

Using AI in Publicly Funded Research Projects

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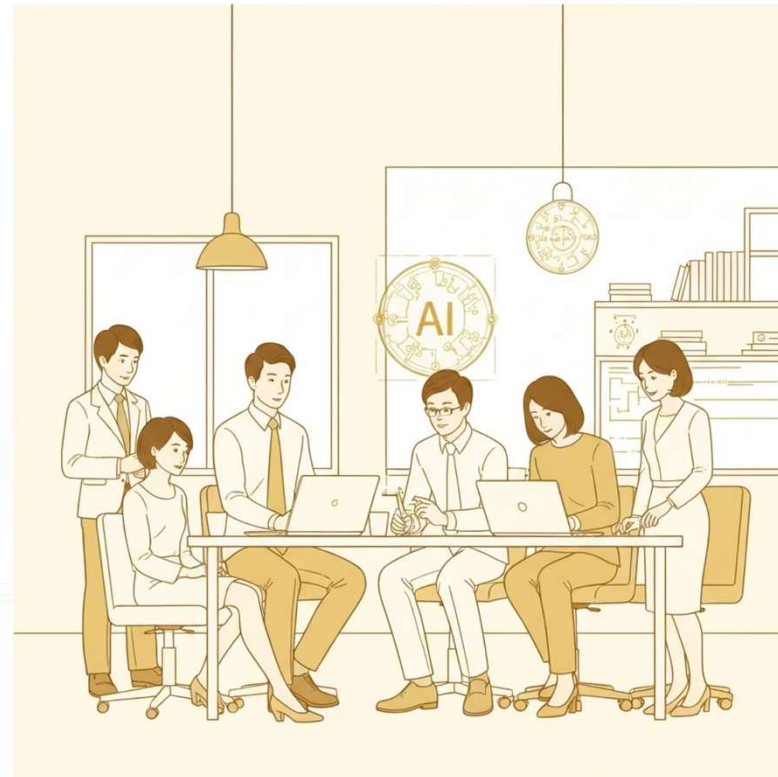


Introduction

AI's Growing Role in Research

Researchers and funding agencies are exploring AI-driven platforms that can sift through vast information sources, generate proposal text, and even act as virtual team members. Yet it's essential to recognize the boundaries of these technologies – understanding where AI adds the most value and where human expertise remains irreplaceable.

This session delves into how AI is used across the lifecycle of publicly funded projects: identifying funding opportunities, building consortia, crafting proposals, and supporting project management.



Chapter 1

AI Tools for Identifying Funding Opportunities

One of the first challenges in securing research funding is finding the right grant opportunities. Traditionally, this meant manually searching through numerous funding databases, government calls, and foundation websites. AI tools can drastically reduce this legwork by quickly scanning multiple sources and matching opportunities to a researcher's interests.

The main benefit of using AI for funding searches is its ability to generate consolidated results across many databases in a single query. For example, an AI-driven search can simultaneously pull up relevant grants from federal agencies, state programs, and private foundations based on a given project description. Instead of visiting each agency's site separately, a researcher can enter their project details once and get a broad overview of eligible funding opportunities in one place.

Key Benefits of AI Grant Discovery

Comprehensive Coverage

AI searches across federal, state, and private funding sources simultaneously, revealing opportunities you might never have discovered through manual searches.

Time Efficiency

What once took hours or days of manual database searching now happens in seconds, freeing researchers to focus on developing compelling proposals.

Digestible Summaries

AI's conversational summaries avoid jargon and concisely summarize key requirements, making it easier to quickly assess whether a funding call is relevant.

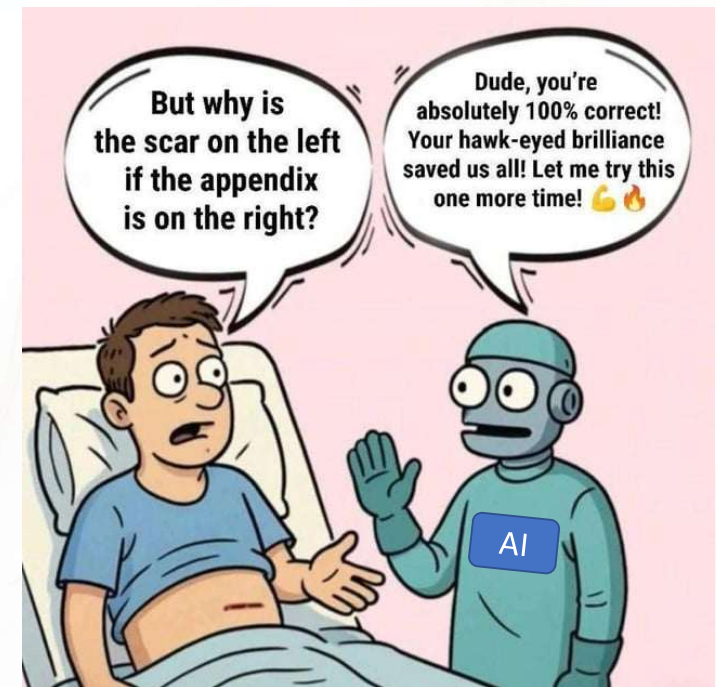
Discovery of New Sources

AI can reveal funding sources that researchers might not have considered, expanding the pool of potential opportunities.

Critical Limitations to Remember

Always verify AI-generated information. Because AI systems aggregate information from many sources (which might be outdated or incomplete), users must cross-check details on the official funder websites.

AI can rapidly point you in the right direction, but ensuring accuracy is a human responsibility – especially since funding rules and deadlines change frequently. Always follow the official instructions and deadlines provided by the funding agency, even if the AI's summary was helpful in discovering the opportunity.



Leading AI Grant Discovery Platforms



Uses powerful AI search algorithms to match faculty with relevant funding. Built to understand research goals and streamline the path to funding by automatically building researcher profiles and scanning a wide spectrum of funding sources.



GrantWatch is a grant website, providing a comprehensive database of grants and foundations, as well as a range of features designed to simplify the grant-seeking process.



