

## The future of work: actuality, seeking new visions, challenges

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**Abstract:** The aim of the article is to present some selected reflections upon the future of work. Its first part presents the main drivers of change, which are even quicker and even more difficult to predict. Their directions seem to be similar all over the world, though their scale and speed depend on the characteristic features of given societies. In the following part of the paper, some hypothetical scenarios have been painted of what work could become in the future. The indicated visions pose a challenge both for employees and the representatives for governments and policy-makers who shape the market policy. Work transformations clearly imply the need for participating in lifelong learning and education, as is necessary to support the acquiring and development of the competences individuals require in the changing world of work.

**Key words:** future, work, change, lifelong learning, lifelong education, competences.

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„[Work] is a beautiful, gigantic *system*—a ‘stock-and-flow’ model—that produces goods, services, fun and happiness. (...) It’s a systems model of peoples’ time and behavior as an input together with positive and negative feedback in the form of incentives that determine the productivity and quality of the outputs.”(Morris, 2011)

### I. INTRODUCTION

What is work going to be like in the future? This question cannot be answered by any researcher, or even a whole group of scientists. We live in the times of acceleration and thus preparing and issuing even medium-term forecasts poses a considerable challenge. In contemporary world, it is believed that human work will be replaced with machines, and humans – with artificial intelligence. Technological achievements, the increasing life expectancy, the rising population, which by 2030 is supposed to exceed 9 billion people, all of them will undoubtedly influence the *future of work*. To all appearances, by that time 3 billion new workers will have entered the labour market. This fact will significantly influence the need for change in organisations. Such a situation will inevitably lead to consequences for the course and prospects of one’s professional career and the development of the model of working from home.

The future of work is a key issue for the representatives for diverse scientific fields. We cannot predict the future with any degree of certainty, at least in relation to the longer period of time. However, it does not mean that such trials should not be carried out. Hence, the following paper is an attempt to join the scientific discourse concerning *work* and points out the scientific field that need careful, active consideration. The first part presents the drivers of change in the global work environment. Then, key trends visible in the global work environment that are expected to occur in the future as well as the tendencies of key interest are described. As the paper suggests the world of work we know is coming to an end, the following part discusses new visions of “working differently”. Then, with regard to the previously identified drivers of change, the paper identifies the ten most needed competences workers need to have in order to perform well in the labour market of the future.

### II. DRIVERS OF CHANGE IN THE GLOBAL WORK ENVIRONMENT

At present, a lot is being said and written about the *revolution of the world of work*. This term describes the essence of all the global changes that happen in a relatively short period of time, and the source of which are complex demographic, social, economic, technological phenomena. Actually, it is quite simple to explain the reasons for the *changes* that occur in the area of human work. Work is done by humans, so if they change, and as a result the whole societies change as well, so does work, along with the ways of understanding its

boundaries, scope and character. Work remains universal, but the ‘how’, ‘why’ and ‘when’ we work have never been the subject of such individual interpretation as today (Prokurat, 2016)

When discussing the issue of human work transformations, one may refer to the most significant civilizational determinants that are affecting it to the greatest extent at the moment and most probably will affect it in the future. The significance, timeframe and the essence of the most powerful drivers of change have been presented in the table below.

Table no 1.

Significance, timeframe and definition of drivers of change

Source: World Economic Forum, Global Challenge Insight Report: *The Future of Jobs Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution*, January 2016, p. 6-7.

Data collected as a result of the survey of 371 biggest employers in the world, across 9 broad industry sectors (World Economic Forum classification) in 15 major developed and emerging economies and regional economic areas (the Association of Southeast Asian Nations (ASEAN), Australia, Brazil, China, France, Germany, the Gulf Cooperation Council (GCC), India, Italy, Japan, Mexico, South Africa, Turkey, the United Kingdom and the United States).

