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The EU's Position on the Development of Artificial Intelligence

Marta Makowska

The United States and China are competing for the position of world leader in the field of artificial intelligence solutions, and the European Union is lagging behind. Ongoing work on the EU strategy in this field is aimed at harmonising the activities of individual Member States. EU legal and ethics regulations (protection of consumer rights and anti-discrimination regulations) and the non-commercial use of artificial intelligence (especially in medicine) will be important. The EU should also support all Member States in the development of digital technologies.

Artificial intelligence (AI) is increasingly used in industry, services, telecommunications, energy and medicine (diagnostics), but also in everyday life (for example, AI-based assistants). The term AI refers to information systems that behave in an "intelligent" manner similar to living creatures. This means performing tasks that require ongoing analysis of the external environment and making partially autonomous decisions that have not been pre-programmed in detail. AI may take the form of software and more complex hardware such as robots and autonomous cars. With technological advances, it can be used on a mass scale in place of human work. AI development means challenges for EU Member States, not only in terms of security (the risk of sensitive data being captured), but because advanced AI could cause social changes leading to unemployment or greater inequalities.

Investment Leaders in AI. The key features in the development of AI are access to technologies (including to expert knowledge), capital and data (proper quality and sufficient quantity). In 2016, 66% of global investments in AI went to U.S. companies, and 17% to Chinese ones. Private companies are the driving force behind the development of AI in the United States. In 2017, Amazon and Alphabet alone invested \$30 billion in research and development (R&D). In the same year, the U.S. administration allocated nearly \$2 billion for non-confidential R&D in the AI sector. In September 2018, the Defence Advanced Research Projects Agency (DARPA), a leading government institution in the field of innovation, announced multi-annual investment worth more than \$2 billion to support AI programmes and projects.

In contrast to the United States, [China has a comprehensive national plan](#), which aims to make the country the global leader in AI by 2030. The 2017 "Next Generation of Artificial Intelligence Development Plan" and a three-year action plan are to support the implementation of AI in industry. The Chinese authorities are also focused on recruiting the most talented AI specialists from abroad. Although official PRC expenditure data for AI development is not available, it is estimated that, in 2017 alone, \$28 billion was spent on this purpose. In addition, between 2017 and 2020, \$10 billion will be allocated to the National Laboratory for Quantum Information Sciences project.

EU Member States' AI Strategies. So far, five EU countries have developed their own strategies for the development of artificial intelligence. These are France, Finland, Sweden, the United Kingdom and Germany. France wants to become European leader in research, having allocated €1.5 billion for the period

2018 to 22. It wants to convince international companies to open R&D departments in France by promising qualified staff on site. Finland wants to implement AI in the public sector, and to attract foreign entities in the field. Finnish society is highly skilled in technology, and the country's business environment is investment-friendly. Sweden plans to stimulate the development of AI for the purpose of improving the quality of life of its citizens and ensuring equal access to the benefits of this technology. The UK and Germany focus on AI's use in industry. The British government plans to spend the equivalent of €1.08 billion on operations in the area of the AI. By 2027, it will increase R&D contributions to 2.4% of GDP (from the current 1.7%) and enhance credit opportunities in this area. The priority is to maintain a friendly business environment. Germany will invest €3 billion by 2025, for research and AI-related activities. It wants to strengthen national and international cooperation (including with France), raise the level of education in AI, and invest in its practical application in German industry.

The European Commission's Strategy. Based on the experience of the Member States, the EC initiated the process of creating a European AI strategy. In April 2018, it published a communication on the desired areas of transnational cooperation in this field. These include developing AI for European industry, preparing societies for changes resulting from the evolution of technology, and creating a legal and ethical framework for AI. With regard to the last of these areas, in December 2018 a group of international experts at the EC published a preliminary list of ethical guidelines for the development of AI (such as prohibiting the identification of a user without their consent, transparency in the application of AI, and preservation of human control over the products of technology). According to the Commission, European cooperation translates into practical solutions in various sectors such as health care, advanced production systems, autonomous vehicles (including the production of vehicle batteries) and the fight against global warming.

The Commission plans to invest around €1.5 billion in AI development by 2020, as part of Horizon 2020. It estimates that the planned activities will attract an additional €2.5 billion from the public and private sectors. The key will be subsidies in the areas of transport, health, creation of digital innovation centres (with knowledge and consulting experience on financing and implementing projects). The Commission also plans to create an "on-demand" AI platform providing free knowledge. In addition, the EC wants to spend at least €500 million on AI projects under the European Fund for Strategic Investments and the European Investment Fund (for small and medium enterprises), as well as under the Connecting Europe Facility (CEF). The Commission is also initiating changes in the law facilitating the flow and sharing of data within the EU. In November 2018, the regulation on the free flow of non-personal data was adopted, and work is currently underway on the amendment of regulations determining the use of public sector data.

In the longer term, under the multiannual financial framework for 2021 to 27, the Commission plans to increase investment in AI. A new initiative called Digital Europe is expected to increase the EU's technological potential. Within the framework of this initiative, investment of approximately €2.5 billion is planned for the development of AI, including R&D, public aid and education.

Challenges for the EU. The creation and use of advanced AI will have an impact on the pace of economic growth of Member States in the near future. Lack of active participation in this technology race could negatively affect the EU's competitiveness in the global economy. The amount of EU capital engaged in AI, both now and for the coming years, is modest compared to world leaders. Therefore, EU strategy should be based on giving financial and legislative support for cooperation between Member States. The EU's niche could be AI solutions in public services, improving the quality of life (and health) of citizens. Such projects require multi-year research and funding and would not yield immediate profits.

The discussion within the EU will be focused on maintaining a balance between supporting the largest economic entities in open competition on the global market, and supporting small entities from less digitally developed regions and EU countries. EU strategy should also take into account the diverse potential of Member States, including, where appropriate, their complementarity.

Poland has published assumptions for an AI strategy, with the final document due in the first half of 2019. It will focus on increasing the capacity of data collecting and processing, raising the number of graduates in specialised higher education programmes, integrating currently fragmented research and implementation in AI, and building international partnerships.

A challenge in AI development is the creation of regulation that will protect citizens (including their privacy) in everyday life but will not hamper innovation.