

# PUBLIC SUBMISSION

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**Docket:** NSF-2025-OGC-0001  
NITRD\_FRDOC\_0001

**Comment On:** NSF-2025-OGC-0001-0001  
Request for Information: Development of a 2025 National Artificial Intelligence Research and Development Strategic Plan

**Document:** NSF-2025-OGC-0001-DRAFT-0124  
Comment on FR Doc # 2025-07332

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## Submitter Information

**Organization:** Adeia Inc.

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## General Comment

See attached file(s)

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## Attachments

Adeia NSF AI RFI Response (NSF-2025-OGC-0001) (2025-05-27)



May 27, 2025

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National Science Foundation (NSF)  
Office of Science and Technology Policy (OSTP)  
Networking and Information Technology Research and Development (NITRD)  
National Coordination Office (NCO)  
725 17th Street NW, Washington, D.C. 20506

**Re: Docket ID No. NSF-2025- OGC-0001 – Comments by Adeia Inc.**

Dear Sir or Madam:

Adeia Inc. (Adeia) provides these comments in response to the “Request for Information on the Development of a 2025 National Artificial Intelligence (AI) Research and Development (R&D) Strategic Plan.” *Federal Register*, Vol. 90, No. 81, Apr. 29, 2025.

Adeia is a publicly-traded U.S. research and development (R&D) technology company headquartered in Silicon Valley (NASDAQ: ADEA). Adeia invents, develops, and accelerates the adoption of next-generation, emerging technologies for the media and semiconductor industries. Adeia is among the most innovative companies in America, ranking #72 of all organizations to receive the most U.S. patents last year.<sup>1</sup> Adeia’s advanced R&D includes innovations in Artificial Intelligence (AI). Adeia was named a 2025 finalist in the Business Intelligence Group’s AI Excellence Awards for pioneering AI solutions that enable media and entertainment platforms to deliver smarter, more immersive experiences.<sup>2</sup>

Adeia recommends that over the next 3-5 years, the federal government prioritize AI R&D investments in the following areas.

## **1. R&D to Support AI Infrastructure**

To maintain global leadership in AI, the United States must invest in the foundational infrastructure that supports AI research, development, and deployment. This includes advanced semiconductor devices and packaging technologies, and improved energy efficiency in data centers.

High Bandwidth Memory (HBM) is critical for AI and high-performance computing, enabling the fast data transfer needed by large AI models. These models require rapid input/output (I/O) between memory and processors (*e.g.*, GPUs, CPUs), and performance is increasingly limited by memory bandwidth. Memory-logic system architecture — where HBM is physically co-located near processors — is essential to reducing latency and ensuring model performance.

HBM relies on advanced semiconductor packaging to stack multiple memory layers. Traditional solder bump connections limit I/O density, increase resistance, capacitance, and inductance (leading to higher latency and power use), and add thermal constraints. To overcome these barriers, next-generation

<sup>1</sup> <https://ipo.org/wp-content/uploads/2025/01/2024-Top-300-Patent-Owners-List.pdf>.

<sup>2</sup> <https://www.bintelligence.com/posts/ai-breakthroughs-of-2025-celebrating-the-visionaries-innovators-and-trailblazers-of-the-artificial-intelligence-excellence-awards>.

packaging technologies such as hybrid bonding are required. Hybrid bonding enables direct chip-to-chip connections, increasing I/O density and resulting in faster, more energy-efficient data transfer.<sup>3</sup>

AI workloads also drive up energy consumption and heat generation in data centers. Training and inference tasks demand high-performance computing (HPC) clusters, which far exceed the power requirements of traditional infrastructure. Investing in R&D to enhance energy efficiency through smarter data center design — such as adopting energy-optimized HPC architectures and advanced chip-level cooling technologies — will be essential to manage growing energy demands and thermal loads.

## **2. R&D to Address AI's Use of Copyrighted Material**

Another important area for AI R&D investment is the responsible use of copyrighted material by AI systems, both during model training and in content generation. Many AI models are trained on large-scale datasets that may include unlicensed text, images, audio, or code, raising concerns about copyright infringement when outputs closely resemble or incorporate protected content. These practices raise unresolved legal questions, creating uncertainty for developers, rights holders, and downstream users.

To address these challenges proactively, the federal government should prioritize R&D focused on developing technical safeguards that promote transparency, accountability, and compliance. These include: (i) technologies to embed standard metadata and watermarks in AI-generated outputs to track provenance and credit original creators; (ii) systems that document the origins and licensing status of training data; and (iii) tools that can detect the use of copyrighted material in AI outputs in real time, assess licensing obligations, and automatically revise content to mitigate infringement risks such as by re-generating images or editing text. Such investments would advance responsible innovation and provide greater legal clarity, while supporting a fair and sustainable digital content ecosystem.

## **3. R&D to Protect Private, Proprietary Data**

As AI agents increasingly dominate network activity, ensuring their secure and trustworthy operation will be critical. From a security and privacy standpoint, the ability to identify, authenticate, and monitor AI agents acting on behalf of individuals, businesses, and governments will become important. And while the productivity gains enabled by AI are substantial, federal R&D should also support efforts to detect and prevent harmful agent behavior — such as bots that congest networks or AI systems that harvest, withhold, or improperly disseminate sensitive or proprietary information. Investment in these areas will help ensure AI-driven innovation is both safe and beneficial.

Thank you for your consideration of Adeia's comments.

Respectfully submitted,

Serhad Doken  
Chief Technology Officer  
Adeia Inc.

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<sup>3</sup> See, e.g., <https://www.eetimes.com/revamping-the-semiconductor-industry-with-hybrid-bonding/>.