Driver of change	Rated as top trend	Expected timeframe	Definition
<b>DEMOGRAPHIC AND SOCIO-ECONOMIC DRIVERS OF CHANGE</b>			
<b>Changing work environments and flexible working arrangements</b>	<b>44%</b>	Impact felt already	New technologies are enabling workplace innovations such as remote working, co-working spaces and teleconferencing. Organizations are likely to have an ever-smaller pool of core full-time employees for fixed functions, backed up by colleagues in other countries and external consultants and contractors for specific projects.
<b>Rise of the middle class in emerging markets</b>	<b>23%</b>	Impact felt already	The world’s economic centre of gravity is shifting towards the emerging world. By 2030, Asia is projected to account for 66% of the global middle-class and for 59% of middle-class consumption.
<b>Climate change, natural resource constraints and the transition to a greener economy</b>	<b>23%</b>	Impact felt already	Climate change is a major driver of innovation, as organizations search for measures to mitigate or help adjust to its effects. Yet as global economic growth continues to lead to demand for natural resources and raw materials, over-exploitation implies higher extraction costs and degradation of ecosystems.
<b>Rising geopolitical volatility</b>	<b>21%</b>	Impact felt already	The geopolitical landscape is constantly changing, with far-reaching implications for global trade and talent mobility, requiring industries such as Oil and Gas or Aviation and Tourism to react and adapt faster than ever before.
<b>New consumer concerns about ethical and privacy issues</b>	<b>16%</b>	2015–2017	In many economies consumers are increasingly concerned about a range of issues related to their purchasing decisions: carbon footprint; impact on the environment; food safety; labour standards; animal welfare; and a company’s record on ethical trade. Additionally, internet users have increasingly become aware of issues around data security and online privacy.
<b>Longevity and</b>	<b>14%</b>	2015–2017	Over the next decade, advanced economies will see

ageing societies			the effects of an ageing population. Increasingly, people will work past age 65 to secure adequate resources for retirement. At the same time, serving the needs of an older society will create opportunities for new products, services and business models.
<b>Young demographics in emerging markets</b>	<b>13%</b>	Impact felt already	Much of the developing world is experiencing rapid population growth and faces a very different demographic challenge than advanced economies: devising appropriate education and training systems to prepare an overwhelmingly young population for the workplace. Leading emerging nations continue to move up the skills ladder and improve access to high-quality education, contributing to a dramatic rise in the number of the college-educated and a shift in the global distribution of talent.
<b>Women's rising aspirations and economic power</b>	<b>12%</b>	2015–2017	Women have made significant gains in labour force participation and educational attainment, resulting in an increasingly important role in the economy as both consumers and employees. <sup>1</sup> As a market, women will account for US\$ 5 trillion additional consumer spending and more than two thirds of global disposable income over the next decade.
<b>Rapid urbanization</b>	<b>8%</b>	Impact felt already	The world's urban population is set to double between 2010 and 2050, from 2.6 billion to 5.2 billion. This rapid and unprecedented pace of urbanization, especially in markets such as China and Sub-Saharan Africa, brings with it many opportunities as well as challenges.
<b>TECHNOLOGICAL DRIVERS OF CHANGE</b>			
<b>Mobile internet and cloud technology</b>	<b>34%</b>	2015–2017	The mobile internet has applications across business and the public sector, enabling more efficient delivery of services and opportunities to increase workforce productivity. With cloud technology, applications can be delivered with minimal or no local software or processing power, enabling the rapid spread of internet-based service models.
<b>Advances in computing power and Big Data</b>	<b>26%</b>	2015–2017	Realizing the full potential of technological advances will require having in place the systems and capabilities to make sense of the unprecedented flood of data these innovations will generate.
<b>New energy supplies and technologies</b>	<b>22%</b>	2015–2017	New energy supplies and technologies, such as renewables and hydraulic fracturing (fracking), are shaking up the global energy landscape and disrupting powerful players at least as much as yesterday's oil price crises did, with profound and complicated geopolitical and environmental repercussions.
<b>The Internet of Things</b>	<b>14%</b>	2015–2017	The use of remote sensors, communications, and processing power in industrial equipment and

<sup>1</sup>See: e.g. the study by L. Manohar, in: Satisfaction of Women in Fulfilling the Role as Mothers – A Comparative Study between Working and Nonworking Mothers, IOSR Journal Of Humanities And Social Science, Volume 24, Issue 9, Series. 7, pp. 62-68, <http://www.iosrjournals.org/iosr-jhss/papers/Vol.%2024%20Issue9/Series-7/J2409076268.pdf> [26.09.2019]