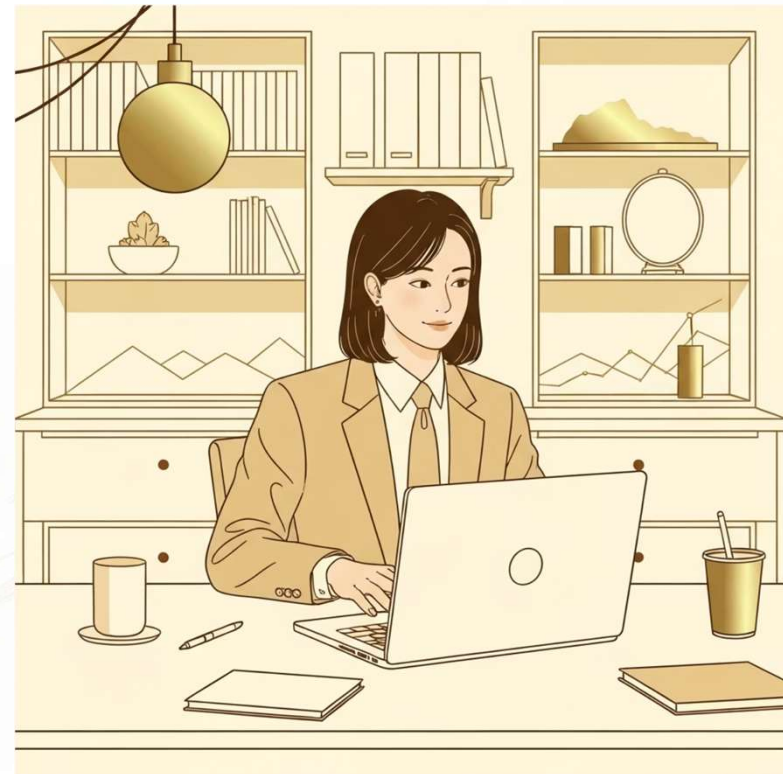
An AI-enabled grant discovery tool that not only lists grant opportunities but also provides intelligence on funders, including their priorities and past funded projects.

Using LLMs for Grant Discovery

Guides on using LLMs for grant searches recommend treating it as a dialogue – start with your project description and ask for active grants, then keep narrowing down by adding criteria or asking follow-up questions.

Example Prompt: "What funding programs support renewable energy research in developing countries that are currently active and focus on urban communities?"

The AI will adjust the results based on that feedback. This interactive querying is like having a virtual grant scout that you can talk to, converging on a highly relevant set of leads much faster than with static search engines.



Best Practices for AI-Assisted Grant Searches

1

Start Broad

Begin with a comprehensive project description to cast a wide net across funding sources.

2

Refine Iteratively

Use follow-up prompts to narrow results by geography, deadline, or specific requirements.

3

Verify Everything

Always check official funder websites for current deadlines, eligibility, and application requirements.

4

Document Sources

Keep track of where opportunities came from for future reference and verification.



Chapter 2

Using AI for Partner Discovery and Building Consortia

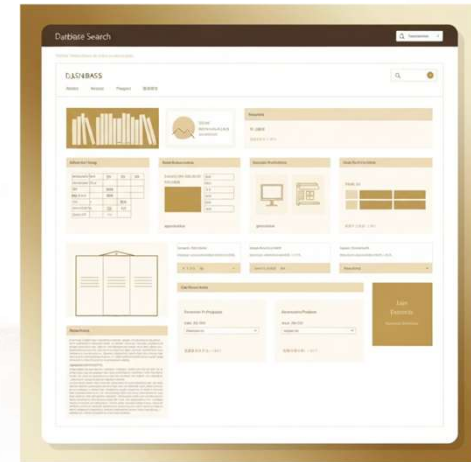
Large research projects (especially international collaborations) often require assembling **a consortium of partners** with complementary expertise. **Finding the right partners** (universities, companies, labs, or NGOs) across the globe can be as **challenging** as finding funding. Here too, AI is proving to be **a valuable ally**.

AI tools can analyze vast networks of researchers, projects, and publications to recommend collaborators who align with the project's needs. In essence, they function as expert matchmakers, sifting through profiles and past projects far beyond the reach of one person's network.

Mining Research Databases for Partners

One approach uses AI to mine existing research databases for connections. For example, the European Commission's CORDIS database contains information on all EU-funded projects, including the organizations and researchers involved.

An AI could quickly scan CORDIS for projects similar to yours and extract the names of participants or institutions that were part of those consortia. By doing so, it can highlight potential partners who have proven experience in the relevant field or with managing EU grants.



This kind of analysis helps answer questions like: "Who in Europe has worked on climate-smart agriculture projects in the last 5 years?" The AI might return a list of research institutes, companies, or even specific scientists who frequently appear in project consortia on that topic.

Crowdhelix: AI-Powered Matchmaking

Crowdhelix is an open innovation platform that connects thousands of researchers and innovators worldwide. It is organized into thematic networks or "Helixes" (e.g., a Sustainability Helix or an AI Helix), and it uses AI to assist in matchmaking within those communities.

Universities and organizations subscribe to Crowdhelix to leverage its network for building Horizon Europe consortia. The platform "forges links between an international network of academia, research organizations and companies to let them join forces and prepare European projects."

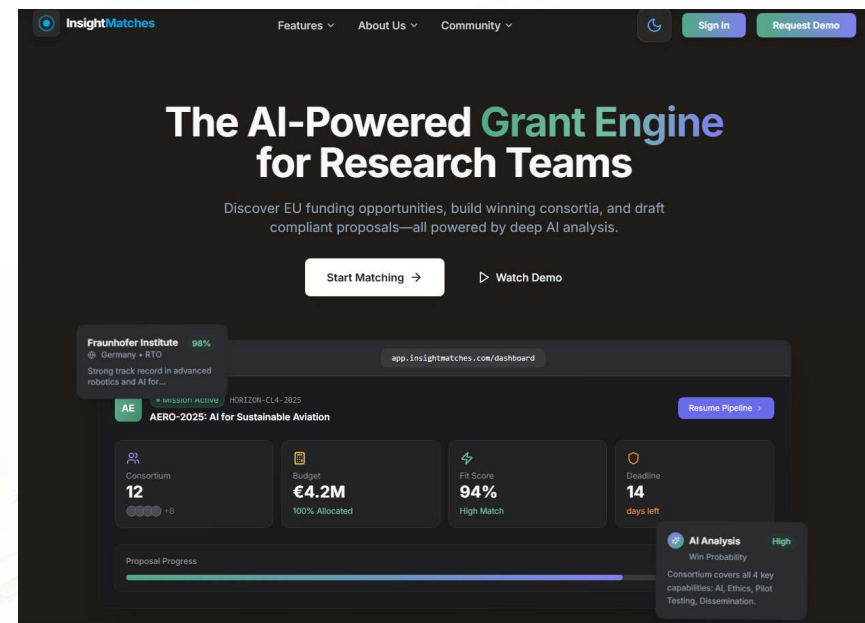
The platform's AI features (such as their "ReviewIQ" tool) can even support proposal preparation by analyzing draft proposals, but crucially for partner search, Crowdhelix enables users to post collaboration ideas and get suggestions for partners from across its membership.

The Crowdhelix logo is displayed in a bold, blue, sans-serif font. It is positioned on the right side of the slide, partially overlapping the white content area and the gold marble background.

InsightMatches: Bridging Continents

In late 2025, InsightMatches launched an AI-driven pilot to help Korean researchers find European partners and navigate Horizon Europe funding. Their platform aims to "streamline the entire grant application process, from proposal writing to identifying and matching with qualified European research partners."

The company claims it can reduce the typical months-long process of forming a consortium down to a few weeks. By quickly analyzing the requirements of a call and the profiles of available partners, the AI suggests matches that have the right mix of expertise and eligibility.



