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General Comment

See attached file(s)

Attachments

AIR Natl AI RD Strategic Plan Submission - May 2025

2025 National Artificial Intelligence (AI) Research and Development (R&D) Strategic Plan

RESPONSE TO REQUEST FOR INFORMATION

May 29, 2025

Submitted to

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We are experts from the American Institutes for Research® (AIR®), a nonpartisan, not-for-profit organization that conducts behavioral and social science research and delivers technical assistance to solve some of the most urgent challenges in the United States and around the world. From education to workforce development to health care service and delivery, community safety and well-being, nutrition, agriculture, and food security, our work drives toward practical solutions that improve lives for American families and communities. Our **interdisciplinary teams** bring innovative ideas to support **advancements across sectors** by generating and using evidence related to AI. Moreover, our extensive networks and deep experience in **building coalitions** positions us to share and advance knowledge related to AI and **enable field transformation at scale**. AIR is pleased to provide input to the 2025 National AI Research and Development (R&D) Strategic Plan.

AI R&D is fundamentally important to the vitality of the United States, which includes addressing public policy challenges and creating solutions to benefit the public good. This requires networks of partners, from industry and universities to nonprofits and state governments, to create an ecosystem of effective and responsible AI solutions that work in service of all Americans. We believe that this AI R&D strategic plan should center around three big ideas. First, we need to **incentivize collaboration regarding AI** to reach across fields and types of organizations nationally. Second, we need to leverage the advantages of AI to **reenvision the ways in which we think about and use data**. Third, we need to **embrace our strengths in human ingenuity and creativity** to further our global leadership in the age of AI. As we look at the next 10 years for the United States, we propose **establishing a national AI Excellence Nexus**, which will set an audacious goal for this country's AI R&D.

Big Idea 1. Incentivize broad, ongoing collaboration in AI

Collaboration *and* competition are components essential to the future of effective and responsible AI R&D, and they are not mutually exclusive. Sustained collaboration across industry and sectors will accelerate advancements in AI through strategic knowledge sharing and avoidance of wasteful duplication. And even within collaborative efforts, healthy competition encourages better and more efficient solutions. **Encouraging long-term collaborative efforts** toward shared goals while still enabling competition can enhance AI R&D progress, build transparency not typically found in black box AI systems created by a single entity, and help ensure that AI advancements align with societal needs and ethical standards. Synergies among public and private partnerships can accelerate the commercialization of AI technologies, bringing cutting-edge innovations from R&D to the market more efficiently. By incentivizing knowledge-sharing and strategic partnerships that still enable competition and economic growth, we can tackle complex challenges more successfully, ethically, and responsibly. Thus, broad collaboration paves the way for a future in which AI enhances American lives in unique and meaningful ways.

Luckily, we can draw on prior examples of investments to guide new efforts. Facing a long-standing dearth of science, technology, engineering, and mathematics (STEM)-focused educators, *100Kin10* brought together an expansive network of industry and sector leaders, researchers, educator training programs, foundations, and others to recruit, support, and retain 100,000 STEM educators in 10 years. The network's success at full-scale collaboration was

evident as it exceeded the recruitment goals, surpassing 100,000 STEM educators.¹ At this moment, we face a similar challenge and opportunity in AI R&D. Without federal support to incentivize collaboration, individual players will focus on their own work, creating silos of information and slowing progress. If instead, we **create enduring conditions for shared advances**, our potential for improving outcomes through AI is unlimited.

Big Idea 2. Reimagine how we think about and use data

In today's world, we are inundated with vast amounts of information. However, we often struggle to harness the potential insights hidden within this ocean of data. AI presents an exciting opportunity to transform how we utilize data, enabling us to redefine its scope and draw from a broader range of sources. Take education, for example. Data continuously flows through the digital systems used by students. By **leveraging AI-enabled analysis methods**, we can unlock new insights, such as creating personalized learning progressions from detailed clickstream data, and make analysis of this information both faster and more cost-efficient. This allows us to better identify and support all student needs.

To fully realize AI's potential in advancing R&D across public-serving domains, we need to **evolve our federal data ecosystems** so that they are not disjointed across agencies. We need to create safe and secure digital environments that enable the responsible linking of disparate data systems. These evolved federal data ecosystems could have profound and positive implications for Americans. For instance, within U.S. Department of Health and Human Services, we have numerous important data systems across agencies like the Food and Drug Administration, the Centers for Medicare & Medicaid Services, and the Assistant Secretary for Technology Policy/Office of the National Coordinator for Health Information Technology. In addition, a wealth of data exists about health and behavior from school, activity-tracking apps, grocery purchases, and more. With better digital infrastructure to connect these systems responsibly, AI R&D that integrates into behavioral and clinical health data could lead to earlier identification of at-risk patients and the development of more targeted interventions. Establishing these shared, national computational resources could both create economies of scales that reduce overall costs and empower a wider range of organizations to contribute to AI development and application across sectors.

Big Idea 3. Embrace human ingenuity and creativity through human-centered AI

We are all witness to the ways in which AI transforms how we work and live. As automation using AI becomes more widespread, many people are wondering what role humans will play in the workplace. This, in turn, raises questions about education, such as how do we approach writing instruction when AI can generate a student's essay in mere moments? Although AI provides advancements that allow many automations and efficiencies, we cannot lose sight of the **irreplaceable value of human ingenuity and creativity**.

Whereas AI is essentially powered by the synthesis of existing information to generate predictions, humans maintain the unique advantage of being able to conceptualize outside the

bounds of current realities. Human creativity brings a unique perspective to problem solving, enabling us to think of innovative solutions that AI processes may not generate. Ultimately, the strongest promise for transformational breakthroughs will leverage the analytic power of AI with the creative ingenuity of people.