			everyday objects will unleash an enormous amount of data and the opportunity to see patterns and design systems on a scale never before possible.
<b>Crowdsourcing, the sharing economy and peer-to-peer platforms</b>	<b>12%</b>	Impact felt already	With peer-to-peer platforms, companies and individuals can do things that previously required large-scale organizations. In some cases the talent and resources that companies can connect to, through activities such as crowdsourcing, may become more important than the in-house resources they own.
<b>Advanced robotics and autonomous transport</b>	<b>9%</b>	2018–2020	Advanced robots with enhanced senses, dexterity, and intelligence can be more practical than human labour in manufacturing, as well as in a growing number of service jobs, such as cleaning and maintenance. Moreover, it is now possible to create cars, trucks, aircraft, and boats that are completely or partly autonomous, which could revolutionize transportation, if regulations allow, as early as 2020.
<b>Artificial intelligence and machine learning</b>	<b>7%</b>	2018–2020	Advances in artificial intelligence, machine learning, and natural user interfaces (e.g. voice recognition) are making it possible to automate knowledge-worker tasks that have long been regarded as impossible or impractical for machines to perform.
<b>Advanced manufacturing and 3D printing</b>	<b>6%</b>	2015–2017	A range of technological advances in manufacturing technology promises a new wave of productivity. For example, 3D printing (building objects layer-by-layer from a digital master design file) allows on-demand production, which has far-ranging implications for global supply chains and production networks.
<b>Advanced materials, biotechnology and genomics</b>	<b>6%</b>	2018–2020	Technological advances in material and life sciences have many innovative industry applications. Recent breakthroughs in genetics could have profound impacts on medicine and agriculture. Similarly, the manufacture of synthetic molecules via bio-process engineering will be critical to pharmaceuticals, plastics and polymers, biofuels, and other new materials and industrial processes.

Therefore, it is possible to identify key trends that on the one hand already partially characterise the global work environment, and on the other hand are expected to occur in the future. Some of them are analogous to the determinants mentioned above:

**I.** In the field of threats and recommendations for pursuing the human resource policy in organisations:

1. The workforce has never been so diverse and educated.
2. The world of labour has become flat and globalised.
3. Global working population has been ageing.
4. The development of urban working population.
5. Hyper-connected workforce.
6. Labour markets have become multiple.
7. In many parts of the world, unemployment is the key issue.

**II.** In the field of creating ‘decent and quality’ jobs and the new social contract between employees and employers:

1. The development of services-oriented labour markets that change the very nature of work.
2. The definition of decent or quality job depends on the part of the world people live in, on a country’s level of economic development or on the particular sector of labour market.
3. Decent and quality work does not automatically rhyme with permanent, full-time job.
4. The development of ‘non-decent’ work, i.e. illegal and forced labour.
5. The ‘9-to-5’ working time is dead, which means that work, being less and less confined to the office will increasingly invade the private domain.
6. The changes of the working place caused by the development of information technologies more and more often are the reason for work being no longer ‘a place to go’.
7. Crowdsourcing as the new template for work.
8. Broadening the needed skills for a job and the increase in the likelihood of holding a series of jobs.
9. The development of interaction-based work: new modes of production based on people’s greater autonomy and accountability, involving more teamwork; they will demand more initiative and further interaction among colleagues.

**III.** In the field of the organisation of work and production:

1. The transition from mass production to mass customisation: in order to respond to the needs of the on-demand economies and their globalisation, the current production patterns have to be reorganised in order to gain flexibility and agility.
2. A new industrial order: additive manufacturing based on 3D printing, resulting from digitisation, generates the need for turning to low-emission economy.
3. The development of services-oriented economy, in which the boundaries between industry and services become blurred.
4. An interconnected, global trading environment.
5. The boundaries and relations between employers and employees become blurred, as the result of the emergence of new employment forms (self-entrepreneurship, franchising, payrolling, etc.)
6. Further digitisation and the development of Human Cloud.

**IV.** In the field of work management and governance:

1. In many economies there is still a high level of unemployment resulting from the workforce’s skills mismatching the needs of the labour market.
2. Dynamic transformations occur in the world of declining and developing jobs.
3. The increasing dependence of national labour markets within the global work environment.
4. The necessity of creation and use of massive information and data sets, the so-called Big Data.
5. Work environment becoming more and more complex owing to the expanding range of legal regulation (OECD Guidelines on Multinationals, ILO Tripartite Declaration of principles concerning multinational enterprises and social policy, UN Business & Human Right Guidelines, etc.)
6. The decline of the power of traditional labour unions and the rise of new counterforces.
7. Low employability of young people due to the lack of basic and in-demand skills sought after by potential employers (World Employment Confederation, 2016)

In order to supplement the presented set of trends, the following tendencies also seem to be of keen interest:

- *The increase in significance of creativity and the need for embedding innovation in the job one does:* the worker today is more and more often rewarded only for succeeding, i.e. for delivering products/services, and not for the actual time devoted to the task, counted in hours,
- *home-centrism:* for the 21<sup>st</sup>-century person, home has become a peculiar decision-making centre; one that is efficiently managed and lets the person satisfy most of their needs. The development of the model of working from home, which in fact has become more like a virtual office, may prove dangerous and lead to the declining of the natural interpersonal relations with other people; to the boundary between personal and professional lives becoming blurred; to workaholism or Internet addiction. Furthermore, the lack of the natural work environment may result in one losing the ability to correctly assess the fulfilled tasks, as the person who does all their work from home is not able to compare its results with other people’s achievements,
- *hyperspecialization:* dividing the work done into even smaller tasks and allocating them to particular workers does not concern production processes only, but it also applies to the knowledge-based work. Even more often employers search for specialists that demonstrate vast knowledge of a narrow and particular field. This is why hyperspecialization makes temporary workers gain a new significance, as there is no need to employ them for indefinite period (Prokurat, 2016),

- *the uberization of work*, i.e. services as part of the so-called on-demand economy, that directly influence the modern companies and change the structure of the hitherto understood careers. Uberization creates plenty of opportunity for earning additional income and doing tasks or doing real-time projects, usually without a manager and as part of flexible employment. It fosters creating the quasi-entrepreneur perspective (that means everyone can become an entrepreneur and everyone will make a profit on it), and at the same time blurs the boundaries between the categories of ‘home’, ‘office’, ‘private’, ‘professional’ or ‘employer’ and ‘employee’. The term ‘uberization’ comes from the Uber company, which created the application connecting clients and people willing to provide taxi services. Thanks to the app, everyone can offer this kind of services if they have a car and some free time. It is worth adding that in the countries where Uber was introduced, there were protests of professional taxi drivers who claimed they were squeezed out of the labour market. In this context, it is said that the world has entered the phase of creative destruction and each branch of economy will soon have its own uber.

The drivers of change indicated in this part of paper, as well as the main trends of the global work environment, are just some selected examples. These phenomena are more and more rapid and even more difficult to predict. Their directions are similar all over the world, whilst their scale and tempo are conditioned by the features characteristic of a given society.

### **III. THE END OF THE WORLD OF WORK WE KNOW AND SEARCHING FOR A NEW VISION, THAT IS ‘TO WORK DIFFERENTLY’**

Consequently, we can propose a hypothesis that the world of work we know is slowly coming to an end. In the ‘Praca. Scenariusze przyszłości’ (‘Work. Future scenarios’) report presented by Infuture Hatalaska Foresight Institute there have been five scenarios described of what work may become in the future. The word ‘may’ is significant here; it has already been emphasized that future cannot be accurately predicted. The future is unknown and will remain so. Its hypothetical scenarios are the only things that we can get to know. Every scenario that is going to be described is the answer to a different change factor. Thus, the answer to:

1. ...the social factor is the ageing society and greater life expectancy. The ‘working forever’ scenario assumes that the generations that will live 100 years and more (such forecasts have been issued for the children born after 2007) will not retire at 60 or 70 years old;
2. ...the technological factor is the development of automation, robotization and applying artificial intelligence. ‘The Useless Class’ scenario takes into account replaceability, and in the case of some jobs – even the uselessness of human work;
3. ...the economic factor is ‘the freelancer economy’. The ‘People Per Hour’ scenario emphasizes the fact that younger generations, Millennials and Generation C, as far as work is concerned, value flexibility and mobility the most; more and more often working as freelancers and building up their own, remote businesses;
4. ...the political factor is based on the transparency rule, due to which organisations and workers have to learn to work in the environment where everything they have said and done may be made public. The ‘Through the Glass Door’ scenario comprises the world of full transparency of the processes in organisations and the decisions made there (those concerning the amount of money one earns as well);
5. ...the environmental factor is foremost the climate change and the resulting ‘There Are No Jobs On a Dead Planet’ scenario. In this vision of the future of work the questions of climate, decarbonisation and transferring to the low-emission economy are being stressed as the main factors influencing the global labour market, including the employment levels, the means of communication within companies and business travels (*Praca. Scenariusze przyszłości*, 2016)

On the other hand, taking into consideration the vision suggested by the authors of ‘The future of work. A journey to 2022’ report, it seems that in the nearest future one of the three world of work scenarios will come true:

- 1) ‘The blue world’, in which large organisations will turn into mini-states and take on a prominent role in society;
- 2) ‘The orange world’, in which large companies break down into collaboration networks of smaller organisations, based on specialisation;
- 3) ‘The green world’, in which social and environmental agenda force fundamental changes to business strategy.

Those three scenarios have been presented in the picture below.

