



# CESAER

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

## AI pathways for technology transfer

Lessons learned from  
universities of science and technology



Report dated 28 October 2025



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## Executive summary

Artificial intelligence (AI) is transforming research and innovation, and technology transfer offices (TTOs) are emerging as a key factor in ensuring its responsible application. To explore how AI is being adopted in knowledge valorisation, CESAER conducted a survey across its membership and convened discussions among Members, experts and partners. This report presents the main findings and lessons, offering insights into current practices, barriers, ethical considerations and future needs.

The survey revealed that adoption is still at an early stage. Just under half of the respondents reported using AI tools, mainly for document drafting and patent analytics, while the remainder are not yet applying AI but are actively exploring possibilities. Despite this cautious start, TTOs see significant potential for AI to support patent and prior art analysis, streamline contract checks, improve partner matching and strengthen communication with stakeholders.

At the same time, respondents highlighted important challenges. Chief among these is the lack of expertise and funding to experiment with AI, concerns about data protection and intellectual property leakage, and limited access to trusted tools based in Europe and tailored to TTO needs. Ethical concerns are widely shared, particularly regarding bias, explainability and accountability in automated processes.

To overcome these barriers, TTOs identified several priority needs: training to build AI literacy, access to reliable tools and platforms, opportunities to exchange experiences with peers, and funding to support pilots and capacity building. Some also called for shared infrastructures such as regulatory sandboxes to enable safe experimentation across institutions.

Discussions among Members and partners confirmed these findings and added valuable case examples. Experiences from Paris, Vienna and elsewhere illustrate both the promise and pitfalls of AI adoption in TTOs. Across the board, participants agreed that AI can enhance workflows and expand opportunities for knowledge valorisation, but it must be embedded responsibly, with safeguards for trust and transparency.

Taken together, the survey and discussions suggest a sector in transition: cautious but curious, motivated by opportunities, yet acutely aware of the risks. The next step is to ensure that TTOs are supported to experiment safely, learn collectively and contribute to shaping responsible AI adoption in research and innovation.

# Recommendations at a glance\*

\*Full recommendations available at the end of this report

## 1- Universities and TTOs

Use AI as decision support, protect confidential data (including personal data where applicable), focus on low-risk/high-value tasks, share resources, set clear terms with partners and invest in staff skills.

## 2- Funders and innovation agencies

Back evaluation of tools, fund secure deployments based in Europe, create regulatory sandboxes and support training and engineering capacity.

## 3- EU institutions and policymakers

Recognise TTOs in AI-for-science actions, clarify IP guidance, invest in shared infrastructures and strengthen communities of practice.



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Rooted in advanced engineering education and research, [CESAER](#) is an international association of leading specialised and comprehensive universities with a strong science and technology profile that advocate, learn from each other and inspire debates. Our [Members](#) champion excellence in higher education, training, research and innovation, contribute to knowledge societies for a sustainable future and deliver significant scientific, economic, social and societal impact.



## Introduction

AI is rapidly advancing as a general-purpose technology with the potential to reshape research, education and innovation. Its applications extend from supporting discovery at the frontier of knowledge to transforming how universities collaborate with industry and society. For universities of science and technology, this raises both opportunities and responsibilities: opportunities to accelerate innovation, and responsibilities to ensure that AI is deployed transparently, ethically and for the benefit of all.

Within this landscape, TTOs play a critical role. As the interface between research and application, TTOs are uniquely positioned to test and implement AI tools in knowledge valorisation. Whether in patent analysis, contract management, in search for industry partners or supporting spinouts, they are on the front line of translating research into impact.

Recognising this, CESAER has identified 'key technologies and their ethical applications' as a priority in its Work Plan 2024-2025. To deepen understanding of AI adoption in TTOs, the CESAER Task Force Innovation conducted a survey among Members and convened discussions with experts, practitioners and policymakers. Together, these activities explored how AI is being used today, where it could deliver the greatest value, what risks it raises and what support is most urgently needed.