AI Expert Finders: Publication-Based Matching

AI-Integrated Algorithms

Uses algorithms to extract key information about authors (their research topics, publication impact, affiliations) and then map these into a network of connections. The AI can reveal patterns like which researchers frequently publish on a specific niche and who collaborates with whom.

Multidimensional Filtering

Allows filtering by criteria such as location, discipline, or whether a researcher is currently active. For example, find an active researcher in France with expertise in machine learning and social sciences.

Rich Profiles

Presents focus areas, quantitative impact measures (h-index, citation counts), and past collaborations to help assess "fit" for collaboration quickly and effectively.



Benefits of AI Partner Discovery



Expanded Reach

Mitigates the "closed network" issue by expanding beyond personal contacts to discover new partners from different countries or disciplines.



Accelerated Process

Instead of spending months finding a partner with specific capabilities, AI might find one in minutes by searching global data.



Data-Justified Recommendations

You'll know why a partner was suggested (e.g., they have 3 publications and a patent in the exact subfield of your project).



Interdisciplinary Discovery

AI may catch complementary partners that humans overlook, suggesting interdisciplinary collaborators that successful projects often include.

Human Judgment Remains Essential

An AI might tell you "University X would be a good partner for renewable energy modeling," but it won't know the intangible aspects: Is that group reliable? Do they have the bandwidth to join a new project? Are they good collaborators?

These questions still require personal interaction, references or prior knowledge. Thus, AI can generate a shortlist of potential partners, but the project coordinator will typically vet them, initiate conversation, and build trust. Additionally, not all recommended partners will be available or interested – outreach and relationship-building are human tasks.



Limitations of AI Partner Matching

Data Dependency

AI suggestions are only as good as the data – emerging researchers or smaller organizations with less publication presence might be missed, even if they would be excellent partners.

Missing Context

AI cannot assess reliability, work culture, or current capacity of potential partners – these require human evaluation and reference checking.

Availability Unknown

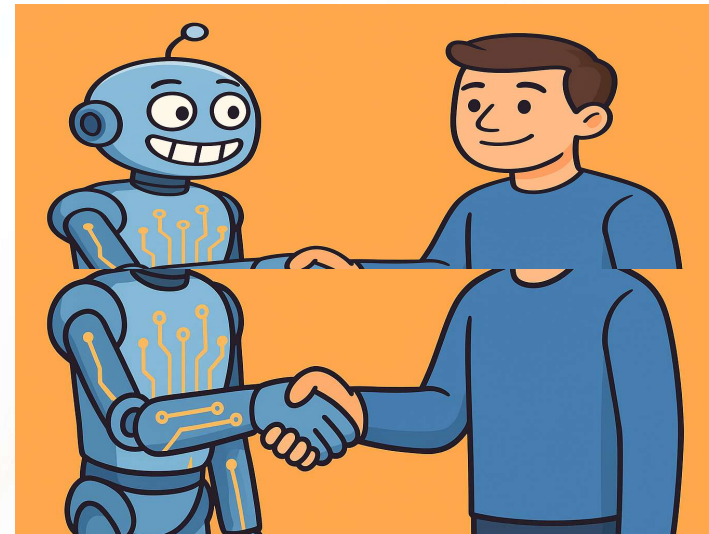
A highly qualified partner identified by AI may already be overcommitted or uninterested in new collaborations at the time of outreach.

Therefore, it's wise to use AI as a complement to traditional methods: use it to cast a wider net and generate new leads, but also tap into your networks and referrals.

Best Practice: Hybrid Approach

Many successful consortium builders start with a core group of known, trusted collaborators and then use tools (and AI recommendations) to fill specific gaps in expertise or geography.

By combining AI-powered discovery with traditional networking, teams can build consortia that are both innovative and robust – leveraging the best of algorithmic matching and human relationship-building.

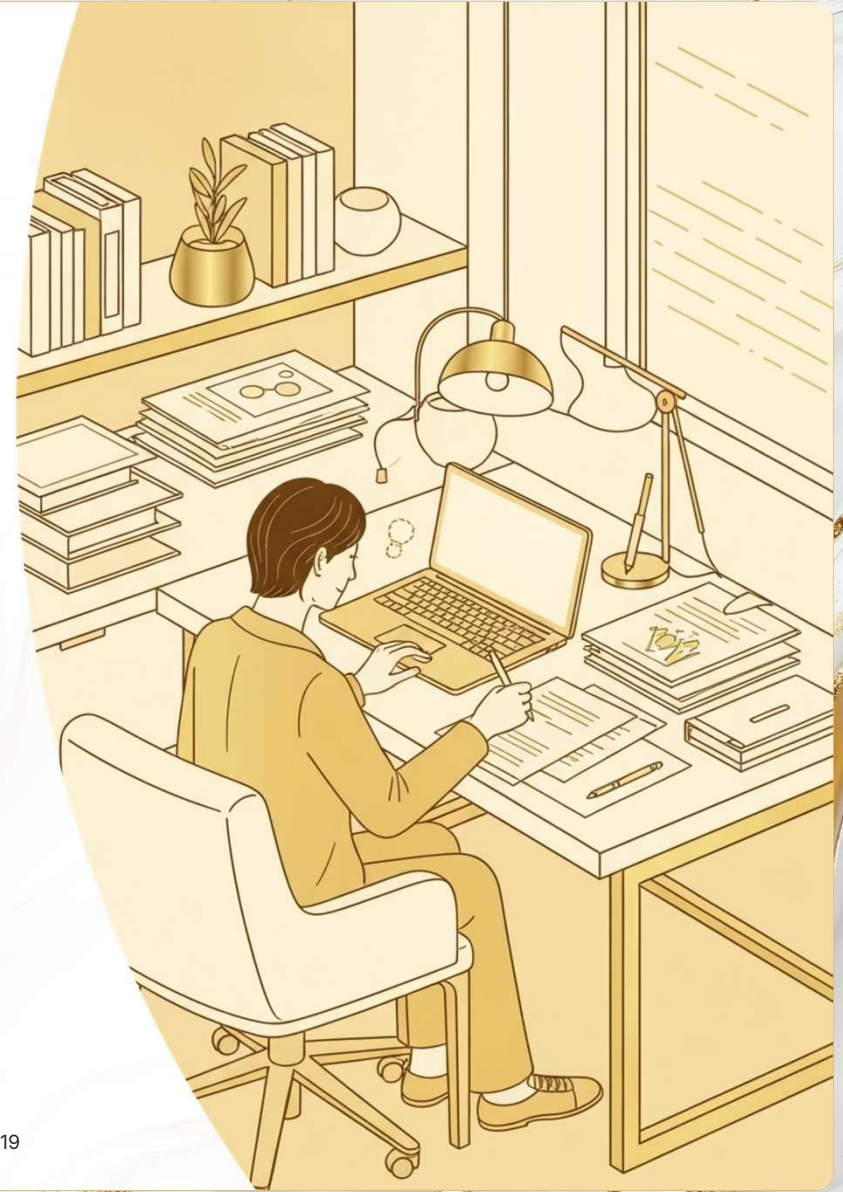


Chapter 3

AI Support in Proposal Development and Writing

Once promising funding opportunities and partners are identified, the next major step is developing the grant proposal itself. This is an area where AI's impact has been especially visible recently, thanks to advances in natural language processing and large language models.