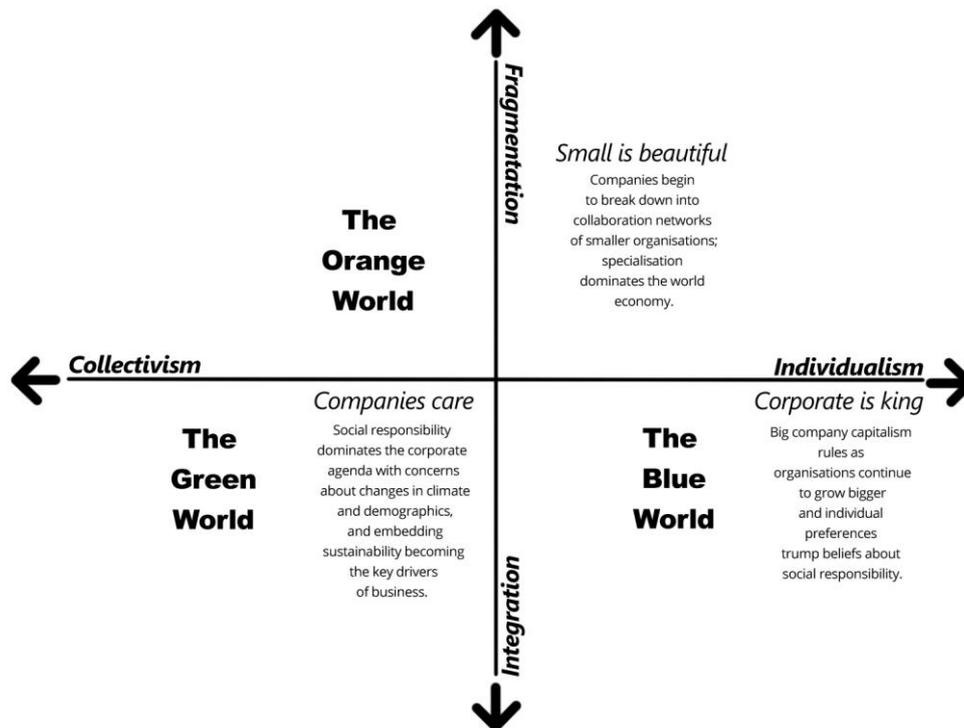


Figure 1. Three scenarios for the future of work – the three worlds of work. (PWC, 2014)

Andreu Mas-Colell, in the ‘In 100 years. Leading Economists Predict the Future’ book, having analysed the development directions of the development of world economy, indicates four fundamental changes that have partly come out, and will probably further rise to the surface in the years to come:

1. The idea of daily or yearly work, as well as workplace, will radically transform towards flexibility. New communication technologies offer such possibilities even today, and the convenience of not being tied to stiff schedules should not be underestimated. In some countries, the rise in discussions about balancing work and family responsibilities is the first sign of the trend that will soon become unstoppable. The idea of work time will eventually cease to be, but the same will happen to the division into professional and private life,
2. The difference between the traditional work contract and the service contract will become less profound. In the future, on the one hand, there will be mostly the workers of civil service, and on the other hand – independent workers who are going to form a dense contact network. The significance of self-employment becoming greater will coincide with the transformation of traditional enterprises,
3. Work will become more interesting, and the motivation stemming from pursuing one’s career and achieving success will still be very strong. Both those reasons will inspire people to make effort and spend time at work, even taking into consideration the fact that citizens’ characteristics are various and only part of workers would display the stimulating effect of the motivating drive,
4. In the times of our great-grandchildren the production of material goods in a repeatable and standardized way will require just a small fraction of the workforce. It means that there will exist a considerable number of goods and services made to order, assessed according to their quality and uniqueness, and they will be the result of highly specialized experts’ work (Mas-Colell, 2016).

The aforementioned visions are some examples only, of course. The researchers, especially those dealing with management science, also draw attention to the progressing computerization, or rather digitization, expressing itself with robotization\* and developing artificial intelligence, which will make more and more people be replaced at work with machines and computer programs. The researchers also deal with the development of the business models that utilize digital tools and boost the demand for project-based, part-time or on-demand work, which is even more often not accompanied with standard social security systems. One of the reasons for such a situation is the emergence of the platforms of sharing economy, which more and more effectively compete with the traditional service sector. It could be emphasized here that earlier the global process of work specialization manifested itself mainly in outsourcing, owing to which organizations were able to delegate tasks to outside companies. In addition to this, in the recent years there has been observed the fragmentation of work. The projects that had been done by single people or small teams before are now divided into pieces that are then assigned to workers via online platforms. This phenomenon is called crowdsourcing. The platforms offer small tasks, done usually with a smartphone or a tablet within a couple of minutes, and the pay for this kind of service