This report brings together the survey findings and insights from discussions to provide a comprehensive picture of the state of play. It highlights good practices, barriers to adoption, ethical concerns and practical needs, and distils them into overarching lessons for universities, policymakers and innovation stakeholders. Importantly, this is not intended as a formal policy position of CESAER, but a reflection of evidence and perspectives gathered across its community. To learn more about CESAER's formal position, please refer to [Strengthening Europe's position in artificial intelligence through science, technology and education](#) (30 June 2025).

## European policy context

Artificial intelligence has become a central priority for the European Union. Following the adoption of the AI Act, the European Commission is now preparing targeted measures to guide how AI can be applied responsibly in research, education and innovation. A key element of this agenda is the AI in Science Strategy, which aims to accelerate scientific progress while embedding safeguards for trust, transparency and accountability.

In parallel, the Commission continues to advance its knowledge valorisation agenda, recognising that the effective translation of research into societal and economic benefit is critical to Europe's competitiveness, sustainability and resilience. AI is seen as a potential enabler of these goals, offering new tools for prior art searches, patent analytics, partner matchmaking and university-industry collaboration.

These developments intersect directly with the findings presented in this report. The survey of TTOs shows that experimentation with AI is already under way, but also that challenges relating to expertise, resources and ethics and compliance with legal frameworks are significant. In particular, practitioners highlighted the importance of aligning AI use with European legislation such as the AI Act and GDPR. The perspectives of practitioners therefore provide valuable, practice-based input to EU policymaking on AI and knowledge valorisation.

CESAER has consistently underlined the importance of responsible approaches to emerging [key technologies](#). Our [position paper](#) 'Strengthening Europe's position in artificial intelligence through science, technology and education' (June 2025) called for policies that foster innovation while ensuring accountability and fairness. The insights in this report complement that work by focusing on the application of AI in knowledge valorisation, offering evidence of how TTOs are navigating opportunities and risks in practice.

## Survey findings

To establish an evidence base for the subsequent workshop and report, the CESAER Task Force Innovation conducted a survey 'AI adoption and ethical practices in TTOs'. TTOs from twelve universities across the CESAER membership participated, providing valuable insights into the current state of play, perceived opportunities, barriers, and support needs.

### Key observations

- Adoption is exploratory and uneven. Most TTOs are only beginning to use AI. Where tools are used, they are often general-purpose (for example large language models) rather than TTO-specific platforms. Early use cases include prior art search, document drafting and partner matching.
- Few bespoke or in-house solutions. Respondents reported limited access to in-house AI for administrative or TTO workflows, indicating reliance on external or generic services.
- Rules and assurance are lagging. Most universities do not yet have specific guidance for AI use in administration or service departments such as TTOs, revealing a governance gap.
- Barriers cluster around skills, ethics, legal compliance, and fit-for-purpose tools. The most cited hurdles were a lack of expertise, ethical and legal concerns (including bias, transparency, IP, data protection and security), costs of implementation, and a perceived lack of relevant tools tailored to TTO workflows.
- Strong appetite for collaboration and capacity building. Respondents highlighted training for staff, funding opportunities and access to tools/platforms as the most pressing support needs and showed high interest in peer networking and shared frameworks.

### Current adoption status

The survey confirmed that most TTOs are still at an early stage of adoption. Out of twelve respondents:

- Five reported that they are already using AI tools in some capacity.
- Seven indicated that they are not yet using AI, although several are exploring possible applications.

This pattern suggests a sector that is cautiously experimenting, with a group of early adopters and another monitoring developments before investing further.

## Tools currently used

Among the TTOs that are experimenting with AI, the most frequently cited tools were:

- General-purpose large language models (LLMs), primarily used for drafting and summarising documents. These tools are often being piloted to support internal workflows such as contract generation, communications, and literature reviews.
- Patent analytics platforms incorporating AI functionalities.
- In-house prototypes, created to automate specific repetitive tasks.

These findings indicate that current AI use remains exploratory, often driven by individual staff initiatives rather than formal institutional strategies.

## Use cases with highest potential

Respondents identified several areas where they see strong potential for AI to enhance technology transfer:

- Patent and prior art analysis, identified as the single most promising application.
- Contract checks and compliance support, reducing the burden of routine due diligence.
- Partner matching and market mapping, strengthening connections with industry and start-ups.
- Communication and outreach, including preparing reports and materials.
- Support for start-ups and spin-outs, particularly in market intelligence and investment readiness.

