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"AI in the green digital European Research Area"

Virtual event, 10 November 2020

Introduction

The digital transformation and the adoption of Artificial Intelligence (AI) can bring solutions to many societal challenges. Benefits are expected in different sectors, such as personal healthcare, smarter transport services, efficient manufacturing, and optimized energy exploitation. In light of the German EU Council presidency, Helmholtz focused on the added value of multidisciplinary research and innovation activities in the field. How can we avoid working in silos and overcome the limits of current digital technologies in terms of capacity, speed and energy consumption? Are there policy steps that should be prioritized at a European level to boost the potential of AI in the green digital ERA? Representatives from science, policy and industry presented their point of view and paramount research examples. Around 350 guests from many EU countries as well as from Great Britain, Turkey, Russia, New Zealand and Korea attended the event.



Summary

Wolf-Dieter Lukas, State Secretary at the German Federal Ministry of Education and Research stated during his conversation with Otmar D Wiestler, that the Federal Government's AI strategy has already created the financial basis for bringing AI in Germany and Europe to a world-leading level. Quality assured data is essential for AI specialists to be able to bring the data into application, allowing people to benefit from it. Furthermore, he emphasised the relevance at EU level of the centres receiving financial and organisational support from the Federal Government and the European Commission. For the data exchange in Europe, he also stressed the need for a set of rules so that whoever receives the data also uses the data in the way the sender intended.

Otmar D. Wiestler, Helmholtz President, emphasized the initiatives to pool the expertise on AI across the individual Helmholtz Centres and the benefits of European collaboration, e.g. in the "[ELLIS initiative](#)" aiming to define lighthouses in Europe at a limited number of locations where AI is very strongly represented. He stressed that such an organisation would serve as a magnet for the European Research Area by attracting talents from around the world. To support the Federal Government in this key topic, he replied in the talk with Wolf-Dieter Lukas, it is important to cooperate and interact with partners in Germany and Europe, both from academia and business. To work efficiently, it is necessary to have the AI where the data is generated, he pointed out. The individual Helmholtz centres have already begun to produce important results in the field of AI, based on the wealth of data at their disposal. One example is personalised cancer medicine, where the individual health data are used to offer a more effective cure and a specialized treatment. One challenge that still needs to be overcome is that of data protection. Sensitive data, for example in the medical field, have to be handled with particular care. However, rules of data protection should not prevent us to be competitive in the field. On the subject of climate, he stressed the need to develop technologies to reduce the energy consumption of data processing machines.

Roberto Viola, General-Director of DG Connect within the European Commission, stressed that a greater investment in AI and computational power is essential in order to make society more resilient in the future. Therefore, public investment in cooperation with the private sector is fundamental. The recovery fund of the European Commission aims at making Europe more resilient, digital and green. Mr Viola pointed out that the next step is to go into quantum computing, where Europe is in the lead, and to invest in a new generation of low power consumption processors. He underlined the significance of the initiative "Destination Earth", which aims to model and understand every process of the earth.

[Wolfgang Marquardt](#), Chairman of the Board of Directors of [Forschungszentrum Jülich](#), Vice-President of the Helmholtz Association for Information/Key Technologies, explained during the conversation with the moderator that the right hardware is essential for scientists to be able to use software to its full potential. In this way, interdisciplinary research can become an enabler for digitisation and technological progress. Neuromorphic computing is an important approach here. The term refers to computing processes that are carried out using neuromorphic chips - analogue computing units that learn on the model of the human brain. He stressed that Helmholtz must and can work as an enabler and a beneficiary of digitalisation at the same time. An enabler to provide data models, software and hardware for application and a beneficiary to employ frontier digital technology.

The subsequent **panel discussion** included the following experts, saying:

[Maria da Graça Carvalho](#), Member of the European Parliament, emphasized: “Access to data is the prerequisite. I strive for better common standards within an overarching ethical AI framework.”

[Laure Le Bars](#), Vice-President of the Big Data Value Association and Research Project Director, SAP Research & Innovation, stressed: “Partnerships between industry and research should boost EU competitiveness and include societal and environmental aspects.”

[Fabian Theis](#), Director of the Institute of Computational Biology, [Helmholtz Zentrum München](#), and Scientific Director of [Helmholtz AI](#), said: “My vision for our databased future is to democratize access to AI and machine learning to maximise research impact.”

[Roberto Viola](#), General-Director of DG Connect, European Commission, added: “Making AI greener is not only an ecological imperative but also a real growth opportunity for Europe.”

The following issues were addressed in the discussion, which was also attended by Mr Wiestler:

- **Attracting talents from all over the world** is a key topic. If Europe wants to be successful, it needs to be a magnet for the greatest talents. **Partnerships and infrastructures** are essential to bring experts from industry and academia together.
- **Establishing a powerful and creative ecosystem for AI and AI applications.** There is a lot of excellence in the different institutions and in the Member States. Joining forces between the strongest and the best players within Europe is also about combining expertise in AI algorithms, machine learning and deep learning. Lighthouses are necessary to bring together AI experts and the expert in AI application fields and specific domains like medicine or social sciences.
- **Bringing AI to the people by demystifying it.** It is important to bring basic knowledge to citizens so that they are not afraid of AI and new technological improvements. There are already important efforts at European and national level to evaluate the ethical challenges linked to the application of AI. It is crucial not to create a negative wave towards this technology and to make people get interested to the enormous potential of AI.
- **AI can contribute to the green transition** by helping to improve energy efficiency and by providing simple solutions for the creation of smart cities. In climate research, AI can be applied to extract new knowledge out of the huge data sets that have been generated in the past years.
- An ecosystem of excellence and an ecosystem of trust is essential to validate algorithms and datasets. Testing and evaluating of algorithms by third parties is crucial to guarantee the best performance.

In their **wrap-up conversation**, Annika Thies, Director of the Helmholtz Office Brussels, and Otmar D. Wiestler stressed the important role of the European Research Area in achieving common European objectives and emphasised that the realisation of a strong AI ecosystem is only possible by joining forces and supporting long-term collaboration at European level.

To re-watch this event, you are welcome to visit <https://www.youtube.com/watch?v=dVeaSxtMv9k> - more information on the [event website](#).

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