CESAER

The strong and united voice of universities of science and technology in Europe

Strengthening Europe's position in artificial intelligence through science, technology and education

Position dated 30 June 2025

The leading universities of science and technology united within CESAER welcome the European Commission's ambition to strengthen Europe's global position in artificial intelligence (AI). To achieve this, it is essential to empower those operating at the forefront of advanced science and key technologies—such as universities, researchers, innovators and their communities. These actors provide the scientific foundation, technological breakthroughs, and skilled talent that are critical for Europe's success in AI.

Enabling them to lead advancements will help accelerate the development of trustworthy, competitive, and societally beneficial AI, anchored in scientific excellence, integrity, and openness. It will also ensure that Europe educates, retains and attracts the talent needed to be globally competitive. In short, empowering these frontrunners is not only about supporting developments within Europe—it is a necessary condition for the continent to shape and compete in the global AI landscape.

This position sets out key recommendations to ensure that AI in Europe is shaped by and for the research and innovation community. These include:

1. adopting a European model that empowers researchers and innovators to lead the European AI future;
2. seizing the momentum to deliver AI in and for science and technology;
3. enabling researchers and innovators to lead: building a competitive and trustworthy AI model for Europe
4. educating, retaining and attracting AI talent;
5. ensuring openness with security and responsibility;
6. delivering strategic autonomy through sustainable investment.

Together, these priorities can help Europe make distinctive, ethical and sustainable contributions to cutting-edge AI that benefits science, technology and society.

1. Adopting a European model that empowers researchers and innovators to lead the European AI future

Europe has many prominent and leading researchers and innovators in AI, both as developers of AI technologies and expert users of AI in other scientific fields. By putting researchers and innovators in the driver's seat of AI development, we can secure trustworthy, sustainable world-class AI, built on the principles of reliability, honesty, respect and accountability. These four pillars of research integrity—elaborated in the European Code of Conduct for Research Integrity—are essential to the European approach and should guide AI development and the use of AI in science in Europe.

This requires a distinctly European model, which should set us apart: whereas in the United States market forces often dominate, and in China the state has a strong role in steering innovation alongside private actors, Europe can chart its own course by enabling researchers and innovators to lead the European AI future. Adopting a European model results in a collaborative, interdisciplinary, and open approach that promotes excellence, ethical responsibility and societal relevance from the outset. This approach therefore not only fosters scientific integrity but enhances competitiveness, public trust and innovation.

To achieve success, this model must be underpinned by a truly European approach to AI—one that takes a continent-wide perspective and engages long-standing, like-minded partners across Europe (both inside and outside the EU), as well as key global allies. Horizon Europe provides a proven and strong foundation for supporting such collaboration and must be financially reinforced and strengthened.

We call on the EU institutions to adopt a distinct European model for AI that:

- empowers researchers and innovators—and their institutions such as universities of science and technology—to lead the strategic European approach to AI;
- is grounded in the four principles of research integrity: reliability, honesty, respect and accountability;
- embraces a continent-wide perspective that includes all of Europe.

2. Seizing the momentum to deliver AI in and for science and technology

Artificial intelligence is already transforming science and technology. From accelerating discovery to enhancing engineering design and enabling novel research methodologies, AI is a game-changer. Yet its full potential remains underexploited due to current structural challenges in Europe such as limited scale-up capacity, a fragmented infrastructure landscape, limited access to high-quality data as well as dedicated, large-scale AI computing resources, insufficient support for talent, and substantial underinvestment.

The European Commission's AI Continent Action Plan is a timely step toward strengthening the role of AI in and for science and technology. We welcome the proposal for a Resource for AI Science in Europe (RAISE) as a distributed infrastructure designed to enable cutting-edge

scientific research through AI. To succeed, it must facilitate access for universities and researchers across Europe to dedicated and advanced AI computing resources, tools, and expert support for applying AI across scientific fields. It should integrate seamlessly with the European research and technology infrastructure landscape adhere to FAIR (Findable, Accessible, Interoperable, Reusable) principles, and complement and connect to other initiatives, such as European High-Performance Computing Joint Undertaking (EuroHPC) and the European Open Science Cloud (EOSC).

We urge that RAISE be developed under strong scientific leadership. It must support both "AI in science" and "AI for science" as distinct yet interconnected pillars: applying AI to research and developing new AI methods driven by scientific challenges. This includes all areas of science and technology, including engineering disciplines. Such an approach would also directly benefit research-based education and training of talent in and for AI.

All actions under this initiative should empower and enable researchers and innovators to pursue ambitious, interdisciplinary, and societally relevant work—underpinned by stable, long-term funding and world-class research and technology infrastructures (RTIs). RTIs include both physical and digital (e-)infrastructures.

