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THE ETYMOLOGY OF TERM THE FORTH INDUSTRIAL REVOLUTION

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Abstract: *In many articles we read about the fourth industrial revolution, also known as Initiative Industry 4.0. Physical and digital worlds are interconnected in a single network economy and industry positions migrate to the service sector. If terms like the 1. industrial revolution, 2. industrial revolution and the information revolution have emerged as reaction to society development with the passage of time, the term 4. industrial revolution was introduced purposefully to underline concept Industrie 4.0. Although the term as such does not yet have stabilized content and it refers to the evolutionary development of ICT, it is used still frequent.*

Keywords: Smart Factory, Industry 4.0, fourth industrial revolution

1 INTRODUCTION

Information and communication technologies (ICTs) have become an integral part of our every day's live. Their real potential, however, has in the Slovak economy many new opportunities. Internet is not only used as a source of information but also as a means of communication. Internet has become a platform on which passes through the huge amount of data obtained from various sources, from customers to producers and vice versa. Products' ability to obtain, process and transmit information from / to the manufacturing process led to the creation of so-called "Internet of Things" (IoT). From an estimated development ITC is expected that today's industry and services are on the threshold of transformation that will have a major impact on the production of goods, offer additional services and to customer behavior in the near future.

Penetration of ICT technologies in production technology has globalization nature and the extent of this impact the manufacturing sector is forced to adapt to this trend, so in order to remain competitive. If we want to make the best deal with the consequences of this transformation is increasingly necessary not to look at it as a matter of the private sector, but also as a priority in education, even as a worthy of consideration priority for the level of economic development. So called fourth industrial revolution changes the existing form of the industry. Priority of industry becomes introduction of digital manufacturing automation, control systems digitization and using of communications networks to ensure interoperability and flexibility of business processes. Thanks to the Internet, which has become an integral part of industrial control systems, there will be a high volume of exchanged data, from which is derived the functional analysis of big data, virtual simulation of processes, link in cloud environments, augmented reality, autonomous devices and other technologies.

In the world we can already see a number of national initiatives, countries such as Germany, USA, Japan, China and many others are looking for a model of cooperation with all stakeholders to a joint action plan designed to make best use of their strengths and to respond to future challenges for the industry and society. With regard to the interdependence of Slovak industry with German industry initiatives known as Industry 4.0 are very inspiring to us.

2 THE ETYMOLOGY OF VERBALISM THE INDUSTRIAL REVOLUTION

In connection with the concept 4.0 Industry often uses the term fourth industrial revolution. This term has originated over gradual development from the original verbalism of the industrial revolution. The concept of "industrial revolution" (partial synonymous is industrialization) means the process of fundamental change in the production tool that enables the transition from the manufactory, founded in the hand work, to the capitalist factory. This process began in Western Europe during the II. mid of 18th century and fully developed thanks to the use of steam propulsion and other inventions in the 19th century. [1]

The first time verbalism the Industrial Revolution in the context to technological change was applied in context of economy by French economist Jérôme-Adolphe Blanqui in his work Histoire de l'économie politique en Europe depuis les anciens jusqu'à nos jours, 1837. Friedrich Engels in his work "Die Lage der Klasse arbeitenden in England "(State of the working class in England) in 1844 spoke of "industrial revolution, the revolution which at the same time changed the whole character of civil society". However, although Engels wrote it in 1840, his book has not been translated into English and the term began to be used more widely in the 20th century. Although many historians have argued that technological, economic and social changes are gradual, at the end of this term is commonly used in the social sciences and this was adopted in the history of science and technology too.

When David Landes in 1966 (professor of economics and history at Harvard University) has used in his work The Unbound Prometheus verbalism II. Industrial Revolution, began the term widely used for

marking of technological revolution as the next phase of the industrial revolution at the end of the 19th and early 20th centuries. The concept emphasizes the importance of new technologies, in particular, the internal combustion engine and oil, new materials and substances, including alloys and chemicals, electricity and communication technologies (telegraph, telephone and radio).