These use cases highlight that TTOs view AI not only as a tool for efficiency but also as a means of reinforcing their strategic role in innovation ecosystems.

## Barriers to adoption

Respondents also highlighted significant barriers to scaling AI in their operations. The most frequently cited were:

- Lack of expertise to assess and implement AI solutions.
- Concerns about data protection and confidentiality, especially around intellectual property.
- High costs of implementation, given limited budgets for experimentation.
- Limited availability of trusted tools, with a particular need for EU-based alternatives tailored to TTO needs.

Together, these barriers underscore that capacity, trust and resources remain the main obstacles to adoption.

## Ethical concerns

Respondents were also asked to assess the significance of ethical concerns in their consideration of AI adoption. A large majority rated these concerns as moderate to highly significant. Key issues mentioned include:

- Risks of bias and discrimination in algorithmic outputs.
- Lack of transparency and explainability, raising questions of accountability.
- Potential intellectual property leakage when using third-party platforms.

While the survey responses did not always clearly distinguish between ethical and legal concerns, both were reflected in the workshop discussions—particularly in relation to compliance with data protection (e.g. GDPR) and alignment with upcoming regulation (e.g. AI Act). These concerns reflect a shared recognition that AI in TTOs must be implemented carefully, with trust, responsibility, and legal compliance as guiding principles.

## Support and resources needed

When asked what forms of support would be most helpful, respondents prioritised:

- Training for staff to develop AI literacy (10 mentions).
- Access to reliable tools and platforms (10 mentions).
- Networking with peers to exchange practices (9 mentions).
- Funding opportunities to support experimentation and capacity building (9 mentions).

One respondent also suggested that shared infrastructures, such as EU-level regulatory sandboxes, could help institutions test tools under safe conditions.

## Key takeaway

The survey paints a picture of a community that is curious and cautiously exploring AI, but still in the early stages of adoption. While there is recognition of the potential for AI to enhance efficiency and impact in technology transfer, barriers related to expertise, trust and resources are holding back progress. Ethical concerns are widely shared, reinforcing the need for a careful and responsible approach.

## Workshop insights and case studies

On 18 April 2025, the Task Force Innovation hosted ‘The future of tech transfer: AI innovation pathways’ at Institut Polytechnique de Paris (France), bringing together TTO practitioners, AI experts, researchers and policy officers. Discussions among Members and partners offered a grounded picture of how AI is being explored within TTOs. The exchanges confirmed tangible opportunities, revealed recurrent risks and pointed to practical steps that can help TTOs adopt AI responsibly.

## Where AI adds value today

- **Making work faster.** AI can save time on repetitive tasks such as checking documents, preparing summaries or organising meeting notes.
- **Searching and connecting.** New tools can scan large sets of patents or publications and help identify possible partners more efficiently.
- **Unlocking value.** By using natural-language search, TTOs can better spot opportunities in their existing intellectual property portfolios.

## Limits and risks

- **Accuracy problems.** Many tools still make mistakes or produce results that look convincing but are wrong. This is a serious concern for sensitive tasks like patent searches and underlines the need to carefully and manually check outputs from AI tools.
- **Data protection.** Entering invention disclosures or confidential information into external systems creates risks of intellectual property leakage and data protection violations.
- **Lack of transparency.** Users often do not know how a tool generated its answer, making it difficult to check and trust the result.

## Ethical considerations

- **Trust and transparency.** AI must be explainable, so that TTO staff understand how a result was reached. TTOs need to trace how an output was produced and on what basis. Retrieval-augmented approaches and model cards were highlighted as practical enablers of explainability.
- **Bias.** There is a risk that built-in bias influences decisions on patents, licensing or spinouts. When AI supports assessments that influence protection, licensing or spin-out decisions, safeguards are required to mitigate bias and ensure fair treatment.
- **Accountability.** Clear ownership of decisions must be maintained. AI should inform and support professional judgement, not replace it.

## Operating model implications for TTOs

- **‘Human-in-the-loop’ by design.** Decision points, approval steps and documentation should be built into each AI-assisted workflow.
- **Validated patterns, not ad-hoc use.** Adoption works best when TTOs formalise tested patterns (for example prompts, checklists, acceptance criteria) instead of relying on one-off experiments.
- **Segmentation of use cases.** Low-risk, high-volume activities (for example drafting support, initial search triage) are suitable entry points; high-stakes tasks (for example freedom-to-operate analysis, valuation) require stricter controls.