In this context, the full realisation of the European Research Area (ERA) and the fifth freedom elaborated in the Letta report—the free movement of research, education and innovation—can help unlock the full potential of AI in and for science and technology. While these goals remain ambitious, they are essential to strengthening Europe's contribution to global progress in AI by drawing on the collective strengths of the continent, which is vital for competitiveness. Recognising and addressing the current fragmentation of the AI landscape as well as the varying capabilities across member states will be critical in this endeavour.

We call on the EU institutions to:

- Ensure expert-led governance and management of RAISE, drawing inspiration from CERN, ESA and ESFRI.
- Prioritise long-term funding and lifecycle planning for AI-related RTIs.
- Facilitate broad and equitable access to AI-related RTIs for researchers across disciplines as well as for spin-offs from universities and related start-ups and SMEs.
- Apply FAIR principles across all data-related initiatives and infrastructures, including by facilitating access to training datasets and learned models.
- Support open-source AI development and access to high-quality training data.
- Implement the 'fifth freedom' without delay, as proposed in the Letta report.
- Facilitate inclusive coordination between the EU institutions and EU member states to define respective roles, ensure complementarity, and build on diverse national capabilities in AI, recognising that boosting national-level investments and capacities are vital to Europe's overall position in this field.

3. Enabling researchers and innovators to lead: building a competitive and trustworthy AI model for Europe

Europe has the potential to strengthen its position in AI by advancing a distinctive model built on trustworthy and human-centred AI. This requires support for open and collaborative research, frontier exploration, and interdisciplinarity—underpinned by policy and funding frameworks that enable universities, researchers, and innovators to excel.

This model allows Europe to distinguish itself not only in terms of the values-based approach, but also in long-term competitiveness as it plays to our continent's strengths. A researcher-led approach fosters public trust, enables agile and societally aligned technological innovation, and builds resilience amid rapid technological change. By embedding research integrity—reliability, honesty, respect, and accountability—in AI development from the outset, Europe can ensure AI systems are not only powerful, but also fair, transparent and beneficial for society.

In parallel, significant structural challenges must be addressed. Europe's AI landscape continues to face underinvestment in AI, limited scale-up capacity, fragmented infrastructure, and weaknesses in critical segments of the value chain, including the production of AI chips. These issues have hindered the translation of cutting-edge research into market-ready applications and globally competitive companies.

In this context, research-intensive SMEs and deep-tech start-ups, many of which originate within academic institutions, have an important role to play in bridging the gap between research and innovation. Their success depends on access to an enabling environment, including tailored policy instruments, supportive ecosystems, and effective collaboration with universities of science and technology, which serve as anchor institutions in research and innovation ecosystems.

Additionally, in our May 2023 position, we warned of the risks generative AI poses to scholarly publishing, where synthetic texts and images can mimic scientific content while spreading misinformation. Building on this, we note that AI-generated output also increases the risks of plagiarism or copyright infringement due to incorrect, missing or 'hallucinated' references. Safeguarding the scientific record will require coordinated EU-level action and significant new investment in tools, infrastructure, and policies that ensure trust, transparency and quality in research dissemination.

Lastly, we welcome the development of generative AI guidelines in research, to which we were pleased to contribute, and see a clear role for EU-level coordination to support development and sharing of good practices.

We call on the EU institutions to:

- Support anchoring AI development in research integrity, not compliance checklists.
- Provide clear, practical guidance for universities on the application of the AI Act—particularly on how the research exemption (Art. 8) interacts with the publication, dissemination and open-source sharing of AI systems—to ensure legal certainty and support compliance without undermining FAIR and open science principles.

- Safeguard the mandatory copyright exception for text and data mining to ensure legal clarity and enable AI-related research and innovation across Europe.
- Acknowledge and plan for the substantial new resources needed (at EU and national levels) for safeguarding the integrity of the scientific record.
- Empower universities of science and technology to lead the development of sector-specific frameworks and tools for the responsible use of AI in research, education and the fostering of innovation while safeguarding research integrity, including by ensuring sustainable and stable funding that enables universities to assume strategic leadership roles.
- Support universities of science and technology as anchor institutions in research and innovation ecosystems to help research-intensive SMEs and deep-tech start-ups—especially those emerging from academia—bridge the gap between fundamental research, technology development and societal application. Recognise their essential role in boosting disruptive innovation, scaling scientific advances and their integration into Europe's AI ecosystem.
- Substantially expand proven and successful EU funding programmes for research and innovation, notably including Horizon Europe and its successor. This is key to bolstering the research and innovation continuum while cultivating the talent, expertise, skills, and capabilities that drive these advancements, as underscored in a joint statement between universities, research and technology organisations, research funding organisations, research performing organisations and industry.

