

When AI meets science: opportunities, risks and ethics for research communities

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European AI Week 2026 – Shaping a Sovereign Future



On 18 March 2026, as part of the [European AI Week 2026](#), BELSPO welcomed around 80 participants to the Royal Library of Belgium to explore a key topic for research communities: the role of artificial intelligence (AI) in science.

The event was moderated by **Marc Vanholsbeeck** (BELSPO) and attendees benefited from the insights of **Andres Algaba** (Vrije Universiteit Brussel), **Mathilde Thiery** (European Commission), **Ine van Zeeland** (imec-SMIT, Vrije Universiteit Brussels), **Justin Janquart** (Université Catholique de Louvain, Royal Observatory of Belgium), and **Julie Birkholz** (Universiteit Gent, Royal Library of Belgium).



In his introductory speech, **Marc Vanholsbeeck** stressed that AI is a transformative force reshaping research practices, knowledge and information exchange between peers, as well as the interface between science and society. At the same time, he highlighted that AI uptake raises deep epistemic, ethical, and equity questions. Marc emphasised BELSPO's commitment to an interdisciplinary approach involving all fields of research - including social sciences and the humanities – to ensure that AI in science is responsible, ethical, and human-centred.

Let's talk about the elephant in the room

When discussing AI in Science, **Andres Algaba** underlined the importance to openly talk about the elephant in the room: Large Language Models (LLMs). LLMs' capabilities have been advancing rapidly over the past years and can perform longer tasks in multi-step problems with higher success rates than ever before. Benchmarked usage even shows that some models surpassed human capabilities. These developments impact scientific discovery, as LLMs become a viable tool in scientific workflows,

generate papers, or assist peer reviews. This raises **concerns about the reinforcement of biases or negative feedback loops** like the *Matthew effect* in citations, success breeding success, false discoveries and equity issues in access to paywalled systems and subscriptions. Despite these challenges, Andres' take is that AI use in science becomes inevitable and that, therefore, its adoption among research communities is advisable. However, towards better AI uptake in science, **current ways of organising research need to adapt**.

Transparency for what and whom?

Ine van Zeeland drew the attention of the audience to two contrasting trends in current discussions on AI in Science: (1) there is a growing use of emerging AI tools with various new applications, and (2) there is a push for Open Science and FAIR principles among researchers for more data, tools and code sharing. The juxtaposition of these trends raises concerns over unclear use of Open Science data: how do private actors benefit from applications based on publicly-funded research outputs? Against this background, Ine highlighted the existence of useful guidance for researchers, such as the [European Commission's living guidelines on GenAI in research](#), which mention four key principles when using generative AI in research: **reliability, honesty, respect and accountability**. To the question: 'Who needs transparency and for what?', the answer must be tailored to the audience and accountability, while individuals cannot be made responsible for protecting their data. In conclusion, Ine showed that Open Science principles face new challenges due to AI's opacity and ethical implications, which call for a **careful governance**.

A policy perspective: the European Union's AI Strategy in Science and RAISE



Mathilde Thiery, European Commission

Mathilde Thiery highlighted that the recent adoption of AI in research is an opportunity, both as an innovation to solve societal challenges and to create economic value. In this context, the recent European Commission [Strategy on AI in Science](#) seeks to address key challenges (i.e. global competition, fast technological developments, and fragmentation across Europe) by leveraging the EU's strengths: **trustworthy AI, top-notch infrastructures, scientific excellence, scientific freedom and diversity**. In addition to this initiative, several tools and resources are available to researchers who wish to use AI, including the publication of the Joint Research Centre (JRC) on [The role of AI in Scientific Research](#). Mathilde also underlined that the European Commission has launched [RAISE](#), the Resource for AI Science in Europe, that is a European virtual institute for AI in Science based on four pillars: **talent promotion, research funding, trustworthy data, and computing power**. Via [SCIANCE](#), a project supporting the RAISE pilot, researchers are invited to join the RAISE community and contribute to shaping its strategic research and innovation agenda.

