CASC | Coalition for Academic Scientific Computation

Coalition for Academic Scientific Computation (CASC) Response to OSTP RFI on Strengthening the U.S. Science and Technology Ecosystem

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The Coalition for Academic Scientific Computation (CASC) appreciates the opportunity to provide input to the Office of Science and Technology Policy on policy updates that can strengthen the nation's scientific enterprise, accelerate discovery, and ensure that the benefits of scientific progress reach all Americans. CASC represents 108 leading research universities and computing centers that provide advanced computing, data, research cyberinfrastructure, and computational expertise to researchers across all fields of science and engineering. Our members operate many of the nation's flagship HPC, AI, cloud, data, and advanced research computing environments.

CASC submits this response based on our community's long-standing commitments to federal research leadership, trustworthy and secure research, public–private partnerships, and inclusive national innovation capacity.

I. Strengthening Public–Private Collaboration and Smoother Pathways from Lab to Market

(*RFI Questions i–iii, ix*)

1. **Modernize Federal funding and procurement mechanisms to better incorporate advanced computing and AI research needs.**
   Agencies should expand **multi-institution and multi-sector funding models**, allowing research computing and data infrastructure (RCD) to be funded across its lifecycle—including operations, staffing, modernization, and security—rather than through equipment-only awards. This would increase reliability, reduce friction, and create predictable collaboration environments for industry partners.
2. **Enable more flexible partnership authorities for university–industry–government collaborations.**
   Clarifying and broadening use-inspired research authorities (e.g., cooperative agreements) would accelerate cross-sector projects, especially in **AI, advanced materials, digital twins, quantum, and manufacturing**—domains where CASC institutions work closely with companies on applied research problems.
3. **Expand incentives for regional innovation ecosystems.**
   CASC supports place-based innovation efforts, particularly those anchored by **R1**

universities, emerging research institutions, and statewide research computing networks. Federal policy should encourage shared RCD investments across institutions, RENs (Research and Education Networks), and local companies. NSF's Regional Innovation Engines program provides a strong model.

4. **Modernize technology transfer.**
   Streamlined contracting templates, expanded access to shared-use research computing environments, and incentives for reproducible data and open-source software would reduce barriers to commercialization while maintaining research integrity.
5. **Remove friction caused by inconsistent security and compliance requirements.**
   CASC's work on **NIST 800-171** highlights the compliance burdens placed on universities and small companies. Aligning requirements across agencies and better distinguishing **classified vs. unclassified research security** needs would preserve national interests while encouraging broader participation.

II. Supporting Small- and Medium-Sized Businesses (SMBs) as Innovators

(*RFI Question iv*)

Small and medium-sized companies rely heavily on access to university expertise in **modeling, simulation, prototyping, and data analytics**. Federal policy can strengthen this sector by:

- Funding shared regional HPC and AI facilities explicitly accessible to SMBs.
- Supporting university extension-style programs for data and computing (analogous to agriculture and manufacturing extension partnerships).
- Incentivizing collaborative SBIR/STTR projects with academic RCD centers.
- Providing vouchers or credits for SMBs to access **secure, compliant research data environments** at academic institutions.

These mechanisms help level the playing field for smaller firms that cannot afford state-of-the-art computing resources.

III. Evidence-Based Funding Reforms and High-Risk/High-Reward Research

(*RFI Questions v–vii*)

1. **Adopt metascience findings that support diverse proposal types.**
   Research shows that competitive grant systems tend to prioritize incremental science. Allowing for **alternative review modes**—shorter proposals, or milestone-driven staged funding—could reduce administrative burdens and enable more bold, exploratory ideas.
2. **Support long-horizon and team-based computational research.**
   Projects requiring long-term data stewardship, interdisciplinary development teams, and sustained RCD operations often outlast traditional grant cycles. Federal support models should include **10-year mission-oriented computing and data initiatives**, which CASC institutions are well-positioned to lead and manage. The NSF Engineering Research Centers serves as a model that could be replicated here.

3. **Nurture novel institutional models that complement universities.**
   Institutions such as **focused research organizations, research software engineer (RSE) groups, statewide collaboratives, and cross-institutional computing consortia** are essential to frontier science. Federal programs should explicitly fund these models, recognizing research computing, data governance, and cyberinfrastructure expertise as core scientific labor.

