ARTIFICIAL INTELLIGENCE (AI) - THE TECHNOLOGY THAT SHAPES THE WORLD

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Abstract: *The paper presents trends, analyzes and perceptions of Artificial Intelligence with pros and cons of its integration in all areas of socio-economic life. Artificial Intelligence (IA) is one of the most advanced technologies in the development of today's science, and for that, the big robotics companies are investing colossal amounts to further develop and integrate them into their products.. Economies around the world are still vulnerable to new shocks and are unprepared for the next wave of "automation and robotization," warned the World Economic Forum (WEF) in its latest Report on Artificial Intelligence and Robotics for 2017. Specialists expect robots endowed with AI will operate 85% of customer interactions by 2030. The WEF-based competitiveness index for the year 2017, based in Switzerland, takes into account various factors including the artificial intelligence that underpin the productivity and prosperity of countries, and it has revealed major differences between the world's economies. In turn, the UN warned that robots could destabilize the world: from the risk of mass unemployment to the use of autonomous robots by organizations or criminal states, research centers in robotics aim to identify possible threats. In a few decades now, robots and computers could surpass the thousands of years of evolution that generated our perception and intelligence.*

Keywords: *artificial intelligence (AI), technologies change, robotics, new economy*

JEL Classification: *O30, O31, O33*

1. Introduction

Artificial Intelligence (AI) is a field of study that includes many theories, methods and technologies. From the perspective of technology, Artificial Intelligence (AI) combines large amounts of fast processing data and intelligent algorithms, enabling

programs to learn automatically from data models or features. The mechanism of artificial intelligence operation is based on the following processes:

- Automatic learning that builds the analytical model through the automation process that uses specific methods: neural networks, statistics, research to find hidden information in the data without explicitly programming where to search or what processes to conclude.

- Learning based on the neural network made up of interconnected units (similar to neurons) processes information by reacting to external inputs that are subsequently transmitted to each unit. The process requires multiple data passages to find connections and get meaning from undefined data.

- Deep learning is based on huge neural networks with multiple processing units that provide computing power and special techniques for using complex models to analyze large amounts of data. Frequent applications include image recognition and speech recognition.

- Cognitive computation involves a human-machine interaction using artificial intelligence algorithm and human cognitive computation, the ultimate goal being that a machine simulates human processes through the ability to interpret images and speech

- Computer vision is based on model recognition and deep learning by artificial intelligence to recognize what is in an image or video. With this technique, machines can process, analyze and understand images, capture images or videos in real time, and interpret their surroundings.

- Natural language processing is the ability of computers to analyze, understand and generate human language, including speech that allows people to communicate with computers using normal, everyday language to perform their tasks.
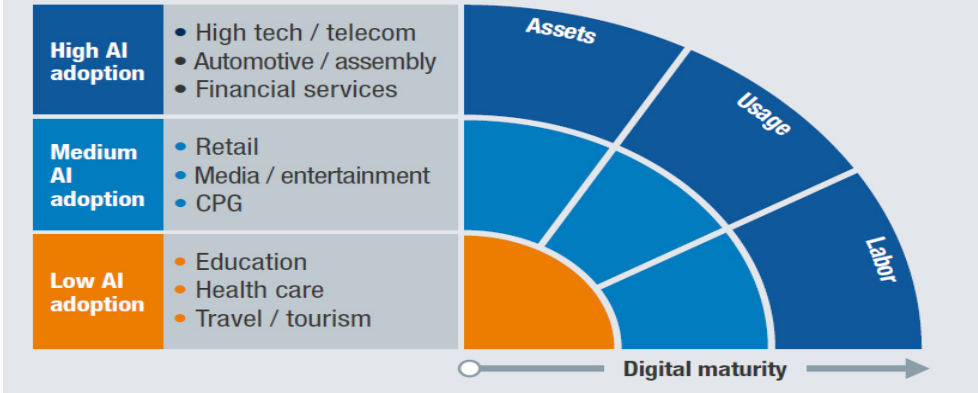
2. The current situation

Many of our daily experiences and interactions involve machines or devices with AI. Technology is an integral part of our lives. For this reason, it is time to evaluate how we can better use machine strengths (while recognizing weaknesses) to enhance our ability to understand and improve the world around us.

Advances in the robot learning process have allowed the creation of systems that can automate complex tasks through constant learning. We may be inclined to say that these computers are intelligent on the basis of the tasks they perform and how they interact with us while performing these tasks. Indeed, computers can learn, understand and make assessments about the world but based on the information we offer them.