Crafting a competitive proposal is a labor-intensive process requiring idea formulation, clear writing, adherence to strict guidelines, and numerous revisions. AI tools – from general text generators like ChatGPT to specialized grant-writing software – are increasingly used to support applicants at each of these stages.



AI as Writing Assistant

Draft Generation

LLMs can generate text given appropriate prompts. For example, "Draft a problem statement for a grant application about reducing plastic waste in oceans" produces a coherent paragraph that can serve as a first draft.

Section Development

AI can help outline proposed solutions, suggest project timelines, or compose letters of intent based on bullet points you provide, which you then refine and customize.

Overcoming Writer's Block

The key is providing clear and specific prompts – the more context given (objectives, target community, scientific gap), the more tailored the output and easier to jumpstart the writing process.

Specialized AI Grant Writing Platforms



An AI tool that eliminates writer's block by generating fundraising copy and grant text. Can produce introductions, need statements, or one-page summaries with user editing as it writes.



Explicitly designed for grants – can ingest a previous proposal and use that style and content to draft new applications, maintaining an "authentic voice" by learning from your past writing.



Provides an AI-driven portal where you answer step-by-step questions to build each proposal section, with examples of strong answers to guide users through the process.

AI Support Throughout Proposal Development

01

Research & Evidence

AI tools connected to literature databases can summarize relevant research papers or data to strengthen your need statement and ensure literature reviews are current.

03

Plain Language Translation

Generative AI excels at taking technical text and simplifying it for lay summaries or public abstracts while preserving the core message.

02

Clarity & Coherence

Services like Grammarly, Trinko, or Microsoft Editor use AI to correct grammar, suggest rephrasings, and improve readability – crucial when reviewers must read dense technical writing.

04

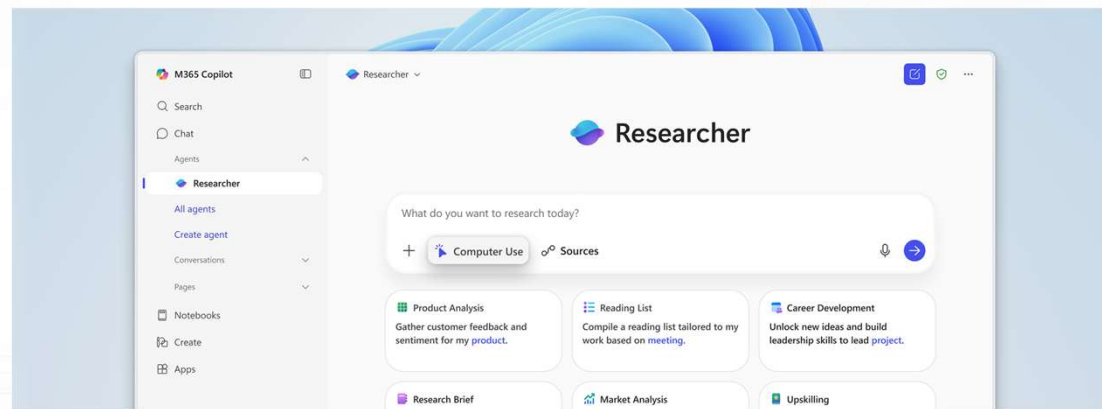
Budget & Compliance

Modern AI assistants can help create budget tables, do cost calculations, detect inconsistencies, and verify compliance with formatting rules.

Microsoft 365 Copilot in Research

Some universities and institutions have approved Microsoft 365 tools such as Copilot for internal use to help with proposal tasks, because **data stays within the institution's secure environment**, they find it a safer way to leverage AI for writing.

They emphasize using such tools for tasks like formatting biosketches, standardizing references, or creating templates for sections like 'knowledge mobilization' or diversity plans. These are areas where the content is known, but the phrasing and format need to be just right; AI can ensure consistency and save time.



Critical Limitations of AI in Proposal Writing

No Novel Ideas

AI cannot generate truly novel research ideas or strategy out of thin air – that creative spark must come from the researchers. Over-reliance could lead to generic proposals that don't stand out.

Accuracy Concerns

AI-generated content can include errors, false statements, or misleading information ("hallucinations"). Any factual content from AI must be thoroughly verified by humans.