British scientist John Desmond Bernal coined the term "scientific-technological revolution" in 1939 in his work The Social Function of Science to emphasize the role of science and technology, played on the development of society as a productive force. In Czechoslovakia Mgr. Radovan Richta, Ph.D., Czech philosopher and sociologist, popularized the term and the associated theory of replacement of physical work mental work. In his most important project, Civilization at the Crossroads deals with social and human relations of scientific and technological revolution." It's actually economical, technological and sociological prognosis of further development of the world that deals with the transformation of former industrial society to society today by the term information.

Digital (information) revolution, sometimes also referred to as the third industrial revolution, dates from the transition from analogue and mechanical technologies to digital technologies. An important turning point in its history was primarily the discovery of the transistor in 1947, which later led to the massive spread of home computers and other digital technologies. The digital revolution gradually dominated in the most sectors. Like the agricultural and industrial revolution in the past, also the digital revolution began another era of human civilization, which brought about globalization and more radical economic changes.

3 THE FOURTH INDUSTRIAL REVOLUTION

The German government announced a program Society 4.0, which also includes a subprogram of digital economy. Within the digital economy is essential program labeled as Industrie 4.0, a program of new orientations and major changes of German industry. Industrie 4.0 became a hit the German economy and new platforms that join together the best researchers with industry, with the one goal of improvement of the competitiveness of the German industry and economy. The new program of innovation in Germany is also referred to as the fourth industrial revolution.

Before the economic crisis in 2008, world economic experts have estimated that the share of industry in GDP countries should gradually decline to below 10% and its place should replace by services. Development of the industrial countries such as the USA, France or England also suggests it. The only exception among the industrial countries was Germany, which maintained a share at around 25%. The new program Industrie 4.0 based on innovations has even more to strengthen the German economy.

Unless the terms first, second or information revolution formed in response to development in the society additionally, term 4. industrial revolution was introduced purposefully to underline the concept of Industry 4.0. As such it does not yet have stabilized content and refers to the evolutionary development of ICT. Term of fourth industrial revolution used the professor Klaus Schwab (founder of the World Economic Forum) in his book, The Fourth Industrial Revolution, which characterizes the fourth industrial revolution as a series of new technologies that combine physical, digital and bio-logical worlds, affecting the all disciplines economies and industries. [2] Basic visions so called Fourth Industrial Revolution appeared already in 2011.

Industrie 4.0 concept is based on a documents which were presented at the fair in Hanover in 2013. According to this idea, "smart factories" will originate that will use cyber-physical systems. They undertake repetitive and simple activities that previously were carried by people. This will be accompanied by a change in the labor market, that could threaten employment of low-skilled workers. That changes would create new jobs, but which will require more qualified staff.

Industry 4.0 brings hope to improve the quality of human life by increasing the productivity of labor and the disappearance of monotonous and physically demanding professions. Automation, systems integration and higher efficiency through sophisticated logistics are also hoping to reduce negative human impacts associated with the industry and for the implementation of sustainable development.

4 CONCLUSION

From exceptional economic successes of Germany in the last decade he has learned the entire EU, and therefore since 2009, making huge efforts to re-industrialization of Europe. They also indicate the latest development programs of the European economy. To these initiatives it responds to the concept of "Smart Industry" (2016) prepared by the Ministry of Economy and created jointly by the public sector, industry and academia, and constitutes the beginning of a nationwide initiative, which aims to transform and strengthen the industry with the latest technological developments, also help Slovakia to adapt to the changes that this transformation will bring. [3]

This concept is the strengthening of the sector high-tech intensive industries that require high demands on R & D and highly skilled workforce. For us, the key is required modification of the education system at all levels, through the development of more appropriate, interdisciplinary curriculum and programs of study, students would have offered new and highly specialized applications. The concept assumes an integrated educational platform, industry and academia to encourage personnel exchanges and exchanges of know-how between the industrial sector and the

academic and research communities aimed at improving professional knowledge, technical skills and creativity.

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