The positive impact of AI on society motivates research in many areas, from economics and law to technical subjects such as verification, validity, security and control.
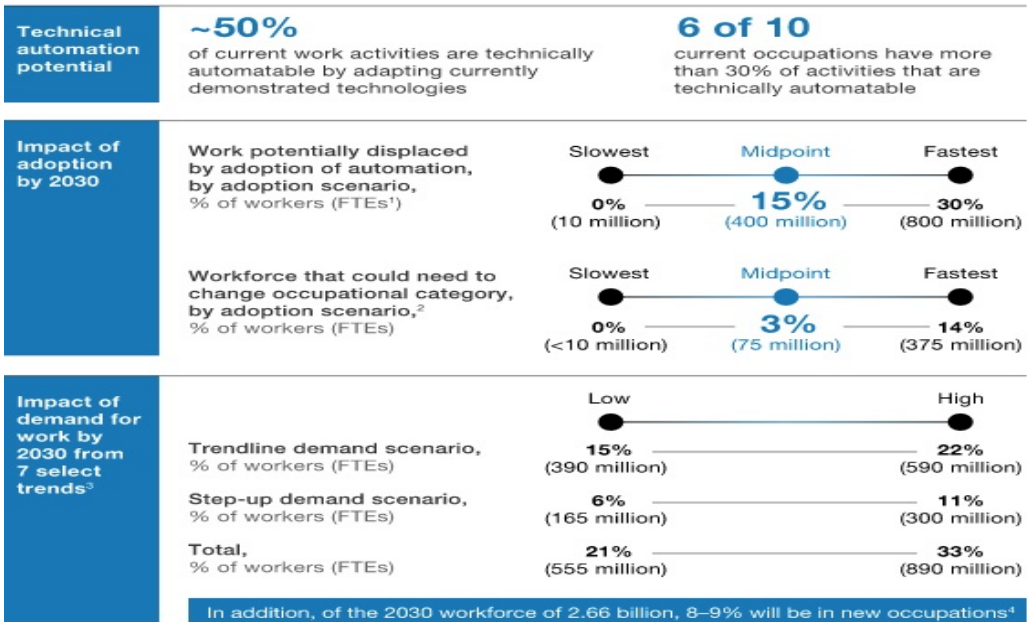
How companies are adopting AI

AI adoption is greatest in sectors that are already **strong digital adopters**

High AI adoption	• High tech / telecom • Automotive / assembly • Financial services
Medium AI adoption	• Retail • Media / entertainment • CPG
Low AI adoption	• Education • Health care • Travel / tourism

Assets · Usage · Labor · Digital maturity

Source: McKinsey Institute

In the long term, as Stephen Hawking, Elon Musk, Steve Wozniak, or Bill Gates, have an important question about what will happen if the design of a performance AI will succeed, and a system with such AI will become better than humans at all cognitive tasks, knowing that designing intelligent AI systems is a cognitive process.

Automation will have a far-reaching impact on the global workforce.

| Technical automation potential | **~50%** of current work activities are technically automatable by adapting currently demonstrated technologies | **6 of 10** current occupations have more than 30% of activities that are technically automatable |

| Impact of adoption by 2030 | Work potentially displaced by adoption of automation, by adoption scenario, % of workers (FTEs[1]) | Slowest **0%** (10 million) — Midpoint **15%** (400 million) — Fastest **30%** (800 million) |
| | Workforce that could need to change occupational category, by adoption scenario,[2] % of workers (FTEs) | Slowest **0%** (<10 million) — Midpoint **3%** (75 million) — Fastest **14%** (375 million) |

Impact of demand for work by 2030 from 7 select trends[3]		Low	High
	Trendline demand scenario, % of workers (FTEs)	15% (390 million)	22% (590 million)
	Step-up demand scenario, % of workers (FTEs)	6% (165 million)	11% (300 million)
	Total, % of workers (FTEs)	21% (555 million)	33% (890 million)

In addition, of the 2030 workforce of 2.66 billion, 8–9% will be in new occupations[4]

[1] Full-time equivalents.
[2] In trendline labor-demand scenario.
[3] Rising incomes; healthcare from aging; investment in technology, infrastructure, and buildings; energy transitions; and marketization of unpaid work. Not exhaustive.
[4] See Jeffrey Lin, "Technological adaptation, cities, and new work," *Review of Economics and Statistics*, Volume 93, Number 2, May 2011.