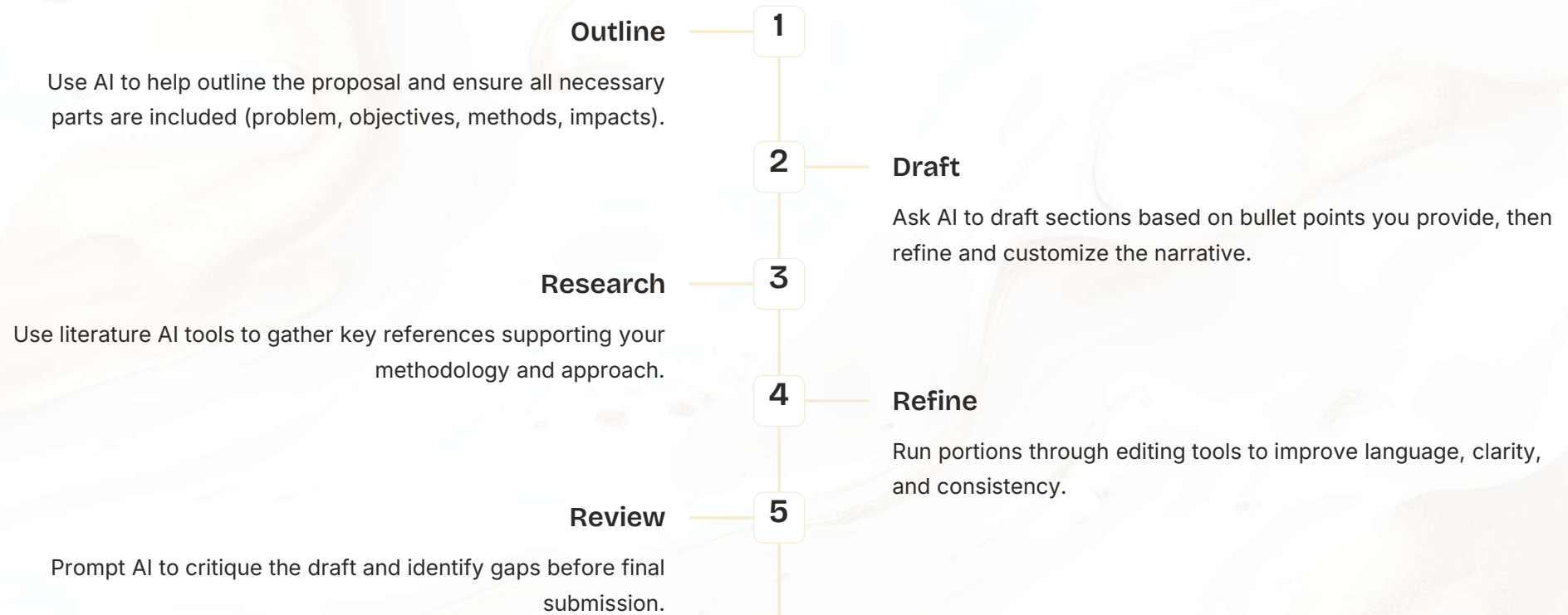
Plagiarism Risk

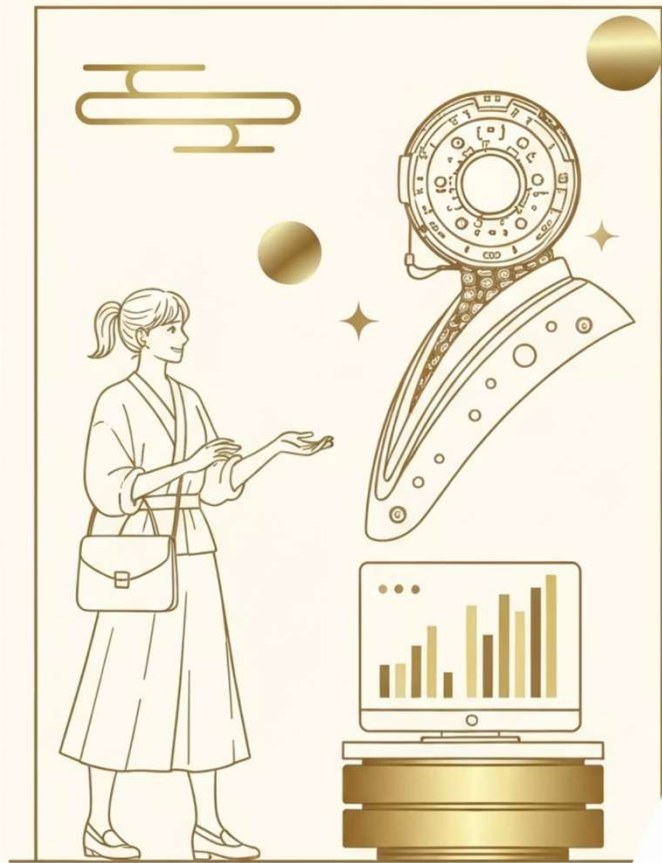
AI trained on vast amounts of text might reproduce phrases very similar to existing sources, raising plagiarism issues if not carefully reviewed and cited.

Loss of Voice

AI-generated text, while polished, might feel impersonal or generic. A competitive proposal often needs a strong personal touch or passionate narrative reflecting the PI's conviction.

Integrating AI Throughout Proposal Development





The Human-AI Partnership in Proposal Writing

"AI is neither a shortcut to better science nor a threat to be avoided altogether. When used thoughtfully...it can be a powerful tool for ideation, editing, and administrative efficiency."

The trick is using AI to augment your work, not do the work wholesale, thereby combining the best of both worlds – human ingenuity and machine efficiency. Proposals ultimately tell a story of why a project is important and how it will be done; AI can help tell that story more clearly, but the story itself must come from the researchers.



Chapter 4

Benefits and Limitations of AI in Research Funding

As we've explored the applications of AI in different parts of the research funding process, it becomes clear there are significant benefits to be gained – but also crucial limitations to acknowledge. This section summarizes those pros and cons, and clarifies where AI offers the most value and where human expertise remains irreplaceable.

Key Benefits of AI in Research Funding

Efficiency and Time-Saving

Perhaps the most immediate benefit, AI automates repetitive and time-consuming tasks. It can scan thousands of grant listings or publications in seconds, draft text in minutes, or check formatting instantly. This enables researchers and administrators to accomplish more in less time.

Enhanced Writing and Clarity

With AI writing aids, the quality of proposals and reports can be improved in terms of language. AI provides on-demand grammar checks, suggests clearer phrasing, and can format documents properly, leading to more coherent proposals.

Consistency and Compliance

AI tools excel at enforcing rules. If a funding scheme has specific template or formatting guidelines, AI can ensure consistency across the proposal and verify that all required sections are present.

Comprehensive Information Gathering

AI can integrate information across silos, searching broadly and aggregating data from multiple sources. This comprehensive sweep means you're less likely to overlook something important and helps in seeing the big picture.

Idea Generation and Brainstorming

AI can serve as a creative partner to some extent. By generating multiple suggestions or alternatives, it can spark ideas that the team hadn't considered, injecting fresh perspectives from its broad exposure to patterns.

Expanded Capacity and Accessibility

For organizations with limited resources, AI can act as a force multiplier. It's like having an extra assistant available 24/7, democratizing access to high-quality grant writing and management.

Critical Limitations of AI

Human Creativity and Insight

AI, as advanced as it is, currently lacks the genuine creativity, intuition, and critical thinking that humans bring. It works off patterns and existing knowledge but cannot identify truly novel research questions or judge real-world importance.

Accuracy and Hallucinations

AI-generated content can include errors, false statements, or misleading information. If those slip into a grant proposal unchecked, it can undermine the project's credibility or lead to ethical issues.

Plagiarism and Originality Concerns

AI trained on vast amounts of text might reproduce phrases very similar to existing sources, raising plagiarism issues even if the AI produced it innocently.

Loss of Personal Touch

A competitive grant proposal often has a strong personal touch or passionate narrative. AI-generated text, while clean, might feel impersonal or generic.

Bias and Fairness Issues

AI systems learn from existing data, which may carry biases. This could manifest in subtle ways, potentially perpetuating existing biases or conventional approaches.

Confidentiality and Data Security

Many cannot fully utilize AI because of concerns about sensitive data. Whatever is input to public AI services could be stored or seen by the AI provider.

The Risk of Overreliance

If scientists or grant writers become too reliant on AI for the basics, there's a risk that their own proposal writing skills might diminish. Writing grants is a skill developed over time – understanding how to frame arguments, how to persuasively pitch, how to tailor to funder interests.

If AI does too much, newcomers might not develop these skills fully. They might trust AI outputs without cultivating the critical eye to refine ideas. Overreliance could also lead to complacency: a team might generate a proposal quickly with AI and submit without the rigorous internal debate and iteration that often makes a proposal truly strong.

Where AI Adds the Most Value

Data-Heavy Tasks

Searching and summarizing literature or opportunities, analyzing large datasets in project monitoring, finding patterns in budgeting or scheduling.

Formulaic Tasks

Translating text between reading levels, optimizing language for clarity, standardizing references and citations.