amounts to from several dozen cents to a few dollars. Crowdsourcing makes further work specialization possible, as it departs from the traditional model of organization that employs a relatively fixed number of people. Apart from crowdsourcing, another emerging key business model that is made possible thanks to online platforms is the sharing economy. It allows the users of a particular platform to earn money by renting their own goods. The most popular platforms at the moment are Uber and AirBnb. Using Uber, people who have a car may become part-time taxi drivers, and AirBnb enables one to share one's accommodation with guests from all over the world. The sharing economy sector has been developing in a dynamic way. Thanks to its simplicity the model of on-demand work through a platform offers a very wide range of services. For instance, it is possible to hire a driver that will drive our car to a particular parking spot; a chef of amateur cook; a neighbour who will help us with home DIY, babysitting, moving houses, doing the taxes; a city guide; or an independent delivery person, who will deliver our parcel 'by the way', when travelling themselves. It is worth indicating that working in the sharing economy model provokes much controversy. On the one hand, the platforms raise professional activity, thus making it easier to start a business and lowering the costs of reaching the clients. On the other hand, they are being accused of lowering work standards by forcing one to work under contracts with no social security services provided (Paliński M., 2016).

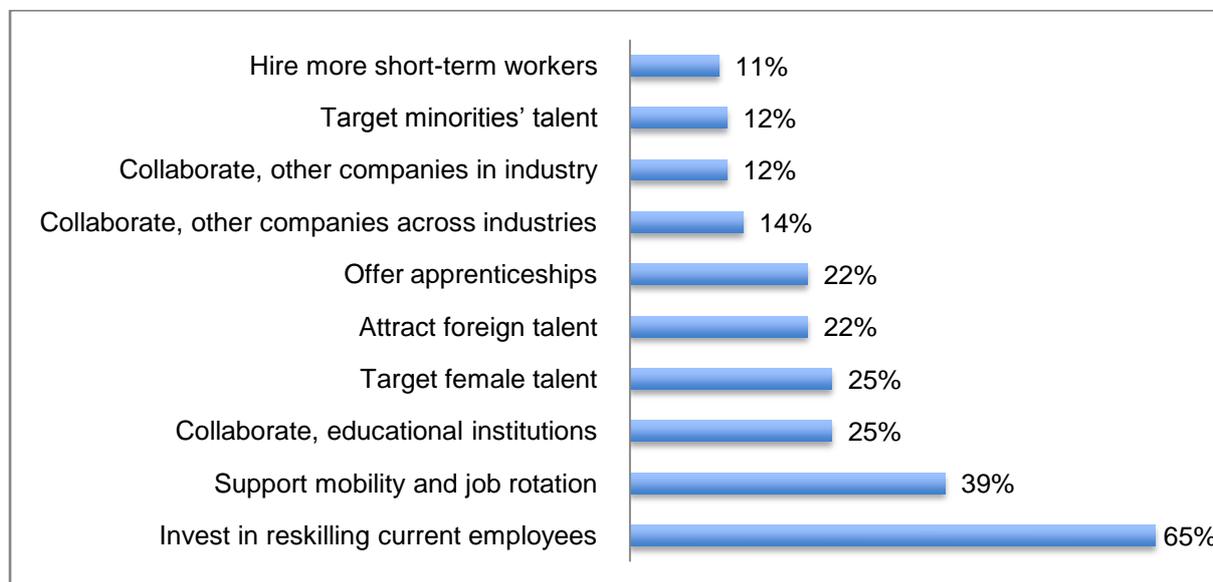
What do those transformations mean, both for the subjects representing the supply and demand for work, as well as for the representatives for governments/policy-makers shaping the market economy?

