

PUBLIC SUBMISSION

Received: April 30, 2025
Tracking No. ma4-gz7s-
pojrn **Comments Due:** May
28, 2025 **Submission Type:**
API

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-0026
Comment on FR Doc # 2025-07332

Submitter Information

Organization: SOCR (UMichigan)

General Comment

Building the US Next Generation AI - Strategic R&D Investments

The current landscape of federally-funded artificial intelligence research and development is at risk of stagnating due to bureaucratic inefficiencies, conservative funding mechanisms, and an over-reliance on incremental advances with clear long-term impact, beyond the instant headlines. This response to the RFI (NSF-2025-OGC-0001-0001) proposes a radical restructuring of the US AI R&D investments to prioritize academic excellence, research reproducibility, and truly novel developments through high-risk/high-impact basic science initiatives.

Primary Challenge: Breaking Through Stagnation

1. Risk-averse funding models that prioritize incremental advances over transformative research
2. Bureaucratic bottlenecks that slow innovation and discourage creative exploration
3. Concentration of resources in a few large grants rather than many smaller disruptive projects
4. Status quo bias in review processes favors established researchers & conventional approaches
5. Commercial pressure that directs research toward short-term applications rather than foundational advances

A New Vision for AI R&D Investment

1. Prioritize Academic Excellence and Research Reproducibility

Future AI advancements require a strong STEM foundation and rigorous, reproducible science. Investments should prioritize:

- * Funding for independent verification and reproduction of key findings
- * Open-source AI framework development, benchmarking and evaluation
- * Cross-disciplinary collaboration between AI researchers and domain experts
- * Development of standardized protocols for validating novel approaches

2. Embrace Truly Novel Developments and High-Risk Research

Breakthrough innovations often emerge from unconventional approaches that challenge dominant paradigms.

- * Allocate at least 50% of total funding to high-risk, high-reward projects
- * Create dedicated funding streams for research that challenges fundamental assumptions
- * Protect researchers from pressure to demonstrate immediate applications

3. Focus on Fundamental Advances in Data Representation and Computing Paradigms

Next-generation AI will require entirely new approaches to representing and processing information.

- * Integration of quantum mechanics with statistical computing
- * Complex-time (kine) representation of observable phenomena
- * Novel neural network architectures that transcend current limitations
- * Biologically-inspired and physics-based AI systems

4. Expand Human-AI Interaction and Augmented Intelligence

The future of AI lies not just in autonomous systems but in the synergistic relationship between human and artificial intelligence. Key investment areas include:

- * Natural and intuitive interfaces between humans and AI systems

- * Cognitive augmentation technologies that enhance human capabilities

5. Prioritize Smaller, Diversified Grants Over Large Consolidated Projects

Innovation thrives on diversity. The new funding structure should:

- * Increase the total number of grants while reducing their average size

6. Disrupt the Academic Enterprise

Transformative innovation requires transformative institutions.

- * Implement alternatives to traditional peer review, such as lottery systems for methodologically sound proposals
- * Establish new research organizations independent of existing academic hierarchies
- * Reward failure as a necessary component of high-risk research

Implementation: Bold Structural Changes - Research Scout Model

Inspired by the Hypothesis Fund approach, we propose appointing accomplished scientists as Research Scouts with significant autonomy to identify and fund promising projects:

- * Each Research Scout receives a \$500,000 fund to distribute over a two-year period
- * Scouts have complete discretion to fund projects they deem meritorious (subject to proper CoI)
- * Minimal reporting requirements enable rapid decision-making and deployment
- * Performance evaluation based on portfolio diversity and long-term impact rather than short-term metrics

Reimagined Grant Process

The entire grant lifecycle requires restructuring:

- * Replace lengthy proposals with concise concept papers and recorded presentations
- * Implement blind review processes to reduce status bias
- * Use diverse evaluation panels including practitioners, theorists, and even AI systems
- * Replace binary funding decisions with graduated investment models
- * Implement continuous application cycles rather than rigid deadlines

Novel Evaluation Metrics of Impact:

- * Rather than publication counts, value projects based on knowledge & resource creation
- * Track the heterogeneity of approaches funded rather than focusing solely on outcomes
- * Measure impact through influence on future research directions
- * Value negative results that eliminate unproductive approaches

(Statistics Online Computational Resource, University of Michigan)