AI use cases in Science, Technology, Engineering and Mathematics (STEM) and Social Sciences and Humanities (SSH) research

Participants had the opportunity to hear from two scientists who presented their use of AI tools in research projects. These use cases concretely highlighted the **opportunities, risks and ethical questions** brought up by AI uptake in both STEM and SSH fields of research.

USE CASE 1: The potential use of AI in gravitational waves research and the future Einstein Telescope

Justin Janquart introduced participants to new methods that can help humans detect 'the sound of the universe', i.e. gravitational waves. Nowadays, ground-based detectors measure these tiny distortions using what is called *interferometry*. The [Einstein Telescope](#), a next-generation detector, will be significantly more sensitive than existing ones, capable of detecting signals every few minutes compared to every few days with current detectors. This would drastically increase the amount of data to be processed to answer the following key questions : what are these objects, what is their nature, and how far away did these events occur? Reconstructing this information is known as parameter estimation. However, even with current large computing clusters, analysing one year of data of the Einstein Telescope would still take about ten years. Machine learning algorithms are a promising solution to tackle this challenge. If future detectors allow humans to hear the entire universe, machine learning can play a key role in enabling it. In this context, Justin however underlined that a major challenge remains accuracy and reliability, and in some cases, **combining machine learning with traditional methods can lead to significant time gains**. Nevertheless, he noted that as gravitational wave research enters the era of big data, **machine learning is becoming an essential tool**.

USE CASE 2: AI and Cultural Heritage research

Julie Birkholz focused her talk on Digital Humanities, an interdisciplinary field. Her expertise lies in infrastructure, which, she emphasised, is related to people, policies, technologies, and social systems. Numerous **research infrastructures** exist at the Belgian and European levels in the field, including DARIAH, CLARIAH, CESSDA, and DiSSCo. As a concrete use case, Julie presented the FWO-funded [NAVEZ project](#), which involves around 2,000 handwritten documents by neoclassical painter François-Joseph Navez (1787–1869). These texts were collected, digitised, catalogued, and made accessible thanks to a digital workflow. By applying automatic transcription and Natural Language Processing workflows, many errors could be corrected, thus significantly improving the usability of the data. Another example is the [MeteoSaver tool](#), which showcases a similar approach in a different domain. MeteoSaver is an AI-based tool that transcribes historical climate data, making it more usable and widely available for research. Together, these projects illustrate how **AI not only helps tackle complex scientific challenges, but also plays a crucial role in unlocking and enriching cultural heritage**.

Discussion and key takeaways



To conclude, the panel discussion underlined important elements for the years to come:

Anticipation: 'Human is the loop' is important, but there is already a need to take into account for the scenario where humans are not as much in the loop as they used to. Policymakers should be urged to think differently about organising science as an industry.

Digital literacy and infrastructure: it is key to ensure that students, but also the general public, are trained on how to use and interpret new AI tools and continue to question things. Research infrastructures have a lot of expertise that can be leveraged, and constructive criticism needs to continue without machines in the loop.

Versatility: researchers need to learn to live with the new AI tools and to keep sharing experiences and best practices. When AI tools are used smartly, they can lead to real productivity gains and unlock new research opportunities.

Accountability and transparency: users as well as providers of AI tools can support and help with providing the transparency that is required, both when it comes to data processing and the analysis that came out of this data. In this context, it is important to highlight scientists' social accountability: it is also researchers' societal role to use AI responsibly in order to positively impact and inspire society at large. Hence, an important message to students and young generations of researchers is that there is no shame in using AI in research – the key is to use it responsibly and in an transparent manner.

“We need to make sure we educate at large scale about what is happening in AI and to be transparent about our usage of AI. It is just a tool, there is no shame using it.”

-Julie Birkholz-

To continue the discussion on AI in Science and learn more about us:



To go further: practical tools and useful references

Tools

AI Watch (JRC), available at: https://ai-watch.ec.europa.eu/index_en

European Commission (2025), 'Living guidelines on the responsible use of generative AI in research', ERA Forum Stakeholders' document. Available at: [2b6cf7e5-36ac-41cb-aab5-0d32050143dc_en](https://ec.europa.eu/era/forum-stakeholders/document/2b6cf7e5-36ac-41cb-aab5-0d32050143dc_en)

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On algorithmic discrimination

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