Undoubtedly, one has to accept the fact that due to the diversity of the workforce and the rising international mobility of work, it is impossible to come up with a universal solution that will secure employment for everybody who is seeking it. Due to demographic change, further globalisation of economy and the 'lack of talents' that employers point out, mobility of work and cultural diversity will be the basis for the world's labour market. That is why the diversifying of working conditions and the further emergence of its new, innovative forms should provide new solutions employment-wise. However, it will most probably lead to the disconnecting of occupation and work, i.e. in the future more and more people may not have a learned profession, but they will not be unemployed. Hence, there will emerge new ways of pursuing a person's professional career, especially the ones based on online work. In the new era of knowledge and IT, work has become less and less physical, processed and repeatable and has been getting more changeable, varied and hyperconnected. As work has slowly ceased to be a place to go to, workers more often will be able to be employed remotely, which should foster the emergence of scattered and dispersed workforce. It must be added that further automation will not result in destroying jobs but rather in creating new ones. Along with the development of technological and social innovation, there will emerge new chances of introducing novelty and starting new companies. It will also be necessary to redefine the concept of 'work time', as in the context of its dematerialisation, the ability to time manage by one's own has become a pressing need of the majority of workers (World Employment Confederation, 2016).

The disappearance of permanent employment forms also seems to be a thing of the future. It may so happen that everyone will work under short-term contracts, and success will depend on good team cooperation to a much greater extent than now. Perhaps all of us will too 'turn into a company' and will try to achieve the 'employability', i.e. the ability to be employed. According to the 'Liderzy przyszłości – 2030r.' ('Leaders of the future – 2030) report issued by the German sociologist Georg Vielmetter, the times of remaining loyal to one company only are coming to an end. As one-person companies, we will have various clients. It also seems that, besides a few exceptions, not many people will stay faithful to one profession throughout their entire lives. Another significant field of change will be working with particular people, not with companies. It has been forecasted that in the times of economic uncertainty, even more organizations will consider gathering all the workers in one place to be unnecessary wastefulness. Even today employers seek people who are absolutely essential to the company's functioning, and they assign doing the rest of the tasks to outside contractors. Again, it is worth referring to the forecasts indicating that most people will be working from home. The Internet, which is rapidly spreading throughout our private and social lives, has become the basis of the virtual office. Workers more and more often meet one another occasionally, e.g. during teleconferences, or in the real-life, physical seat of the company – if there exists one, of course. Thus, working conditions will become more fluid and related to individual needs. In this context, one may wonder if professional career of the individual will be seen as pro-family and taking into account the need to balance personal and professional lives. One of the biggest management challenges, virtual management included, will be the ability to cooperate with people across various cultures and coming up with motivation and awarding methods suitable for the workers in different parts of the world. The manager of the future will not only become an expert in managing. They will have to speak several foreign languages fluently; be flexible; perhaps they will have to travel long distances and make tough, risk-related decisions. They should also be open and eager to learn; think in a creative and strategic way; be sensitive to cultural, generational and gender differences; create new mechanisms fostering loyalty towards the leader and not towards the company; tolerate a high level of vagueness and uncertainty. Another important question of the future is the ageing workforce. In 2005, in developed countries, people over 65 years old

constituted 15% of the society. In 2050, it will be 26%. Some scientists predict that in 10 years people who are 60-70 years old will constitute as much as 40% of the workforce in the USA (Nieckuła, 2015).

In relation to that, one may indicate the future managing strategies concerning workforce that have been identified in the ‘The Future of Jobs Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution’ report. They were declared by 371 largest global employers in the world and shown in the chart. It is worth noting that the largest percentage relates to the level of workers’ education.



**Figure 2.** Future workforce management strategies.(World Economic Forum, 2016)

Therefore, what are the exemplary implications and recommendations, resulting from the indicated work transformations, for the subjects shaping market policies?

It seems that tackling unemployment should consist in enabling access to work, and the legal regulations concerning employment and social policy should place the labour market security over the security of a job (e.g. by facilitating the workers’ possibilities of transitioning between jobs). Token-based work may be the instrument facilitating the creating of new jobs. In such a scenario, an employer receives a token/voucher from a third-party institution (usually public authorities) in order to use it to pay the service-providing person, instead of cash. Also, the current social security programmes must be modernised and security networks must be introduced for the new employment forms and/or make them cohesive with the ones existing today, for its traditional forms. It is so as, for most workers in the world, having only one permanent job is not realistic. Job security must thus be considered at the labour market level instead of the professional one. At the same time it is necessary to support flexible work arrangements, entrepreneurship and self-employment, e.g. by encouraging people to start new companies (one-person shops/ solopreneurs/ micropreneurs), as well as by facilitating the access to financing and capital. The following things also seem crucial: cooperation between public and private employment institutions in order to foster inclusion everyone seeking jobs and to reduce the differences between the demand for work and its supply; promoting inclusive labour markets that will allow non-representative groups take part in profitable and sustainable employment. So, policy makers must reach solutions adequate to the adjusting labour markets, which will be able to face the downward tendencies in economy. Policy-making approach should also support lifelong learning/education so that the periods of unemployment could be the chance for the people seeking jobs to upgrade their skills and to retrain (World Employment Confederation, 2016).