4. Educating, retaining and attracting AI talent

Strengthening Europe's position in AI depends on talent. This means not only educating, retaining, and attracting AI experts, but also enabling students and researchers across all scientific fields, as well as other university staff, to become confident users of AI. Talent policy must be inclusive, interdisciplinary, and long-term.

AI talent should not be addressed in isolation but treated within the broader scope of advancing research careers. For guidance and detailed recommendations see CESAER report Research careers: A critical choice for Europe.

The European Research Council (ERC) and the Marie Skłodowska-Curie Actions (MSCA) are prime examples of how Europe has long been delivering results in AI—well before it became a political and public priority. These flagship programmes have been enormously successful in advancing frontier research and nurturing world-class talent at the cutting edge of scientific knowledge. Their success is rooted in their exclusively bottom-up design, which empowers researchers to pursue bold, researcher-led ideas free from thematic or political constraints. It is therefore vital that instruments such as ERC and MSCA remain exclusively bottom-up to safeguard their excellence and relevance. Top-down funding has an important role, but should be deployed through separate and well-designed instruments that complement, rather than constrain, the success of Europe’s researcher-led ecosystem.

Proven programmes with a strong track record in attracting and retaining talent—particularly in science and technology—must be expanded. An excellent starting point is the recommendation in the Align, act, accelerate report, which recommends ensuring that all proposals evaluated as excellent under Horizon Europe are funded through a combination

of EU, structural and national funds (e.g. via 'Seals of Excellence'). We strongly support this recommendation and urge its swift implementation, as it would mark a decisive step forward with immediate positive effects on Europe's ability to attract and retain top talent, particularly in cutting-edge fields such as AI.

To enhance Europe's global competitiveness and attract and develop top AI talent, it is essential to promote AI literacy across all levels of education and training, and to integrate AI tools where appropriate, engaging the full university community. We welcome initiatives such as the Union of Skills and the STEM Education Strategic Plan, as well as the forthcoming AI Skills Academy and AI fellowships, which show strong potential to advance these goals. These efforts should be firmly embedded in the knowledge triangle—connecting education, research, and innovation—to foster a dynamic ecosystem that drives talent development, scientific and technological progress, and Europe's global position in AI.

We call on the EU institutions to:

- Expand strong programmes with global appeal and proven capacity to attract, retain and train top talent in science and technology, such as Horizon Europe and Erasmus.
- Implement the recommendation in the Align, act, accelerate report to fully fund—through a combination of EU, structural and national funds (e.g. via 'Seals of Excellence')—all high-quality proposals under Erasmus+ and Horizon Europe.
- Advance 'Choose Europe for science' as a strategic, cross-cutting initiative to incentivise top talent to remain in and come to Europe, by boosting overall investment (both public and private), financially reinforcing key funding programmes such as Horizon Europe to increase their overall success rate, and strengthening public-private partnerships in research, innovation, science, and technology.
- Address visa, immigration and mobility barriers for global scientific talent, as elaborated in our research careers report.
- Ensure that there are clear synergies and interconnections between upcoming initiatives in AI, education, and 'teach the teacher' approaches — including the AI Skills Academy and AI Fellowships — and existing programmes, tools, and initiatives such as Erasmus+ and the Union of Skills.
- Support researcher-led training and interdisciplinary AI literacy across all research and higher education domains, to foster a broad understanding of AI's role in education, research and innovation.
- Promote ethical engineering and responsible innovation as a hallmark of European education and research in and for AI.
- Actively engage leading universities of science and technology—already driving excellence in AI education and training—as strategic partners in the development and implementation of the AI Skills Academy and its apprenticeship programme, leveraging their expertise to strengthen Europe's AI talent pipeline and global competitiveness.

5. Ensuring openness with security and responsibility

A European approach to AI must ensure that openness and security go hand in hand and mutually reinforce each other. AI development should follow the principles of open science, while also safeguarding critical and sensitive technologies and data. Openness and responsibility are not in conflict, but together form the foundation of trustworthy AI.

These efforts must be grounded in research integrity and led by researchers, innovators, and their institutions—such as universities—working across disciplines, as they are best positioned to advance trustworthy AI in practice.

In this regard, it is crucial for Europe to strengthen global partnerships through key instruments, fostering collaboration to promote responsible and open development of AI, ensuring a balanced and effective approach to AI.

We call on the EU institutions to:

- Connect AI initiatives to the broader RTI landscape in general, and to the European Open Science Cloud (EOSC) in particular.
- Enable universities to make informed decisions in critical and sensitive areas by providing clear, coherent rules and guidelines, along with adequate (human, financial, technical, and digital) resources—while avoiding 'autonomy traps'.
- Support the establishment of a helpdesk to assist researchers with risk management in sensitive areas, as well as AI Act compliance.
- Leverage and financially reinforce key instruments such as Horizon Europe to strengthen global partnerships in AI, fostering a local-to-global approach that mutually reinforces openness, security, and responsible AI development.

