THE PIVOTAL ROLE OF RESEARCH AND INNOVATION IN ARTIFICIAL INTELLIGENCE POLICY

EUROPE FIT FOR THE DIGITAL AGE

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Investment in R&I for artificial intelligence is a pillar of Europe fit for a digital age and to boost European competiveness at a global level. R&I in artificial intelligence underpins the digital and green transition.

Mariya Gabriel, *Commissioner for Innovation, Research, Culture, Education and Youth*

Europe is one of the world's major leaders in the development of Artificial intelligence (AI). AI has become an area of strategic importance and a key driver of economic development. It can bring solutions to many societal challenges from treating diseases to reaching climate and sustainability goals and will bring high-impact innovations in healthcare, education, transport, industry and many other sectors. However, socio-economic, legal and ethical impacts have to be carefully addressed.

It is essential to join forces in the European Union to stay at the forefront of this technological revolution, to ensure competitiveness and to shape the conditions for its development and use, ensuring respect of European values.

The EU must act as one, based on European values, to promote the development and deployment of AI.

This is why the Commission's research and innovation policy on artificial intelligence focuses on

- developing and deploying AI solutions that have positive impacts on society and the economy
- increasing and prioritising public and private investments (including **better access to and use of scientific data**)
- promoting the development of **Trustworthy AI** by prompting ethics by design in Horizon Europe research and innovation projects
- funding research and innovation **projects in AI** underpinning the industrial transition

Investments in Artificial Intelligence

The EU needs to increase and better coordinate public and private investment to reap the full benefits of AI and to become a world leader in this key enabling technology.

Under the Horizon 2020 framework programme, the Commission is investing €1.5 billion in AI, which is expected to trigger an additional €2.5 billion in investment through public-private partnerships. In partnership with the
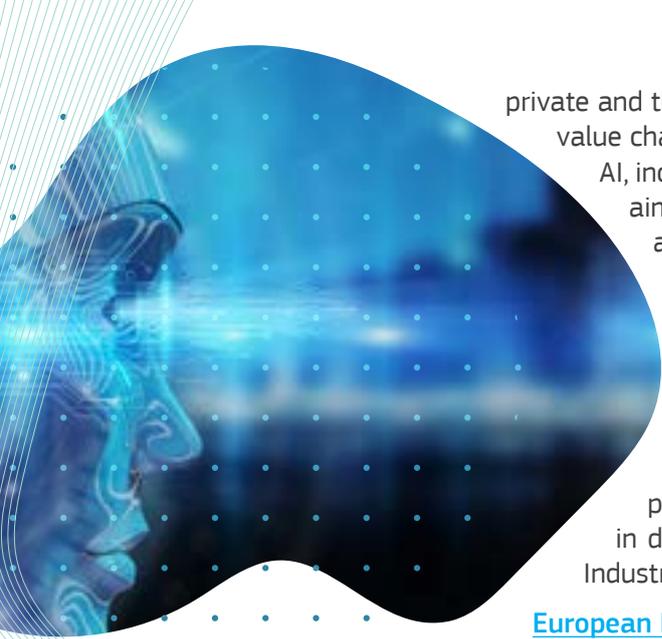
private and the public sector, the aim is to mobilise resources along the entire value chain and to create the right incentives to accelerate deployment of AI, including by smaller and medium-sized enterprises. The Commission aims to increase total investment in Artificial Intelligence (public and private combined) to €20 billion per year by the end of 2020. The Commission will keep funding AI research and applications through Horizon Europe and Digital Europe programmes.

Horizon Europe will invest in AI covering the whole life cycle from development of technologies to the application of these technologies in specific domains such as health, energy and climate using different instruments for the different stages in the process. Collaborative research and innovation projects on AI are in different Horizon Europe clusters, in particular clusters on Digital, Industry and Space, Health and Climate, Energy and Mobility.

European Research Council (ERC)
ERC grants, as well as the creation of AI-focused research centres in EU countries, support Europe's research institutes, which are global leaders in AI research.

Partnerships
Partnerships under Horizon Europe will facilitate stepping up private investment.

European Innovation Council
Funding for promising innovators and SMEs, to turn research into genuine breakthrough innovations.

In addition, further synergies among Multi-annual Financial Framework (MFF) programmes will provide other dimensions to AI investments, for example between the Structural Funds and the Connecting Europe Facility for infrastructure, but also from the Common Agricultural Policy for advanced AI applications in agriculture.

AI projects that benefit society and help to drive the economic recovery

The story behind that little padlock in your browser

Whenever you see a little padlock in the address bar of your internet browser, as well as when you use apps, email and messaging, you're relying on something called 'transport layer security' or TLS. It's a protocol that keeps us safe online. The EU project CRYSP-TLS provided the web users with an improved TLS protocol that ensures digital security. Google Chrome, Mozilla Firefox and other major web-browsers currently deploy the TLS 1.3 so citizens can check emails, make online purchases or even pay taxes using a more reliable web browser that ensures secure connection.

Neuro-rehabilitation to aid recovery of COVID-19 intensive care patients

Patients in intensive care often leave with significant brain damage: about 30 % to 50 % will not return to work within three years. These people need neuro-rehabilitation but most healthcare systems do not provide it due to the lack of cost-effective solutions. The EU funded CDAC project, contributed to the development and clinical validation of innovative technologies that have already been used for the rehabilitation of over 3 000 stroke patients across Europe. More than 30 % of intensive care patients suffer delirium and cognitive impairment, a figure that rises to 80 % among mechanically ventilated patients such as the thousands treated for COVID-19.

Project details

Project details

Smart sensors will help feed growing world populations

Global population is rising fast – by 2050, it is projected to reach 9.8 billion, meaning the world will need to almost double its food production to feed its people. At the same time, agriculture is facing tough challenges including climate change, environmental concerns and land-use pressure. The EU-funded ANTARES project is developing smart sensor and big data technologies that could help farmers produce more food in a way that is sustainable for society, farm incomes and the environment. A farmer with a 5 000-hectare farm can save €1 to 1.5 million just by planting the right crops in the right place using the project's algorithms and the farm's environmental footprint can be reduced through 'precision agriculture'.

Project details

Fostering human-machine collaboration in the factories of the future

The future of manufacturing will depend on the evolving relationship between humans and machines, such as robots, particularly in the design and creation of highly specialised and customisable products. And it's here on the factory floor where some of the first major AI-based innovations are being pioneered and rolled out. The Manuwork project is fostering human-machine collaboration in the factories of the future. A virtual object can show the human worker the place in which a new part best fits inside a bending metal tool. In such a case, the AR application adapts its functionality to the profile and skill level of the operator and offers training and guidance throughout this process.

Project details

Helping emerging energy market players make the right calls

The EU wants to develop a pan-European energy market, where providers freely compete and provide the best energy prices while helping Europe fully achieve its renewable energy potential. The EU-funded ADAPT project has created a decision support system to help new players with their negotiations. Its system assists users as they plan their entry into the electricity market and with the actual negotiation process. The large power provider, ENGIE, is involved in validating the results to ensure the project's models work in the market environment.

Project details

Robotic extraction of asbestos fibres from buildings protecting the health of industrial workers

Europe has paid a high price for asbestos, with over 100 000 related deaths. First in line in the fight to free buildings from asbestos contamination, workers in the construction sector could soon find a helping hand in the form of an AI-piloted robotic system. The EU project Bots2ReC developed a robotic system capable of handling asbestos removal on construction sites. The robot operates asbestos removal comprehensively and not just piece by piece. Thanks to its AI capabilities, it is also tailor-made to be used under real conditions.

Project details