Accordingly, one must consider it to what extent the aforementioned visions of the future of work are realistic and should be reflected in education. In the context of the fourth industrial revolution, there is no doubt that the future of labour market will belong to the independent, flexible workers who will be prepared to changes in a better way and will understand the world around them. Hence, the future of human work generates implications for lifelong learning.

The authors of the ‘Future work skills 2020’ report have identified six fields – drivers of change – that will have the greatest influence over the shaping of the labour market: the even greater life expectancy; the increase in the use of machines that do the repeated, routine tasks; the world turning towards the system that can be programmed; the environment of new communication media; the increase in significance of large, structured organisations and the ongoing globalization. Based on them, they have identified ten most sought after

competences workers need to have in order to be able to perform well in the labour market of the future. They are:

1. The ability to find hidden sense, deeper meanings – this ability will become more valuable when simple, repeatable processes will be done by machines.
2. Social intelligence – the ability to communicate with others at the emotional level.
3. Narrative thinking and the ability to adapt – the ability to think and come up with solutions that are not restricted by strict, clear rules; reacting to untypical situations or doing something that employs creativity, that cannot be done by machines.
4. Multicultural competences – the ability to work in various environments, which will allow the workers of tomorrow cooperate with people who greatly differ from them.
5. Analytical thinking – the ability to connect large amounts of data into abstract concepts and understanding the proofs based on data. The workers who are experienced in statistical or quantitative analysis will be sought after, as the amount of available data is still rising.
6. Being a proficient user of the new media – the ability to understand and read paper texts as well as various forms of information, such as video or pictures. It will be crucial to be able to analyse and interpret them.
7. Transdisciplinarity – the ability to understand concepts that belong to various disciplines. Perfect workers will have expert knowledge in a particular field, supplemented with general knowledge in other fields, essential to the solving of a complex problem.
8. Project-based attitude – the ability to develop tasks and processes in such a way that they allow reaching desirable goals.
9. Cognition management – the ability to filter information. The employee of the future will have to distinguish between important information and ‘buzz’, to pick out the contents significant from their work’s perspective.
10. Virtual cooperation – the ability to act and engage in work as a member of a virtual team. Even today we have the possibility to putting together teams despite their members’ place of physical existence, and in the future this possibility will develop even more. However, this kind of cooperation needs other skills and competences than the real-life one (Davies, Fidler and Gorbis, 2011).

The presented examples of competence the contemporary worker has to develop and the necessity to constantly improve ‘hard skills’ clearly indicate that there is the need to take part in education. It must be stated that education is the most useful here, as it is a means of supporting one’s improvement and development.

The forecasts concerning the life in the future, as far as work, its character and jobs done are concerned, are interesting and though-provoking, but they may be uneasy or disturbing. In the subject literature one may find the opinion of scientist who show various ‘visions of work’ – from its further transformations to its disappearance. So far, despite the fact that in the world of work one can notice the ‘great revaluation’ and in many countries there are arguments about the regulations that make the work time longer, although much is being said about the ongoing transformations, not much is being said about the disappearance of this kind of activity. If it is so, then especially pedagogues and educators should not be indifferent to the preparation of current and future generations of young people in order for them to be able to recognise the ongoing transformations and deal with the situations they are going to be faced with in the labour market.

## V. CONCLUSIONS

Undoubtedly, there is the need to reconsider human work. Certainly, the traditional world of work is slowly becoming a thing of the past. Every attempt at predicting its future definitely enriches the field of scientific discourse. In spite of the difficulties resulting from the efforts devoted to predicting the future of work, there are two issues that should not raise any doubt: the necessity to invest in oneself through education, as well as the need to take responsibility for providing others with the competences essential to enjoying professional success, both now and in the future.

\*For developed OECD countries, it is being estimated that 57% of all the jobs are endangered by automatization; in Poland about 40% of jobs are endangered by atomatization. Almost half (47%) of all the jobs will be replaced by machines in the following 25 years. Data analysis is the most promising direction of development: the best-paid jobs will be Data Scientist, DevOp Engineer and Data Engineer.

Digital literacy is crucial for professional success in the new reality of digital economy. Source: Gumtree 2017 Report, *Aktywni+. Przyszłość rynku pracy*. See also: European Forum for New Ideas, Report: *The Future of work. Realities, dreams and delusions*, Sopot, 28–30 September, 2016.

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