## Data and IP governance foundations

- **Confidentiality rules.** Clear do’s and don’ts on what may be processed by external services; preference for private, institution-controlled deployments where feasible.
- **Provenance and logging.** Record-keeping of inputs, model versions and outputs to support reproducibility, audits and dispute resolution.
- **Third-party arrangements.** Contract clauses for vendors and attorneys covering acceptable AI use, data residency, non-training on customer data, audit rights and liability.

## Tooling landscape and procurement criteria

- **Fit for purpose.** General-purpose models can assist drafting and exploration, but TTO-specific tasks (for example prior art search, clause analysis) require domain tuning and rigorous evaluation.
- **Assurance over features.** Data control, access management, audit trails and update transparency matter as much as raw model capability.
- **Preference for EU-aligned options.** Where possible, institutions favour providers based in Europe or private deployments that meet European data protection expectations.

## Collaboration and shared infrastructure

- **Community evaluation.** Shared test sets, red-teaming protocols and comparative reviews are valuable, but they should follow minimum agreed standards to ensure that results are meaningful and comparable across tools and models.
- **Regulatory sandboxes.** Time-bound pilots in real workflows, with proportionate oversight, can generate publishable evidence on effectiveness and safety.
- **Reusable assets.** Common playbooks, prompt libraries, governance templates and training materials prevent duplication and raise the baseline across TTOs.

## Skills and culture

- **Targeted upskilling.** Practical training in safe use, validation methods, prompt discipline and basic data governance is a near-term priority.
- **Dedicated roles.** AI experts within TTOs, connected to institutional data or engineering teams, can harden workflows and curate shared assets.
- **Augmentation mindset.** AI should augment professional expertise, not displace it.

## Measurement and evaluation

- **Evidence over anecdotes.** Pilots should define clear success criteria (time saved, error rates, recall/precision in search, user satisfaction) and publish methods and results where possible.
- **Continuous improvement.** Feedback loops from users to tool owners (internal or external) are essential to correct failure modes and reduce operational risk.

## Lessons learned

- **Start small, standardise quickly.** Begin with low-risk, high-volume tasks and formalise successful patterns.
- **Build trust deliberately.** Prioritise explainability, validation and secure deployments, document decisions.
- **Protect sensitive inputs.** Invention disclosures, draft patent claims and other confidential material should not be entered into external AI tools unless there are strong security measures and explicit approval in place.
- **Invest in people and shared assets.** Skills, playbooks and community evaluations are as important as the tools themselves.
- **Align with the European policy direction.** Evidence from practice should inform evolving guidance on AI in science and knowledge valorisation.

## What is missing and what is needed

The survey and discussions made clear that while AI is beginning to enter TTO practice, there are important gaps that need to be addressed for responsible and effective adoption.

### Clearer guidance and standards

Many TTOs are currently experimenting with tools in an ad hoc way but are missing structured guidance on how to integrate AI responsibly into technology transfer processes. Two distinct needs emerged: practical guidance for implementation at the institutional level, and shared standards that align with regulatory frameworks such as the AI Act and GDPR. These standards would help establish legal clarity and consistency, while guidance would support day-to-day decision-making on the use and governance of AI tools.

### Trusted and tailored tools

Current AI platforms often fall short for specialised TTO tasks. Tools designed for general use cannot always handle the complexity of patent searches, licensing agreements or due diligence. There is a need for reliable, domain-specific solutions, preferably developed within Europe and aligned with European data protection and ethical standards.

## Skills and capacity building

The demand for training is evident. Staff need to understand not only how to use AI tools, but also their limits, risks and governance requirements. However, AI adoption is not just a technical challenge, it reshapes the nature of work in TTOs. New competences will be required as roles evolve, workflows are reconfigured, and decision-making becomes increasingly supported by automation. Continuous professional development in AI literacy, ethics and responsible use will be crucial to ensure TTOs can adapt, evaluate tools effectively, and retain human oversight.

