fourth Industrial Revolution" (2018), considers that the rapid, complex and interdependent changes we are assisting today, lead to a new hiper-connected world with unknown consequences. "Artificial intelligence, robotics, internet of things, 3D printing, nanotechnology, biotechnology, storage of energy, quantum informatics etc will determined people to change rapidly their way of living, working and consuming."<sup>1</sup>

These very important and complex changes will not look like anything from what

mankind has experienced so far. Even it is not clear which will be the consequences of the fourth industrial revolution, it is obvious that the answer must be global and must involve the public sector, as well as, the private sector, academic world and civil society.

Thinking and acting in accordance with the fourth industrial revolution requires the definition of a new type of leadership, “systems leadership which is based on the fact that it is not enough to create new technologies but is necessary to take into account how they are managed, the new values which are created and the impact they have on the whole world”<sup>2</sup>

If, the first industrial revolution had as result the mechanization of the production through the steam power, the second introduced mass production utilizing electric energy, the third

<sup>1</sup> Schwab, Klaus – The Fourth Industrial Revolution, Dunod, 2016

<sup>2</sup> Schwab, Klaus; Davis, Nicolas – Shaping The Fourth Industrial Revolution, 2018.

automated it by information technology and electronics, the fourth industrial revolution, also called the digital revolution is characterized by the fusion of technologies process that clears the borders between physical, digital and biological spheres. This revolution is completely different from the previous one through the rapidity of the emergence and dissemination of innovations, through their application areas and impact. This revolution evolving at an exponential rate and influences almost all fields of activity, all over the world. The magnitude and the importance of the fourth industrial effects will lead to profound changes of the production, management and governance systems.

Today, billions of people benefit from unlimited communication possibilities due to interconnected electronic devices, whose power of action, storage and access to information is unprecedented, tomorrow all these possibilities will be multiplied by innovative technologies. Artificial intelligence, already has developed to such a level that it can drive drones and automobiles, translate into foreign languages, invest on the international markets etc, and it can create a symbiosis between persons, products, buildings, markets etc.

It is no doubt that, the fourths industrial revolution has as an ultimate goal revenue growth and enhanced quality of life all over the world but, till now, only those with financial means can purchase something, make a payment, listen to music, book a flight etc through the new technologies. In the future, thanks to the innovative technologies the offer will increase substantially with major long-term implications in increasing efficiency and productivity. Transport and communication costs will diminish sharply, logistics and supply chains will become more efficient, trade costs will decrease which will lead to opening of new markets and boost global growth.

In the same time, as a result of the fourth industrial revolution there may be disturbances in the labor market and global inequalities may deepen. Automation will replace the labor force and the substitution of workers with high performance

machines will accentuate the difference between capital and labor force return. On the other hand, the demand for high qualified labor force will grow vertiginously at the global level leading to labor market segregation into a low qualification and remuneration segment and another one characterized by high competences and payment process that will intensify social tensions worldwide. Great beneficiaries of the fourth industrial revolution will be, undoubtedly, the innovators, respectively highly qualified labor force providing intellectual capital together with shareholders and investors providing financial capital, which explains the deepening of the differences between those who depend on capital and those who depend on work. Another risk is that, today, when more than one quarter of the world population uses social networks to interconnect and share information and knowledge, in many cases, instead of mitigating cultural differences and enhancing cohesion the separatist and extremist ideas and ideologies spread among the peoples. It is no longer a secret for anyone that the technologies supporting the fourth industrial revolution, the acceleration of innovation processes and the speed of changing of processes and procedures of production and processing have a major impact on companies. There are winning companies that adapts to changes induced by innovation and new technologies in such areas as R & D, marketing, sales, distribution etc and others that cannot keep up with these changes.

Major changes are registered also at the consumer level also. New patterns of consumption based on real-time access to data networks and the information they provide, appear. This situation obliges enterprises to adapt their way of manufacturing, marketing and delivering products and services to the new conditions.

"The fourth industrial revolution will affect businesses on at least four plans, namely: customers expectations, products improvement, organizational forms and collaborative innovation (enterprise/clients), clients becoming, in this conditions, the epicenter of economic activity."<sup>3</sup>

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<sup>3</sup> Schwab, Klaus – The Fourth Industrial Revolution, Dunod, 2016.

In the same time, the emergence of new economic models based on innovation and new associative technologies requires the reconsideration of business organization and the redefinition of company culture.

In so far as the concrete, the digital and the biological environment are in a converging process digital platforms and new technologies will allow citizens to be in a permanent dialogue with governments to express their opinions, to coordinate their efforts and even to exert some control over the central public power that will diminish in importance due to redistribution and decentralization processes. "At the same time, governments will benefit from the new technologies to increase control over the population since the new system of surveillance is omnipresent."<sup>4</sup> In order to maintain its prerogatives, the central power must adopt a style of governance that allows for rapid adaptation to environmental changes and must continually reinvent itself. However, by means of legislation, data protection and privacy of individuals must be ensured.

The fourth industrial revolution will also have an important impact on national and international security and will affect the nature and likelihood of conflicts emerging as a result of new technologies. These may have as result the creation of autonomous or biological weapons that are easy to handle by small groups of people, creating in this way new fears and new global vulnerabilities. At the same time, new ways of protection and defense will certainly be developed.

According to specialists, the fourth industrial revolution will have a major impact also or especially on people. It will not only change what and how we do, but also who we are, will deeply affect our identity by altering our innermost feelings, by modifying the notion of property and the way of consumption, by defining in a different way the time devoted to work and to rest, the way we are developing our career and skills, the way we are relating to others, and the list can continue.

We must emphasize that, one of the great challenges of new technologies is regarding the private life of the human being. We understand instinctively that this challenge is essential for people, but sharing private information is part of the new process of human interconnection worldwide. Today we can say without fear of mistaking: "I'm connected, so I exist!"

On the other hand, the revolutions in the sphere of biotechnology and artificial intelligence that redefine the human being by removing barriers such as lifetime, health status, various incapacities will force us to redefine our moral and ethical limits.

## 2. CONCLUSIONS

The Fourth Industrial Revolution, the one that constituted the main theme of the Davos meeting in 2016 and one of important points of debates in 2018, focuses on how emerging technologies will change production systems with multiple global economic implications. "The new economic models will lead to the concentration of production in a small number of countries and businesses that can lead to an increase in inequalities and social movements worldwide."<sup>5</sup> In this regard, the World Economic Forum published in January 2018 a Report in which countries eligible to join the Fourth Industrial Revolution are nominated by adopting the 12 emerging technologies (artificial intelligence and robotics, Internet of Things (IoT), virtual reality, blockchaining technology, 3D printing / bioprinting, innovative materials, nanotechnologies, energy storage, quantum informatics, biotechnology, geo-engineering, space technologies).

According to the World Economic Forum ranking, the top three countries in terms of production structure are: Japan, South Korea and Germany, and in terms of the means of production: USA, Singapore and Switzerland.

In conclusion, " through rapidity and globality this revolution requires us to rethink how to do politics, how to do economy even will force us to

<sup>4</sup> Safta Alexandru, Andone Claudiu – A patra revoluție industrială, Revista Știință și Tehnică, nr. 20/2017

<sup>5</sup> Raportul Forumului Economic Mondial, 12 ianuarie 2018, Davos.

rethink the sense our humanity."<sup>6</sup> At the risks that human robotization can bring through new emerging technologies we can answer, benefiting from its advantages through a new collective interconnected consciousness, based on trust in a global common destiny.

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<sup>6</sup> Schwab, Klaus – The Fourth Industrial Revolution, Dunod, 2016.