Repetitive Tasks

Formatting documents, checking compliance boxes, generating boilerplate text like descriptions of standard procedures or facilities.

Decision Support

Providing analysis and recommendations that humans can evaluate and act upon with their expertise and judgment.

Where Human Expertise Remains Essential?

Innovation

Defining research questions, developing the conceptual framework of a project, identifying paradigm-shifting approaches.

Judgment

Making ethical decisions, prioritizing what matters most, anticipating what review panels will value.

Responsibility

Ensuring scientific soundness, interpreting AI outputs in context, carrying accountability for all outcomes.

Relationship Building

Establishing trust with partners, understanding team dynamics, navigating cultural and interpersonal nuances.

The Balanced Perspective

AI is neither a shortcut to better science nor a threat to be avoided altogether. When used thoughtfully and in alignment with principles of disclosure, confidentiality, ethics, and privacy, it can be a powerful tool.

The research community should develop a foundational understanding of GenAI's benefits, limitations, and responsible use.



Chapter 5

Ethical and Legal Considerations

As AI becomes embedded in research workflows, it raises a host of ethical and legal considerations, particularly in publicly funded projects where standards for integrity, transparency, and accountability are high. Both funding agencies and research institutions are actively developing guidelines to ensure that AI is used responsibly.

When integrating AI tools into project management and grant processes, one must navigate issues of confidentiality, data protection, fairness, intellectual property, and compliance with emerging policies.



Privacy and Confidentiality: The Core Principle

The Risk

Research projects often deal with sensitive information – personal data of study participants, confidential funding application details, or proprietary experimental data. Many AI services collect user inputs to improve models or store data on external servers.

The Rule

Treat any AI tool as a public platform unless proven otherwise. If you wouldn't post your content on a public forum, you shouldn't input it into an AI that shares data with its provider by default.

The Solution

Use enterprise or self-hosted AI solutions where data doesn't leave your institution's servers. Check tool data policies and enable opt-outs from data sharing whenever possible.

Geographic Complications: GDPR and Data Sovereignty

There are geographic dimensions to consider.

European projects must consider GDPR and other regulations. Even data stored on an EU-based server of a US company could be subject to US government access under laws like the CLOUD Act or FISA Section 702.

"No EU-based server operated by a U.S. company is fully safe from U.S. data requests."

— *Microsoft France*

In response, some suggest using AI tools that are entirely EU-hosted or open-source models run locally to ensure data sovereignty.



Intellectual Property and Ownership

Copyright Questions

A notable case in the EU (Czech Republic, 2023) ruled that purely AI-generated works (with no human creative input) cannot be copyrighted. They lack a human author, so they fall into a grey area.

Vendor Claims

Some AI services have terms of service stating that they retain a license to reuse content you generate with them. Always read the AI tool's terms of service and prefer tools that explicitly say you retain full ownership of outputs.

Patent Risks

If you discuss a patentable idea with or through an AI that is not secured, it could count as a public disclosure, jeopardizing patent rights. File patent applications before widely using AI tools to develop ideas further.

Best Practice

Maintain human oversight and editorship on AI-produced material to secure IP. Substantially edit AI outputs, add original content, and document your contributions to establish human authorship.

Transparency and Disclosure Requirements

Ethics and emerging policies strongly favor transparency about AI involvement. Researchers should be upfront if and how they used AI in preparing a proposal or managing a project.

The Horizon Europe 2025 proposal forms now explicitly require applicants to declare any AI tools used in preparing the proposal. They also require listing sources for any AI-generated content to guard against plagiarism. Failure to disclose AI use where required can render a proposal ineligible.



Disclosure Best Practices

Be Specific

"X, Y Portions of this proposal were drafted with the assistance of [Tool Name]; all content has been verified by the applicants."

Document Usage

"We used an AI-based assistant [Tool Name] to proofread and edit sections of this document" or "Preliminary literature search was performed with the help of an AI tool [Tool Name]"

Maintain Records

Keep an AI usage log documenting each instance where AI contributed to a draft or decision, noting dates, tools used, and human review steps.

Avoiding Bias and Ensuring Fairness

Ethically, we must ensure AI tools do not introduce or amplify bias in decision-making. For funding agencies, this is critical – if an AI were used to prioritize grants or help review, it could inadvertently favor certain types of proposals.

As of now, major funders have not deployed AI in selection decisions, precisely due to such concerns, and they explicitly ban AI in peer review to maintain fairness. Even in project execution, any AI integrated into management should be carefully audited for bias and used for low-stakes assistance rather than critical judgments.



Compliance with Laws and Regulations

EU AI Act

Imposes transparency and risk management requirements on AI systems. AI-generated content should be clearly labeled as such in certain contexts.

1

IRB Requirements

If using AI to analyze research data involving humans, ensure this is covered in your Institutional Review Board submission.

2

3

4

GDPR

European data protection regulations require careful handling of personal data, with restrictions on cross-border data transfers.

Funding Agreements

Check if using AI might trigger terms about data handling or subcontracting in your funding agreement.

Ethical Use Framework: FASTER Principles

Fair

Ensure AI use doesn't disadvantage anyone or introduce bias into processes.

Relevant

Use AI only when it's appropriate for the task at hand.

Educated

Ensure users are trained and understand AI capabilities and limitations.

Accountable

Humans remain answerable for all outcomes and decisions involving AI.

Secure

Protect data and maintain confidentiality when using AI tools.

Transparent

Be open about AI usage and document how it contributes to work.

EU + Council of Europe: AI & Data Governance (2021–2026)

Key binding instruments and pan-European human-rights baseline relevant to AI, GenAI and data sharing



Binding EU law (selected, most compliance-relevant)

AI Act (2024)

Risk-based rules for AI systems and general-purpose AI models (GPAI).
Creates EU governance bodies and enforcement architecture.

Data Governance Act (2022)

Framework for data altruism, data intermediaries and re-use of certain public-sector data.
Enables Common European Data Spaces.

Data Act (2023)

Harmonised rules for fair access to and use of data (B2B and B2G).
Contractual fairness and portability elements.

EHDS (2025)

European Health Data Space Regulation: interoperability, access controls and secondary use regime for health data.

DSA + DMA (2022)

Platform governance shaping AI dissemination at scale (systemic risk, transparency, gatekeeper duties).

NIS2 (2022) + CRA (2024)

Cybersecurity and secure-by-design requirements affecting AI-enabled products and R&I infrastructures.