McKinsey&Company | Source: McKinsey Global Institute analysis

McKinsey Institute researchers say that such a system could suffer a recurrent self-improvement, triggering an explosion of intelligence that would leave much behind the human intellect. Inventing new revolutionary technologies, such super-intelligence could help us eradicate war, disease and poverty, so creating a powerful AI could be the greatest event in human history. Some experts have expressed concern, however, that it may be the last one if we do not learn to align the AI's goals with our goals before it becomes a super-intelligence.

3. Using artificial intelligence

3.1. Human cyborgization (Cyborgization)

Tom Gruber, one of the inventors of the Siri Voice Interface, used in the iPhone device system and the Mac OS operating system, believes that Artificial Intelligence (AI) can be used to increase human memory. At a conference held in 2017, Tom Gruber launched the following rhetorical questions and concluded: "What if you could remember any person you ever met? How do they pronounce their names? Their family details? Their favourite sports? The last conversation you had with them?

That's why using AI to catalogue our experiences and to enhance our memory is not just an idea, it's inevitable. „At Facebook's annual development conference, Mark Zuckerberg has shared a project that proposes building non-invasive sensors that will read brain activity. Sensors are designed to read the part of the brain that translates thoughts into speech to allow thought transcription.

Elon Musk, CEO of Tesla and SpaceX, has set up a new company called neural link to build a wireless technology for the brain-computer interface. Musk shared his idea of the technology he calls a neural lace at the Codode conference of Recode in 2016.

3.2. Car robots

Artificial Intelligence (AI) is also used to build autonomous driving systems. Google's smart car has driven 1.8 million miles and has been involved in 13 accidents - all caused by other cars. Publishing Inc. writes that autonomous cars are so safe that manual driving can become illegal in the future, which is bad news for professional drivers, but good news for us, the followers of the 1.3 million people who die in road accidents every year.

There has already been a lot of information on unmanned cars, and big companies, including Apple, have announced joining automotive developers. In Asia, Nissan and Toyota have already created autonomous vehicles that have been launched on public roads in Japan since 2013, and in Singapore the tests started in October 2015.

Germany, Sweden and the United Kingdom are the only countries that have reviewed their legislation and have allowed testing cars without a driver. At the CES 2016 Technology Festival, BMW introduced its concept of autonomous car, called "I Vision Future Interaction", but the company's representatives said its cars would not be "very automated" by 2020.

Electric cars and those driving alone will master the future due to technological change, consumers think, according to a Roland Berger specialist. According to the analysis, up to 46% of global consumers would not buy a car if they had access to self-directed taxis, also known as robots. Also, 37% of consumers already consider the next car to be electric. The study shows that digitization makes services such as car sharing and ride sharing more and more accessible, but also opens up new sales channels. At the same time, electric vehicles are becoming more and more present on the market. Last but not least, the introduction of driving assistance facilities and the success of the autonomous technology implemented so far predict a rapid penetration of the market by autonomous cars. The Roland Berger studies shows that the consumer attitudes have changed, especially influenced by the sharing of the economy. Thus, new business models are in an ascending trend. As robot-taxi will become a viable economic alternative to having a car, their share will increase significantly in the coming years.

According to the analysis, consumers in countries with a high population density such as the Netherlands (59%), Japan (56%) and Singapore (51%) can imagine the use of robot-taxi at the expense of their personal car. Germany is not far away, with almost 47%. On the other hand, customers in large countries such as the USA (35%), India (33%) and China (27%) are less open to this idea. Roland Berger's Marcus Berret said: "Autonomous electric vehicles are expected to be ready for trade until 2021. All major manufacturers work intensively with suppliers and non-automotive players, such as IT firms, to become competitive in this area. Globally, about 40,000 employees work on new mobility and autonomous management services.

3.3. Bank robots

Many aspects of bank operations are transferred by start-ups, such as payment applications, robot-consultants, and the digitization of the credit process where people are no longer involved in the decision-making process. Most banks bet on Artificial Intelligence (AI) to act as a personal digital assistant to customers, helping automate money-making decisions, according to executive executives in the sector. AI also threatens the existence of bank branches, defending a multitude of non-physical banks, such as N26 and Monzo, which also pose a threat to traditional institutions.