IV. Preparing for Advances in AI Systems

(*RFI Question viii*)

CASC strongly supports a national strategy for **AI-ready research computing** as called for in the National AI Act of 2020 (NAIRR) and the Genesis Executive Order #14363:

1. **Establish a federated national AI research platform.**
   CASC has called for the integration of academic, federal, and NSF-supported AI resources into a **national AI research commons**, with seamless access to training data, scientific models, secure computing environments, and campus-based systems. Investments should include high-speed networks, FAIR data, and shared model repositories. Closely aligned with the NAIRR Task Force final report of Jan 2023.
2. **Support autonomous laboratories and computational workflows.**
   Federal agencies should pilot AI-driven discovery environments that integrate HPC, cloud, lab automation, and software-defined instruments—making them accessible through academic institutions for broad scientific use.
3. **Invest in workforce development for AI in science.**
   National programs should expand training for **cyberinfrastructure professionals, data scientists, and AI safety experts**. CASC institutions operate some of the most advanced RCD workforce pipelines in the country.
4. **Ensure responsible AI development.**
   Invest in model transparency, reproducibility tools, and secure environments for dual-use AI systems. CASC institutions are already building such trusted research environments.

V. Reducing Barriers to Scientific Research

(*RFI Question ix*)

CASC recommends:

- **Aligning grant compliance requirements** across federal agencies to reduce administrative burden.
- **Funding for cybersecurity modernization** that reflects increasing national security expectations.
- **Harmonizing data-sharing mandates** to minimize conflicting requirements between agencies.
- **Supporting open science infrastructure**—including repositories, HPC gateways, and RSE support—which dramatically reduces duplication and accelerates discovery.

VI. Identifying and Developing Talent Nationwide

(*RFI Questions x–xi*)

The nation's scientific workforce requires pathways that:

1. **Invest in distributed and hybrid research models.**
   Digital collaboration tools, cloud-based research environments, and federated data systems allow students and researchers in multiple demographic regions to contribute to frontier science.
2. **Support cross-training of scientists, engineers, and technical specialists.**
   Many breakthroughs depend on research teams that integrate theory, experiment, and computing. Federal programs should create **joint training grants** linking computational science, engineering, and skilled technical workforce programs.
3. **Support community colleges and MSIs as career on-ramps.**
   Federal investments should ensure these institutions have access to modern computing and data capabilities to empower students to reach their maximum potential.

VII. Ensuring the Benefits of Federally-Funded Research Reach All Americans

(*RFI Question xii*)
Policies should prioritize:

- **Open access to federally funded knowledge products** (data, software, workflows).
- **Regional investments that distribute economic benefits**, especially in areas historically underserved by federal R&D.
- **Community-engaged research models** that translate discoveries into local economic and health gains.
- **Support for public-sector talent pipelines**, as federal agencies struggle to recruit the technical workforce needed to administer modern Science & Technology programs.

VIII. Strengthening Research Security While Minimizing Burden

(*RFI Question xiii*)

Research security must protect sensitive technologies while preserving the openness of the U.S. research ecosystem. CASC's members remain committed to research integrity, responsible international collaboration, and the protection of sensitive technologies.

CASC recommends:

1. **Differentiated security requirements** that distinguish levels of risk, rather than imposing one-size-fits-all compliance frameworks.
2. **Federal investment in shared secure research environments**, enabling universities and small businesses to comply with controlled unclassified information (CUI) requirements efficiently.
3. **Consistent guidance across agencies**, reducing contradictory expectations and audit regimes.

4. **Workforce and training support** for research security officers, research computing professionals, and campus administrators.
5. **Risk-based international collaboration guidelines** that preserve scientific openness while addressing legitimate threats.

Conclusion

The United States must sustain and grow its commitment to a scientific enterprise that is innovative, collaborative, secured, and open. Strengthening research computing, modernizing funding and compliance systems, supporting place-based innovation, expanding AI-ready infrastructure, and empowering the national research workforce are essential to maintaining global leadership.

CASC and its member institutions stand ready to support OSTP and federal agencies in developing forward-looking policies that advance American science and ensure its benefits reach all communities.