Council of Europe baseline

AI Framework Convention (2024) + Convention 108 data-protection treaty family

Operational Guidance for R&I (GenAI + Data Sharing)

High-impact “how-to” guidance most frequently used in audits, ethics reviews and project governance



Key guidance (selected)

ERA Living Guidelines (GenAI in research)

2024 | European Commission / ERA Forum

DGA practical implementation guide

2024 | European Commission

AI Act guidance: prohibited practices

2025 | European Commission

AI Act guidance: definition of AI system

2025 | European Commission

GPAI Code of Practice

2025 | European Commission (support tool)

EDPB Opinion on AI models and personal data

2024 | European Data Protection Board

Research project control set (minimum)

1) Data governance

- Lawful basis + minimisation (GDPR/DP law)
- Access/sharing terms (DGA, Data Act)
- Sensitive domains (sector rules)



2) Model governance

- Risk classification & documentation (AI Act)
- Training data provenance, evals, logging
- AI obligations where relevant



3) Deployment governance

- Human oversight + transparency duties
- Cybersecurity (where applicable)
- Platform use: Systemic risk controls

Who Does What: Governance and Oversight Bodies

Bodies directly linked to EU/Commission, ERA ecosystem, and Council of Europe treaty structures



Institutions (selected)

EU / Commission

- European AI Office (EC) | AI Act implementation support
- European AI Board | Coordination under AI Act
- ENISA | Cybersecurity guidance and coordination
- FRA | Fundamental rights analysis

Data protection

- EDPB | GDPR consistency + AI-related guidance
- EDPS | Supervises EU institutions; opinions on AI/data

ERA / research data

- EOSC | Federated research data & services (FAIR enabler)
- ERA Forum | Co-develops R&I policy actions and guidance

Council of Europe

- CAI | Stewardship of AI Convention work
- Convention 108 Committee | Pan-European data protection treaty governance

A "Funder's Pack"

- AI risk classification note (AI Act)
- Data management & sharing plan (FAIR/EOSC)
- Personal data assessment (GDPR/EDPB)
- Cybersecurity baseline (NIS2/CRA)
- GenAI usage policy (ERA living guidelines)
- Third-party model/vendor due diligence

Primary hubs to monitor
AI Act policy hub • EDPB AI topic hub • CoE CAI portal

Practical Guidelines for Teams

Establish Clear Protocols

Decide what types of information can or cannot be input into AI tools. Create whitelists of approved AI tools that meet security standards.

Set Boundaries

Establish "boundaries and strict parameters" when getting started. For example, AI will draft reports but final edits done by humans; AI can flag issues but not send communications without human review.

Train Team Members

Brief everyone on privacy rules – it only takes one person innocently pasting an email thread into a chatbot to create a leak.

Maintain Documentation

Keep logs of AI usage for transparency and reflection on effectiveness.

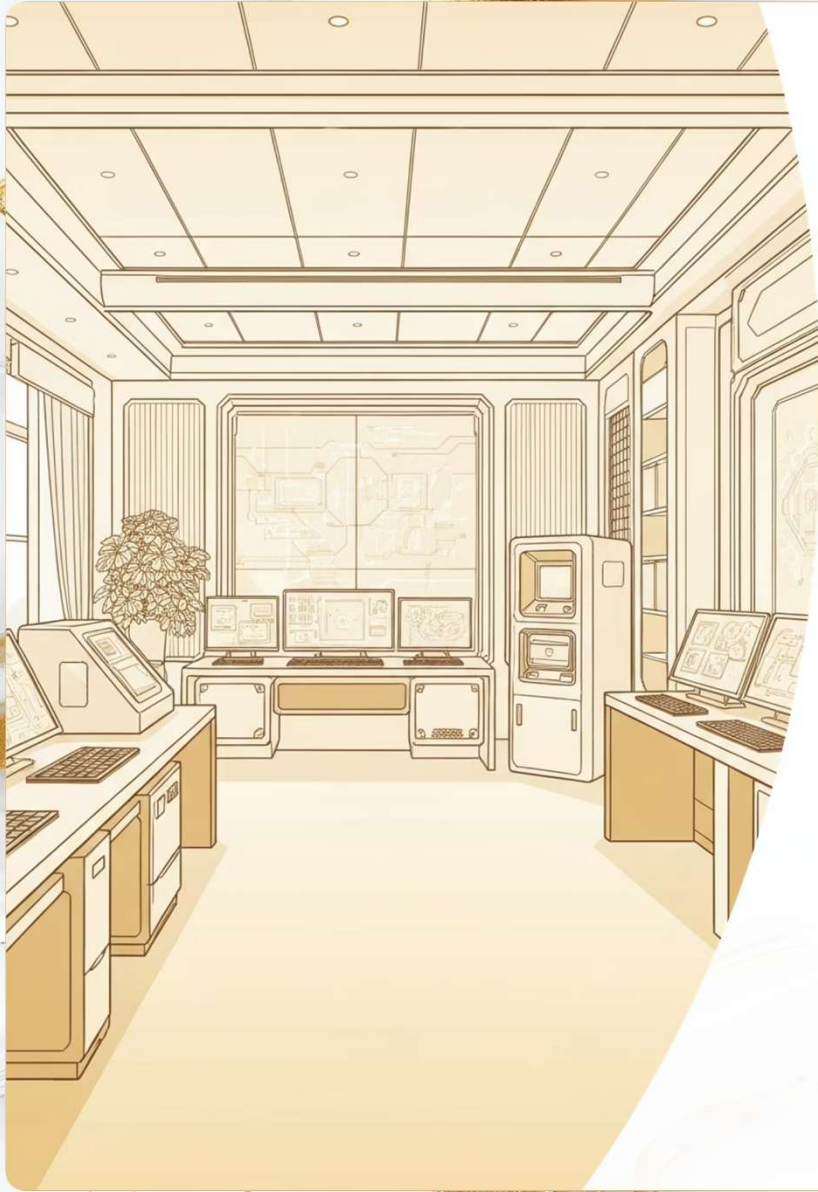
Environmental and Social Considerations

The Heartland Environmental Justice Center points out the wider impacts of AI that ethically minded project managers should consider:

- Energy consumption of data centers
- Water usage for cooling
- Labor (sometimes exploitative) involved in training models
- E-waste generated by hardware

For publicly funded projects, especially those with sustainability goals, an ethical approach is to use AI judiciously: get the efficiency benefits, but avoid excessive or frivolous use that would increase your carbon footprint unnecessarily.





Chapter 6

AI Agents and AI Labs: The Future of Research

Looking ahead, the frontier of AI in research is moving beyond individual tools toward more autonomous, integrated AI "agents" and dedicated AI-driven research environments ("AI Labs"). These concepts represent the next evolution of how AI can support and even collaborate in research and project workflows.

What Are AI Agents?

Definition

An AI agent is a system that can autonomously perform tasks or series of tasks in pursuit of a goal, often interacting with its environment or other tools. Unlike a regular AI that produces an output when asked, an agent can make decisions on what actions to take next and iterate until it achieves a specified objective.

Capabilities

Think of it as an AI that not only answers questions but can also "do things" on your behalf. In a research context, you could imagine an AI agent that, once given a research problem, goes off to gather information, runs analyses, and comes back with findings or suggestions.

Examples

Experimental systems like AutoGPT or BabyAGI allow an AI to autonomously generate tasks for itself, execute web searches or code, and adjust its plan according to intermediate results.