German Central Bank President John Cryan said in an interview in early September 2017 that many of his bank's positions would be occupied by robots or other forms of automatization in the next five years. This will remove a substantial part of the staff of 100,000 employees of its bank. Cryan declined to come up with an exact estimate of the number of employees to be laid off, but said it would be an "important number, certainly." "The sad truth for the banking industry is that we will not need as many people as we do today. In our bank people work like robots. Tomorrow we will have robots with human behaviour, "said CEO Deutsche Bank. Head of Deustche Bank also said that automation could lead to an improvement in working conditions. "Let's take the example of a bank accountant. Much of its work is to produce figures. It takes them three to four weeks to create an account. Would not it be great if the robots could group those figures in just a few hours? Then the accountants could analyse them, form valid opinions. "Andy Haldane, CEO of the Central Bank of England, has also warned that robots will be able to take over more than 15 million UK workers threatened.

3.4. Financial robots

An early version of Artificial Intelligence (AI) is already being used to detect credit card fraud and to combat fraud in the financial industry. In the same way that AI is used in marketing to buy and sell advertising space, the financial industry can apply to make decisions on data-based investments.

Artificial Intelligence (AI) could even find its place in new emerging technologies such as digital coins, and can also automate much of the manual work that slows down financial industry activity and makes employees less productive.

Banks are being attacked on several fronts and face a potential "Kodak moment" by falling into irrelevance, according to former Barclays CEO Antony Jenkins, who now runs his own financial affair - "10X". Jenkins, who predicted 2015 that banks could shut down half of their branches and could lay off 50% of their workforce in 10 years, said that this is happening faster than expected.

Ashok Vaswani, CEO of Barclays, said in turn: "It's about automating all routine transactions so time spent with customers is used for operations that matter."

3.5. Robots in marketing

The marketing industry is increasingly relying on tools and automation to deliver results, enabling them to deliver customized messages to customers, improving their experience and selling more products at a time. Over the next ten years, these tools may increasingly rely on artificial intelligence technologies as they are developing more and more personalized ads. In the same way that the recommendations from Netflix or YouTube are based on what other people with similar tastes have watched, the next generation of marketing tools will use Artificial Intelligence (AI), learning user behaviour and helping target potential customers.

3.6. Robots in space

On September 12, 2013, NASA's Space NASA announced that Voyager 1 became the first spacecraft created by a man who was reach outside the Solar System.

For some NASA researchers, the future of our planet seems to be a grim one: the threat of nuclear war, the overcrowding, or the lack of action in the face of climate change, all of which made many think of Revelation. In this context, one of the "backup plans" includes the colonization of another nearby planet. The latest move by US researchers is a huge step in this direction.

Mars planet is far from being an ideal candidate for a human colony, however scientists are eager to send people to the Red Planet. Before this is possible, robots, such as the NASA Curiosity Rover, are used for exploration. A new plan involves robotic "bees" to discover the secrets of the neighbouring planet. Mechanized devices are called "Marsbees," in a revolutionary NASA project. "Bees" can easily and quickly explore or bring samples back to the base, which would not probably make a robot rover or lander robot.

To test how effective the plan is, the researchers are proposing a simulation in a laboratory imitating the air density conditions on the Earth's neighbouring planet to see how these devices can fly. For now, exploratory robots are constrained by rugged terrain,

and can become even inoperable if they reach a pit where their tracks cannot pull them off. "Marsbees" would not face such problems, would have more freedom, but also greater energy autonomy. "The energy required for Marsbees will be substantially reduced by using wings with a conforming structure and an innovative energy-generating mechanism," said Changkwon Kang, an aerospace engineer at Alabama University, who was part of the team that conducted the study feasibility.

3.7. Medical robots

The main purpose of Artificial Intelligence (AI) applications in health is to analyse the relationships between prevention and treatment techniques and patient analyses. AI programs have been developed and applied in practices such as diagnostic processes, treatment protocol development, drug development, personalized medicine, patient monitoring and care.

Dr. Emmanuel Fombu, author of The Future of Healthcare, said: "Artificial intelligence is certainly the biggest disrupter for the medical industry. This will release doctors' time, taking care of minima tasks, help in discovering new drugs and treatments, and help deliver personalized health care to every patient in the system."

Technology companies, such as Google, IBM, Microsoft, Intel, and many start up, work with medical institutions and universities to develop AI technology. The Google Deep Mind platform is used by the National Health Service (NHS) in the UK to detect certain health risks through data collected through a mobile app. A second NHS project involves analysing medical images collected from patients to develop cancer detection algorithms by the computer.