R&D efforts should focus on **exploring reciprocal human–machine learning approaches**² to design AI systems that complement human ingenuity. AI technologies should be designed to augment human capabilities, empowering individuals to explore new perspectives and solve problems in innovative ways. For example, fully autonomous clinical decision support systems will help scale health care delivery systems; however, it is imperative to keep a “human in the loop” as we integrate AI automations. AI applications in radiology through image segmentation, computer-aided diagnosis, and predictive analytics are well known;³ however, radiologists apply their own deep medical knowledge, contextual understanding of the patient, and critical judgment to AI outputs for more accurate and timely diagnoses.⁴

How do we address these three big ideas for AI R&D?

A National AI Excellence Nexus

We envision an AI R&D strategic plan of action. We recognize that AI is radically changing the future in terms of how we connect with and contribute productively to our society, and we must redesign our capacity to embed AI continual learning into the fabric of life for all Americans to thrive. To cement our country’s worldwide AI leadership by leveraging the three big ideas outlined here—*incentivizing collaboration in AI, reenvisioning how we think about and use data, and embracing our strengths in human ingenuity and creativity*—the United States should have a **national AI Excellence Nexus**.



The AI Excellence Nexus will create the catalyzing conditions for AI R&D to be infused across all places where American's learn, from formal schooling to workplaces. Because this effort will be nationally transformative, the AI Excellence Nexus will set a common, measurable goal for the network of partners to work toward. By 2028, the American labor force will increase to 171 million Americans.⁵ By 2030, the total number of K–12 students enrolled in public and private schools will be around 52 million.⁶ ***By 2035, this national AI Excellence Nexus will have an audacious goal to build the conditions so that all 52 million K–12 students and more than 100 million American workers are (a) aware of, (b) using, and (c) creating novel, ethical AI use appropriate to their communities, states, and job sectors.*** The AI Excellence Nexus could operate through many avenues, but below we propose a few potential constellations in service of its ultimate goal.

- ***Constellation 1. Build collaborative networks working toward this goal.*** The AI Excellence Nexus would be modeled after a collective impact approach that includes a broad ecosystem of public–private partnerships. Rather than mandating fixed standards, the AI Excellence Nexus would promote a tiered, risk-based, and context-aware approach. Serving as a central hub for policymakers, developers, clinicians, and researchers, the AI Excellence Nexus would facilitate interdisciplinary collaboration to balance innovation with oversight. This structure supports responsible AI progress and aligns with calls for greater transparency in algorithmic decision making.⁷ In addition, the AI Excellence Nexus would be a central hub for data and infrastructure across these collaborative networks.
- ***Constellation 2. Establish a tiered national AI training framework from K–12 to workforce.*** As different industries are calling for AI education and literacy for their workforce⁸ (e.g., health and medicine,^{9,10} finance¹¹), the AI Excellence Nexus would facilitate a collaborative process to establish a tiered national AI training framework tailored to varying audiences: K–12 students, industry professionals, AI developers, and the general public, to name a few. This framework would include deploying public-facing AI literacy initiatives, sector-specific microcredentials, and enhanced support for advanced technical training and infrastructure access. In addition, we recommend that the federal government and private partners invest in open educational resources (e.g., virtual labs, datasets, reusable curricula) and require the integration of ethics,¹² fairness, and accountability principles into all AI training programs, from public outreach to technical developer education.
- ***Constellation 3. Conduct ongoing research on the impacts of AI on the United States.*** The AI Excellence Nexus will promote collaborative development and commercialization of AI technologies that enhance human ingenuity and creativity. As AI R&D scales up into everyday lives, the AI Excellence Nexus will support research that examines how AI use evolves over time and how AI affects American families and workers. This research evidence will keep the collective partners of the AI Excellence Nexus progressing toward our goals for ingenuity and global leadership.

¹ 100kin10. (n.d.). *Our impact*. <https://pathto100k.org/impact>

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⁴ Najjar, R. (2023). Redefining radiology: A review of artificial intelligence integration in medical imaging. *Diagnostics (Basel)*, 13(17), Article 2760. <https://www.doi.org/10.3390/diagnostics13172760>

⁵ Bureau of Labor Statistics. (2019). *Employment projections—2018–2028* [News release]. https://www.bls.gov/news.release/archives/ecopro_09042019.pdf

⁶ National Center for Education Statistics. (2025). *Projections of education statistics to 2030—Elementary and secondary enrollment*. <https://nces.ed.gov/programs/PES/section-1.asp>

⁷ Nundy, S., Montgomery, T., & Wachter, R. M. (2019). Promoting trust between patients and physicians in the era of artificial intelligence. *Journal of the American Medical Association*, 322(6), 497–498. <https://doi.org/0.1001/jama.2018.20563>

⁸ Ng, D. T. K., Leung, J. K. L., Chu, S. K. W., & Qiao, M. S. (2021). Conceptualizing AI literacy: An exploratory review. *Computers and Education: Artificial Intelligence*, 2, Article 100041. <https://doi.org/10.1016/j.caeai.2021.100041>

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¹¹ Gursoy, S. (2025). Artificial intelligence literacy and the digital divide: Implications for financial investors. *Journal of Business and Econometrics Studies*, 2(1), 1–9. <https://doi.org/10.61440/JBES.2025.v2.52>

¹² Wiese, L. J., Patil, I., Schiff, D. S., & Magana, A. J. (2025). AI ethics education: A systematic literature review. *Computers and Education: Artificial Intelligence*, 8, Article 100405. <https://doi.org/10.1016/j.caeai.2025.100405>