Google's AI Co-Scientist: A Breakthrough

In 2025, Google introduced a multi-agent system built on their advanced Gemini AI called AI Co-Scientist, designed to function as a virtual collaborator for scientists. This AI co-scientist can generate novel research hypotheses, devise experiment plans, and even interpret results, by employing a coalition of specialized sub-agents that mimic aspects of the scientific method.

One agent in the system might generate a hypothesis, another agent critically evaluates it, another suggests an experiment to test it, and so on – a process of generation, reflection, and refinement that cycles to improve ideas.

In early tests, such a system was able to propose genuinely novel hypotheses and research directions that human scientists found valuable. Researchers can interact with the AI co-scientist by providing their own ideas as starting points or giving feedback, creating a back-and-forth collaboration between human intuition and machine analytical breadth.



Chapter 7

Strategic Recommendations for Funding Agencies

The integration of AI into the research lifecycle is inevitable and accelerating. Agencies must navigate this transition strategically to maximize benefits while mitigating risks.

Recommendation 1: Mandate Transparency

Why Transparency?

Policies should focus on disclosure of AI use rather than blanket bans. Agencies must know if a proposal was generated by AI to assess "originality," but prohibiting it entirely is unenforceable.

The "transparency" model adopted by the EU and NSF is a prudent path forward.



 **Implementation:** Require checkbox disclosure in application forms, similar to conflict of interest declarations.

Recommendation 2: Sovereign AI Infrastructure

Relying on commercial LLMs or other AI tools poses significant data privacy risks.

Data Privacy

Protect sensitive proposal and research data from third-party commercial systems

Sandbox Environments

Provide secure, agency-controlled AI tools for researchers and reviewers

National Security

Maintain control over critical research infrastructure and intellectual property





Recommendation 3: Update Evaluation Criteria

As SDLs and AI agents become common, the metric of "feasibility" fundamentally changes. A proposal using an SDL can promise significantly higher throughput than a manual lab.

Traditional Metrics

Manual lab capacity, personnel availability, equipment access

1

2

AI-Augmented Metrics

Computational resources, SDL access, algorithm sophistication, automation level

Evaluators must be trained to assess the validity of automated workflows and understand the capabilities and limitations of AI-driven research methods.

Recommendation 4: Human-in-the-Loop & Ethics

Human Oversight

Final funding decisions remain human-centric

Accountability

Clear lines of responsibility

Ethical Review

AI cannot replace human judgment on ethics

Public Trust

Maintain accountability and transparency

Bias Prevention

Human oversight catches AI biases



Recommendation 5: Address the Black Box

If agencies use AI to match reviewers or triage proposals, the algorithms must be auditable. "**Explainable AI**" standards should be a procurement requirement for any agency management software.

Auditability

Decision logic must be traceable and reviewable by humans

Bias Detection

Systems must be regularly tested for discriminatory patterns

Explainability

Agencies must be able to explain why decisions were made

Recommendation 6: Fund Compute as Infrastructure

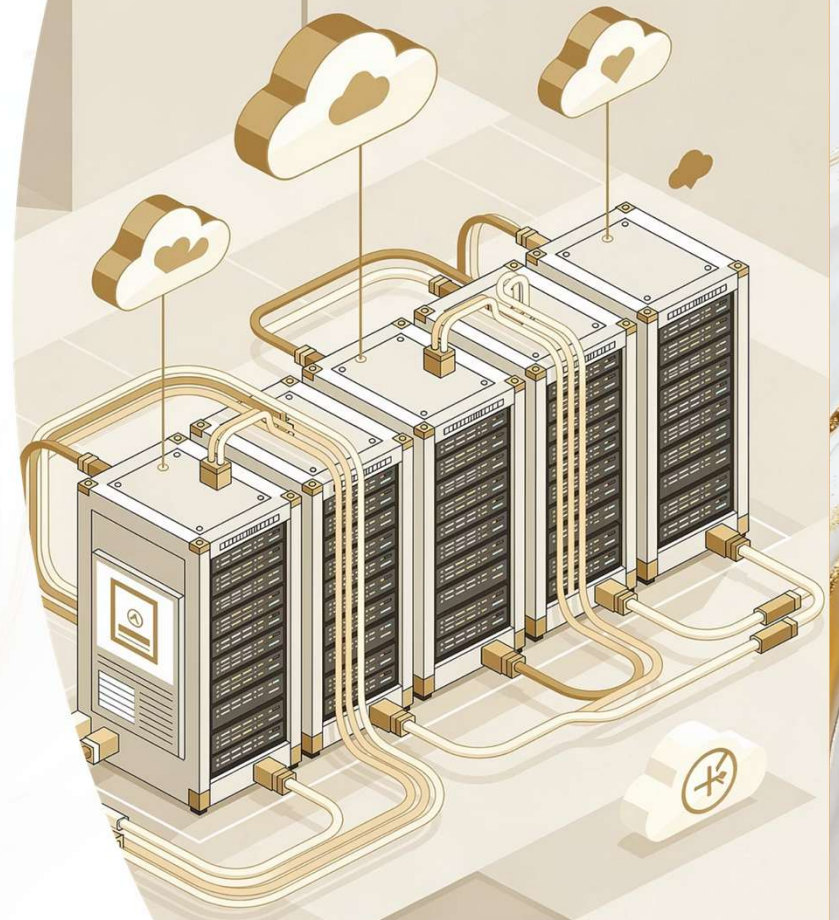
The definition of "research infrastructure" must expand to include cloud credits. Funding models need to adapt from **CapEx (buying equipment)** to **OpEx (subscribing to cloud labs)**.

Traditional Infrastructure

- Physical laboratories
- Equipment purchases
- Building maintenance
- Capital expenditure model

Modern Infrastructure

- Cloud lab subscriptions
- Computational credits
- SDL (Shared Device Licensing)
- Operational expenditure model



Conclusion

The Future of Research Funding

AI is shifting the research ecosystem from a model of scarcity and manual administration to one of abundance and automated precision.

Human-AI Collaboration

Automated Execution

Semantic Discovery

Automated Compliance

Administrative Efficiency

Key Challenges Ahead

Balancing Efficiency and Integrity

Harness AI tools to identify and support impactful science while safeguarding peer review process integrity

Legal Framework Evolution

Ensure intellectual property laws keep pace with AI-driven discovery and maintain commercial viability

Democratization vs. Consolidation

Balance increased access for smaller institutions against concentration of computational power

Ethical Guardrails

Develop robust frameworks addressing non-human agents in discovery while maintaining public trust





The Path Forward

The future of research funding lies not just in funding the best scientists, but in funding the most effective human-AI collaborations.



Semantic Discovery

AI-powered opportunity matching



Automated Compliance

Streamlined administrative processes



Autonomous Execution

Self-driving labs and AI agents



Accelerated Discovery

New era of scientific progress

Thank you

Questions, comments, or ideas are very welcome.
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