6. Delivering strategic autonomy through sustainable investment

Strategic autonomy should be understood as Europe's ability to act independently and decisively in critical areas, while remaining globally connected, open, and collaborative in AI development. Strengthening strategic autonomy in AI therefore requires urgent and sustained action to address Europe's systemic underinvestment in this field. Compared to other global regions—notably North America and Asia—Europe's investments in AI remain modest. This growing gap poses a serious threat to our competitiveness and limits our capacity to shape global developments.

Realising the ambitions set out in the AI Continent Action Plan demands a decisive shift in Europe's investment strategy to achieve a stronger Europe through research & innovation. The announced €200 billion investment target in AI and the proposed InvestAI Initiative are promising steps. These must be accompanied by substantial increases in proven funding programmes that deliver cutting-edge research and innovation, to ensure that overall success rates are increased. Transferring funds from existing, successful programmes with a

proven track record in advanced science and technologies, thereby reducing success rates, would be counterproductive for Europe's global positioning in these fields.

A key priority must be to significantly raise the success rates in Horizon Europe. Too many world-class proposals from leading researchers currently go unfunded due to limited resources. This represents a missed opportunity, as many of these proposals are ready to be implemented and would have immediate positive impact. Increasing the budget for Horizon Europe and its successor would allow for rapid scaling and would boost Europe's global standing in cutting-edge science and technologies such as AI.

Following this financial reinforcement, further investments should support the entire knowledge value chain—from advancing frontier research and nurturing top talent, to accelerating technological innovation and fostering deep tech breakthroughs. Sustainable public and private investment in AI must enable Europe's scientific and technological communities to contribute meaningfully to global AI advances and realise the transformative potential of AI across all scientific disciplines.

Beyond EU-level funding, it is vital that member states swiftly fulfil their commitment to invest 3% of GDP in R&D, including at least 1.25% in public R&D. Meeting these targets would be a game-changer for advancing Europe's global position in advanced science and technologies such as AI.

All investments should reinforce the central role of researchers, innovators, and their institutions—such as universities of science and technology—particularly in cutting-edge domains where pushing scientific boundaries is essential to breakthrough and deep tech innovation, as outlined in our position Competitiveness, reindustrialisation and strategic autonomy through leadership in science & technology.

We call on the EU institutions to:

- Expand support for researcher- and innovator-led approaches to frontier research and breakthrough innovation, enabled by non-prescriptive, proportionate, and clear regulatory frameworks.
- Financially reinforce proven programmes such as Horizon Europe and its key instruments—including ERC, MSCA, EIC, and a revitalised EIT—while safeguarding the primarily bottom-up nature of flagship initiatives. For maximum benefit, new initiatives should complement existing ones with additional resources to ensure a net increase in funding and success rates.
- Coordinate with member states to ensure the swift fulfilment of the 3% GDP target for R&D investment, including the 1.25% public effort target, as a key lever to strengthen Europe's global position in cutting-edge science and technologies such as AI.
- Boost collaborative research at lower technology readiness levels (TRLs) to facilitate cross-border and cross-sector research and innovation along the full knowledge value chain.
- Invest in shared research and technology infrastructures for AI, such as AI Factories and Gigafactories, ensuring a strong emphasis on scientific and technological excellence, equitable access, and lifecycle sustainability, combined with increased overall success rates for Horizon Europe.

- Align all AI investments with Europe's sustainability objectives, by fully integrating environmental, social, and economic sustainability into design, implementation, and evaluation. This includes prioritising energy-efficient systems and promoting circularity and resource-efficient innovation.

Conclusion

Europe has the potential to strengthen its global position in artificial intelligence by building on its core strengths: scientific excellence, interdisciplinary talent, world-class infrastructures, and a strong culture of collaboration and integrity. Realising this potential requires a distinctive European model built on trustworthy and human-centred AI—one that places researchers, innovators, and their institutions, such as universities of science and technology, at the forefront of AI development and application across research, education, and innovation.

To deliver on this ambition, the EU must make strategic and sustained investments in AI as a driver of scientific discovery and technological progress, anchored in the principles of research integrity: reliability, honesty, respect, and accountability. This entails reinforcing researcher-led programmes and infrastructures, educating, retaining and attracting retaining top talent, and fostering openness while ensuring responsibility and security.

The six priorities outlined in this position offer a pragmatic and forward-looking path to enhance Europe's global position in AI. CESAER and its Members stand ready to contribute expertise across the full knowledge triangle and to work in close partnership with the EU institutions to shape an AI future that advances science, strengthens education, drives innovation—and delivers lasting societal value.

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