The Hanover project at Microsoft, in partnership with the Oregon Health & Science University Cancer Institute, is analysing medical research to predict the most effective treatment options for cancer patients. Other projects include the medical image analysis of tumour progression and the development of programmable cells.

Intel has recently invested in launching "Lumiata", which uses AI to identify patients at risk of developing illness and develop their care options. Medical care is the most important investment area in AI.

3.8. Military robots

In mid-August 2013, over 100 researchers, experts and company leaders have asked, in an open letter, for the UN to ban robots endowed with artificial intelligence in war. They have warned on this occasion that military robots will trigger the third revolution in armed conflicts, after those generated by gunpowder and nuclear weapons. The letter refers to robotic military systems with a high degree of autonomy, including drones, missiles or machine guns. "These can be weapons of terror, weapons that you despise and terrorists can use against innocent populations and weapons that can be compromised by computer attacks to be used in unwanted ways," the letter said.

4. Artificial Intelligence, automation and innovation

China has the resources and plans to create an artificial intelligence economy in the coming years, reveals a report by Goldman Sachs. In the report, the world's most influential investment bank shows that the world's second largest economy has become a major global rival in using Artificial Intelligence (AI) as the engine of economic progress.

According to Goldman Sachs, the government and Chinese companies have identified artificial intelligence as the next major innovation area.

"We believe artificial intelligence will become a priority on the government's agenda and we expect new national / regional policies and funding support," the Goldman Sachs report said. While the US is generally considered to be the leader in the field, other countries are coming up strong. In July 2017, the State Council of China issued the principles of development of the field of artificial intelligence and set the goal of transforming China into a major global innovation Centre by 2030. The State Council of China expects that the total value of artificial intelligence industries' production will exceed 1.000 billion Yuan (about 148 billion American dollar) in 2-3 years.

A Chinese company invested in the US to build a unit equipped with robots able to stitch a shirt in less than 30 seconds The 20 million euro investment has generated 400 jobs, but it is likely to overwhelm the US textile market. Chinese clothing maker Suzhou Tianyuan Garments Company will opened the factory in Arkansas in 2018 to produce around 23 million t-shirts per year on the 21 production lines!

4.1. Robots seen by...

- Richard Gregory: "Curiosity, imagination, entrepreneurial character, planning for the future, all these things have brought Man on the Moon and robots on Mars ..."
- Udo Gollub: "At the horizon of 2030, machines will be smarter than people, software will rethink the industries, solar power will start to be widely used, people's lifetime will steadily exceed 100 years and 80% of the available video games will disappear. Only the people ultra-specialized will have the chance not to be replaced by the robots. "
- Elon Musk: "The Third World War will most likely be caused by the competition between the great powers in the field of artificial intelligence."
- Vladimir Putin went through an unusual moment when a robot came to "greet him" at a technology fair. The robot, endowed with artificial intelligence, uses facial recognition technology. The machine was scheduled to identify the Russian president himself and made the decision to salute him, although Putin was in a conversation: "Hello Vladimir Vladimirovich. I'm Promobot, an autonomous robot. It is a pleasure to meet you, "the Kremlin leader said. Quite surprised, Putin shakes hands with Promobot and says, "Forget about the nuclear bombs, the archery race, or the space conquest. The country that will dominate the Artificial Intelligence (AI) will lead the world. Russia wants to be a leader in the field but will not monopolize it but will share knowledge with the whole world. "

The Russian president also warned at a youth festival that super-engineered soldiers will in the future pose a greater danger than nuclear bombs. That's because they will not feel the fear or the pain. The Kremlin leader added that world leaders should conclude treaties to prevent the emergence of these soldiers: "A man has the possibility to access the

genetic code created either by nature or by God, as religious men would say. All sorts of consequences can follow. A genius mathematician, an extraordinary musician, or a man who can fight without fear, compassion, regrets or pain can result. What I just described may be more dangerous than a nuclear bomb. Although he said he was afraid of genetic experiments on humans, Putin is a supporter of the development of artificial intelligence, a technology that others consider to be extremely dangerous.

5. Conclusion

In a few decades now, robots and computers could surpass the millions of years of evolution that generated our perception and intelligence.

Economies around the world are still vulnerable to new shocks and are unprepared for the next wave of "automation and robotization," warned the World Economic Forum (WEF) in its latest report for 2017. The 2017 Competitiveness Index of the organization WEF, based in Switzerland, takes into account the various factors underlying the productivity and prosperity of countries, and it has revealed major differences between the world's economies. According to the report, Switzerland remains the world's most competitive economy, followed closely by the US and Singapore.

