

# PUBLIC SUBMISSION

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**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-0350  
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## Submitter Information

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## General Comment

Please see attached.

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## Attachments

RFI AI RD Plan

May 29, 2025

Faisal D'Souza, Technical Coordinator  
NCO/NITRD  
2415 Eisenhower Avenue  
Alexandria, VA 22314

Re: 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 (Vol. 90, No. 81 Federal Register, Tuesday, April 29, 2025,  
Request for Information) Docket No.: NSF-2025-OGC-0001

Dear Coordinator D'Souza:

As a member of the public, I am offering my comments to the Networking and Information Technology Research and Development ("NITRD) National Coordination Office ("NCO") in response to the request for information related to the Office's inquiry on the development of the 2025 National AI R&D Strategic Plan. This response discusses AI sandboxes as a novel mechanism for fostering research partnerships with industry and academia.

### 1. Introduction

An AI sandbox is a structured environment where AI technologies can be tested, refined, and validated under real or simulated environments.<sup>i</sup> Such environment may include regulatory oversight or domain-specific testing protocols, depending on application area. AI sandboxes are increasingly used to foster collaborative and agile development of AI-enabled applications. They have potential as a novel mechanism for integrating federal, industry, and academic collaboration in AI research and development, particularly in domains where performance, safety, and compliance are critical.

International examples illustrate different purposes served by AI sandboxes. For example, with a regulatory focus, the UK's Financial Conduct Authority and Singapore's Monetary Authority have used AI sandboxes to test new products or business models in a controlled testing environment.<sup>ii</sup> On the other hand, in the U.S., the MITRE Federal AI Sandbox, developed in partnership with NVIDIA, exemplifies an operational sandbox.<sup>iii</sup> It is designed to accelerate federal AI application development for testing government-specific use cases.

### 2. What Makes the AI Sandbox a Novel Mechanism for Research Partnerships

AI sandboxes represent a novel mechanism for AI research partnerships by integrating compute infrastructure, real-time testing, secure access to data and models, and collaborative governance in a single, cohesive framework. This setup enables continuous refinement of AI models in close coordination with stakeholders across government, industry, and academia. Compared to some research partnership models outlined in the National Artificial Intelligence Research and Development Strategic Plan (2023 Update), AI sandboxes offer distinct advantages:

*(i) AI Sandboxes vs. Individual Project-Based Collaborations:* Traditional project-based collaborations are often time-limited and narrowly scoped, making it difficult to sustain long-term development. In contrast, AI sandboxes support ongoing experimentation and iterative

refinement. This continuity is valuable for long-horizon challenges such as AI for materials discovery and design, where models benefit from ongoing feedback and performance validation. (ii) *AI Sandboxes vs. Federal Prize Competitions*: Federal prize competitions typically incentivize one-time solutions aimed at achieving predefined goals. While effective for spurring innovation, they lack the infrastructure to mature solutions beyond initial prototypes, are constrained by fixed timelines that limit stakeholder engagement, and result in standalone solutions with no clear paths to operational integration. By contrast, AI sandboxes offer domain-specific environments that enable end-to-end development beyond prototyping. Additionally, AI sandboxes provide shared infrastructure, an important enabler for advancing AI-driven innovation in materials discovery and design.

(iii) *AI Sandboxes vs. Data and Model Sharing*: Data and model sharing partnerships often face challenges due to commercial sensitivities and intellectual property concerns, which can discourage private sector participation. AI sandboxes mitigate these challenges by offering secure, access-controlled environments where data and models can be pooled and used with flexible sharing options. This facilitates joint experimentation and validation while protecting proprietary interests.

Together, these features make AI sandboxes a novel mechanism for research partnerships accelerating AI-driven innovation. While many existing mechanisms address isolated parts of the innovation pipeline, sandboxes unify infrastructure, governance, and experimentation into a shared operational space.

### 3. Federal Government's Role in Advancing AI Sandboxes

The federal government can provide resources for AI sandbox infrastructure, including data repositories, simulation platforms, and domain-specific testing environments. For example, the DOE's AI Testbeds program provides a promising model by offering researchers access to high-performance computing systems for AI experimentation. Federal agencies can also establish standards and guidance as new AI technologies emerge, while clarifying intellectual property and data governance to address proprietary and privacy concerns. To encourage collaboration, the government can encourage private companies to contribute expertise and infrastructure to AI sandboxes through various mechanisms.

### 4. Conclusion

AI sandboxes represent a novel and integrated approach to advancing AI research and development by combining secure infrastructure and collaborative governance within a shared environment. Unlike traditional models, they enable continuous iteration, cross-sector collaboration, and end-to-end solution development, addressing critical challenges in complex domains such as materials discovery and design. Federal leadership—through infrastructure support, standards setting, and incentives—can play a pivotal role in implementing AI sandboxes and fostering AI-driven innovations for real-world deployment.

Sincerely,

Sheng Tong

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developing the 2025 National AI R&D Strategic Plan and associated documents without attribution.

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<sup>i</sup> <https://techcommunity.microsoft.com/blog/publicsectorblog/enhancing-federal-ai-safety-responsible-and-secure-ai-sandbox/4279628>

<sup>ii</sup> See e.g., <https://www.fca.org.uk/firms/innovation/regulatory-sandbox>;  
<https://www.mas.gov.sg/development/fintech/regulatory-sandbox>

<sup>iii</sup> MITRE's Federal AI Sandbox, Next Generation Artificial Intelligence,  
<https://www.mitre.org/sites/default/files/2024-11/PR-24-2936-MITRE-Federal-AI-Sandbox.pdf>