

A European Strategy for AI in Science Science Europe Input to the European Commission's Call for Evidence

Science Europe, representing national European research funding and research performing organisations, recognises the need for a 'European Strategy for AI in Science' that will remain relevant in the face of the rapidly evolving field of artificial intelligence. Europe's approach towards AI for science should be guided by a human-centred, ethical, and secure approach that is true to scientific values. The strategy should be aligned and streamlined with all existing regulatory frameworks (e.g. GDPR regulation, AI Act) and guidelines to ensure coherence and avoid contradictions. Europe's need to boost its innovation capacity and global competitiveness should not shift the focus away from its values-based model.

A strategy for AI in science should focus on the fundamental characteristics of AI, promote its beneficial applications, recognise and mitigate associated risks, and ensure it safeguards the integrity of scientific research. Risks such as the rise of misinformation, due to hallucinations and unverified proliferation of synthetic (AI-generated) content, could undermine scientific reliability and public trust. For that reason, the strategy should ensure that it connects to the responsible adoption of AI.

Science Europe's Member Organisations have had numerous discussions on the opportunities and challenges of the use of AI tools in research processes, and their impact on areas such as research assessment, science communication, and open science, as well as on legal certainty and the environment. Based on these conversations, Science Europe proposes the following points for consideration when defining a European Strategy for AI in Science:

- 1. Al in grant applications and evaluation processes: Establish guidelines for researchers, for the appropriate and ethical use of generative Al in the preparation of grant applications. The European Commission could play a role in supporting research organisation in the adoption of 'best practices' for the responsible use of Al systems in evaluating grant applications. Current systems must be assessed for their ability to handle Al-assisted proposals, safeguard the integrity and originality of research, including potential risks from Al-generated submissions.
- 2. **Peer review using AI systems:** Identify responsible techniques in reviewing research outputs that take into account aspects of data privacy, confidentiality, and intellectual property. Such processes should also be overseen by humans.

Reviewers should receive training to uphold the ethics and integrity of the process.

- 3. **Training the researchers in the responsible use of AI:** Research funding and research performing organisations should include the exchange of experience and training of researchers in their programmes. Research performing organisations should bear the responsibility of overseeing that researchers comply with ethical standards and responsible use of AI. Research funding organisations should provide the necessary frameworks to enable the implementation of these processes (such as including ethics as an evaluation criterion).
- 4. **Evaluate the impact of public research investments using big data:** Research funding and research performing organisations may use big data and AI systems to assess the results and broader impacts of the research they fund or perform. For this process, they should build datasets that follow FAIR principles, create clear classification systems (taxonomies) for organising information, and use transparent machine learning models.
- 5. Address the environmental footprint of AI in research: Evaluate the carbon footprint of the design, training, and use of AI models (in particular LLMs), including the water, energy, and material consumption required to build and operate the data centres they require. Promote environmentally sustainable practices, for example those identified in Science Europe's 'Framework for the Environmental Sustainability of Research Organisations' (November 2024).

To support researchers and research organisations in making the most of AI in the scientific ecosystem, the strategy should promote European sovereignty, according to <u>values</u> widely accepted in the research community. It should provide funding strategies and policies for infrastructure and computing architecture, high-quality and ethical standards for AI systems, and foster interoperable and FAIR data environments. This should be done taking into consideration existing regulations and guidelines (for example, the <u>Living guidelines</u> on the responsible use of generative AI in research, to which Science Europe contributed).

Science Europe would like to further contribute to defining the European strategy for Al in science based on the expertise and experience of its Member Organisations who initiate and participate in the entire value chain of research processes, from call design through to publication and valorisation of research.