In turn, the UNICRI warned that robots could destabilize the world: from the risk of mass unemployment to the use of autonomous robots by organizations or criminal states, research centres in robotics aim to identify possible threats. Irakli Beridze, strategic adviser at the United Nations Interregional Crime and Justice Research Institute, said a team from the Netherlands will try to come up with ideas on how progress in this area could be used to reach UN targets. He said there are considerable risks associated with the use of robots in society to be taken into account.

Unlike the other views outlined above, the European Commission proposed in 2018 a European approach to artificial intelligence and robotics. It presents technological, ethical, legal and socio-economic aspects to stimulate EU research and industrial capabilities and put AI at the service of the citizens and the European economy. Artificial Intelligence (AI) from the point of view of the European Commission has become an area of strategic importance and a key factor for economic development. It can bring solutions to the many challenges of society, from treating diseases to minimizing the impact of agriculture on the environment.

President Jean - Claude Junker points out that: "a European approach to AI will boost the competitiveness of the European Union and provide confidence based on European values. The European Commission has already invested significant sums to bring benefits to the EU society and economy".

The European Commission considers it essential to join forces in the European Union to remain at the forefront of this technological revolution, to ensure competitiveness and to shape the conditions for its development and use (respect for European values). However, the socio-economic, legal and ethical impact must be carefully addressed.

There are also voices in the European Union who say that sophisticated robots, with a high degree of autonomy, should have a legal status, be "electronic people" with rights and obligations, whether doing good things or committing crimes. The Robotics Report adopted by the European Parliament includes a debate on the imposition of taxes and duties on the use of robots. Written by Luxembourg Member of Parliament Mada Delvaux, the report contains rules on the definition of these electronic people, including interaction

with human beings. "We are in the age when human intelligence stands by and rests on the artificial one," the report shows.

On 10 April 2018, the 24 Member States of the European Union and Norway signed a Declaration on Cooperation in the Field of Artificial Intelligence (AI) in Brussels in an effort to keep up with the investments made by the US and China.

Romania has a National Research, Development & Innovation Program 2016-2020. The priorities mentioned in the Program are: information and communication technologies, space and security, and big data and AI.

The main AI association in Romania is the Romanian Association for Artificial Intelligence (ARIA). It comprises eight universities and twelve companies, and has over 150 members in total. ARIA is carrying out several national and international projects, such as establishing an overview of the AI landscape in Romania, summer schools, and AI competitions. Over thirteen Romanian universities and research institutes work on AI-related topics, including the Polytechnic University of Bucharest, the Research Institute for AI (part of the Romanian Academy), the Technical University of Cluj-Napoca, the University of Bucharest, the National Research Institute for Informatics, and the Technical University of Iasi. Topics addressed by researchers include machine learning, multi-agent systems, applications for social and assistive robots, natural language processing, corpora building, computer vision, and virtual reality.

Romania is host to over 30 start-ups and small AI and AI-related companies that work in a wide range of domains, such as computer vision, natural language processing, conversational agents/personal assistants, and applied deep learning techniques.

There are several accelerators and hubs based in Bucharest and Cluj-Napoca. While Spherik Accelerator, Tech Angels Accelerator, Innovation Labs, and Tech Hub Bucharest all support start-ups, there are no specific AI-focused accelerators. The Romanian Association for Smart City and Mobility is supporting initiatives in over twenty cities in Romania, with deployment under the Alba Iulia Smart Cities initiative and in the Cluj IT cluster (nine projects in areas such as smart parking and digital access to public services).

Romania signed on 17 April 2018 the European Pact on Artificial Intelligence, Blockchain Technology and the Launch of the Radar on Innovation. According to the Romanian Government Communication: "Romania is an active supporter of the initiatives launched in the context of the Digital Single Market Strategy, as they will reduce barriers, improve access to services for all citizens and create incentives for investment and innovation, not only in the field of telecommunications , but also in all economic and industrial sectors. The new technologies addressed in the proposed signatures for signing are complemented and generate multiple effects in various sectors, such as public services, where blockchain technology will be used in the future. Artificial intelligence is essential for future economic growth and European productivity, it is estimated that the market for robots and artificial intelligence will increase by 142 billion euros by 2020. The field of artificial intelligence can generate concrete benefits in the efficient use of energy, water, and low pesticide use in agricultural exploitation, increasing precision in surgery, or providing assistance in dangerous situations or natural disasters. "

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