## Shared infrastructures and collaboration

No single office has the capacity to test and validate all AI tools alone. Joint infrastructures—such as regulatory sandboxes or shared evaluation frameworks—would allow TTOs to learn collectively, reduce duplication and accelerate safe adoption. While TTOs often operate in competitive environments, there is broad recognition that collaboration in non-competitive areas, such as tool validation and regulatory alignment, can benefit the entire sector.

## Stronger evidence base

Most current insights are based on pilots and anecdotal experience. To move forward, more structured evidence is needed on what works, what fails and under what conditions. This includes comparative testing of tools, cost-benefit analysis and documentation of impacts on efficiency and quality.

## Recommendations

### For universities and TTOs

- Prioritise low-risk, high-value applications. Early adoption should focus on tasks such as prior art searches, standard clause analysis, meeting summaries, partner mapping and draft communications — always validated by staff.
- Adopt a ‘human-in-the-loop’ approach. AI should be treated as a support tool, not a replacement for professional judgement. Workflows should maintain meaningful human oversight, with clearly defined points for validation and accountability. The goal is to enhance trust and transparency without overburdening staff with unnecessary formalities.
- Protect confidentiality and observe data protection regulations. Confidential or patentable information should not be entered into external AI services without explicit safeguards and approval. Deployments based in Europe with clear data-use terms are preferable.
- Build and share resources. TTOs can contribute to and benefit from shared community resources such as playbooks, prompt libraries, validation sets and comparative evaluations. Pooling resources across Members will reduce duplication and improve quality.
- Set expectations with partners. Engagement terms with patent attorneys, consultants and vendors should specify acceptable AI use, data provenance, confidentiality requirements, audit trails and liability.
- Appoint AI champions within TTOs, connect them with institutional data and engineering teams, and provide continuous professional development rooted in real TTO tasks. In parallel, be ready to redefine the core purpose of TTOs—from often transactional functions to more personalised, strategic engagement with researchers and partners, enabled by AI.

## For funders and innovation agencies

- Create regulatory sandboxes. Develop test environments where TTOs can safely experiment with AI for high-impact workflows, generating evidence on safety, effectiveness and governance.
- Support evaluation and assurance. Fund shared test sets, peer reviews and open evaluations of AI tools relevant to technology transfer, ensuring results and methods are published.
- Enable secure deployments. Provide funding pathways for private or AI deployments based in Europe, including shared instances for consortia, with strong assurances on data access, security and logging.
- Strengthen skills. Fund practical training for TTO professionals and adjacent roles (for example legal, data and engineering) and incentivise cluster-level engineering support that TTOs can access.

## For EU institutions and policymakers

- Invest in shared infrastructures. Align funding for compute, data and AI tools with TTO use cases, supporting open, EU-based components (including open-source where appropriate) that can be audited and improved collectively.
- Recognise TTOs in AI-for-science initiatives. Knowledge valorisation and AI-for-science actions should explicitly include TTO needs, such as validated tools, secure deployments, evaluation resources and skills.
- Provide clear IP guidance. Clarify how research exemptions and intellectual property rules apply to AI use in technology transfer, including safe-use patterns for confidential inputs, prior art corpora and generated outputs.
- Strengthen communities of practice. Use the Knowledge Valorisation Platform to convene exchanges focused on AI in TTOs, share good practices and co-develop templates and guidance for widespread adoption.

## Conclusion

AI is already beginning to reshape the work of TTOs. The survey results and discussions confirm that the technology holds significant promise to accelerate processes, open new opportunities for valorisation and strengthen connections between research and industry. At the same time, accuracy, transparency, confidentiality and ethics remain key concerns.

What is clear is that TTOs cannot address these challenges in isolation. Shared guidance, trusted tools, stronger evidence and investment in skills will be essential. Collaboration across institutions and alignment with European initiatives will help ensure that adoption of AI strengthens trust in the research and innovation system rather than undermining it.

This report does not present fixed positions, but reflects lessons learned from Members and partners. Its findings underline the need for responsible and collective approaches to AI adoption in technology transfer, and aim to inform universities, policymakers and funders as they shape the next steps.

## Appendix

- [Survey questions \(PDF\)](#)
- [Summary of survey results \(PDF\)](#)

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