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RESPONSE TO REQUEST FOR INFORMATION ON THE DEVELOPMENT OF A 2025 NATIONAL ARTIFICIAL INTELLIGENCE (AI) RESEARCH AND DEVELOPMENT (R&D) STRATEGIC PLAN

Submitted by the Johns Hopkins Center for Health Security[1]

Thank you for the opportunity to provide comments in response to the request for information on the development of a 2025 National AI R&D Strategic Plan from the Networking and Information Technology Research and Development (NITRD) National Coordination Office (NCO),[2] on behalf of the Office of Science and Technology Policy (OSTP). The Johns Hopkins Center for Health Security (CHS) conducts research on how new policy approaches, scientific advances, and technological innovations can strengthen health security and save lives. CHS has 25 years of experience in biosecurity and is dedicated to ensuring a future in which biological weapons can no longer threaten our country and world. CHS is composed of researchers and experts in science, national security, emerging technology, economics, law, medicine, and public health. These comments reflect the views of the Johns Hopkins Center for Health Security and do not necessarily reflect the views of Johns Hopkins University.

NCO seeks input on how the 2023 Strategic Plan Update[3] can be rewritten so that the U.S. can secure its position as the unrivaled world leader in AI by performing R&D to accelerate AI-driven innovation, enhance U.S. economic and national security, promote human flourishing, and maintain U.S. dominance in AI while focusing on the federal government's unique role in AI R&D over the next 3 to 5 years.[4]

We believe the 2023 Strategic Plan Update should be revised to: (1) focus clearly on key bottlenecks for AI R&D, which include compute,[5] data,[6] technical talent,[7] and capital;[8] and

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[1] This document is approved for public dissemination. The document contains no business-proprietary or confidential information. Document contents may be reused by the government in developing the 2025 National AI R&D Strategic Plan and associated documents without attribution.

[2] *Request for Information on the Development of a 2025 National Artificial Intelligence (AI) Research and Development (R&D) Strategic Plan*, 90 FED REG 17835 (Apr. 29, 2025), https://www.federalregister.gov/documents/2025/04/29/2025-07332/request-for-information-on-the-development-of-a-2025-national-artificial-intelligence-ai-research.

[3] EXEC. OFFICE OF THE PRESIDENT, NATIONAL ARTIFICIAL INTELLIGENCE RESEARCH AND DEVELOPMENT STRATEGIC PLAN 2023 UPDATE (May 2023), https://www.nitrd.gov/pubs/National-Artificial-Intelligence-Research-and-Development-Strategic-Plan-2023-Update.pdf.

[4] *Request for Information on the Development of a 2025 National Artificial Intelligence (AI) Research and Development (R&D) Strategic Plan*, 90 FED REG 17835 (Apr. 29, 2025), https://www.federalregister.gov/documents/2025/04/29/2025-07332/request-for-information-on-the-development-of-a-2025-national-artificial-intelligence-ai-research.

[5] Henry Josephson, *How Fast Can Algorithms Advance Capabilities?* EPOCH AI (May 16, 2025), https://epoch.ai/gradient-updates/how-fast-can-algorithms-advance-capabilities.

(2) prioritize and reformulate the safety and security component of the strategic plan to greatly strengthen prevention of and preparedness for high-consequence threats to the country, particularly biosecurity threats. Investing in compute, data, technical talent, and capital—if focused and applied to challenges in biosecurity—could help drive the bioeconomy and strengthen biosecurity and biopreparedness by, for example, accelerating biothreat and outbreak detection and greatly increasing the speed of antiviral and vaccine development. The convergence of AI with biotechnology could also facilitate the rapid development of medical countermeasures and optimize crisis response/resource allocation.[9]

The 2023 Strategic Plan Update outlines 9 strategies for achieving the overall goal of making AI a national priority, including making long-term investments in fundamental and responsible AI research, ensuring the safety and security of AI systems, developing datasets and environments for AI training and testing, and expanding public-private partnerships to accelerate advances in AI. We support these strategic goals. OSTP should also strengthen the strategic plan by alleviating AI R&D bottlenecks such as compute, data, technical talent, and capital, and by prioritizing safety and security for specific classes of high-consequence threats, particularly biosecurity threats.

Compute & Data. Compute and data are key bottlenecks for AI development in recent projections on the feasibility of AI scaling in the next 5 years,[10] and our own review confirmed these problems for biological AI R&D. This will disproportionately impact smaller research groups and startups that may not have the resources to train and deploy large AI models. The federal government could resolve these bottlenecks through initiatives such as the National AI Research Resource (NAIRR)[11] and the American Science Acceleration Project (ASAP).[12]

Technical Talent. In a January 2025 report, the Council of Economic Advisers found that "demand for AI talent…appears to be growing at an even faster rate than the increasing supply of AI talent trained in U.S. colleges and universities," and it provided recommendations for how the U.S. "could increase its supply of AI talent in three broad

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[6] Pablo Villalobos et al., *Will We Run Out of ML Data? Evidence From Projecting Dataset Size Trends*, EPOCH AI (Nov. 10, 2022), https://epoch.ai/blog/will-we-run-out-of-ml-data-evidence-from-projecting-dataset.

[7] THE WHITE HOUSE, AI TALENT REPORT (Jan. 14, 2025), https://bidenwhitehouse.archives.gov/cea/written-materials/2025/01/14/ai-talent-report/.

[8] Ben Cottier et al., *How Much Does It Cost to Train Frontier AI Models?* EPOCH AI (Jan. 13, 2025), https://epoch.ai/blog/how-much-does-it-cost-to-train-frontier-ai-models.

[9] Aurelia Attal-Juncqua et al., *AIxBio: Opportunities to Strengthen Health Security*, SSRN (Aug. 6, 2024), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4912421. *See also* Melissa Hopkins et al., *Response to AI Action Plan Request for Comment*, JOHNS HOPKINS CTR. FOR HEALTH SEC. (Mar. 15, 2025), https://centerforhealthsecurity.org/sites/default/files/2025-04/Johns-Hopkins-Center-for-Health-Security-AI-Action-Plan-RFI-3.20.25_0.pdf.

[10] Jamie Sevilla et al., *Can AI Scaling Continue Through 2030?*, EPOCH AI (Aug. 20, 2024), https://epoch.ai/blog/can-ai-scaling-continue-through-2030.

[11] *National Artificial Intelligence Research Resource Pilot*, NAT'L SCI. FOUND., https://www.nsf.gov/focus-areas/artificial-intelligence/nairr.

[12] *American Science Acceleration Project (ASAP)*, MARTIN HEINRICH, https://www.heinrich.senate.gov/asap.

ways: 1) increasing the number of students training at U.S. institutions, 2) increasing post-graduate inflow of students trained abroad and reducing post-graduate outflow of students trained in the United States, and 3) providing incentives for capable workers to switch into AI sectors."[13]

Capital. According to Epoch AI, "[t]he cost of training frontier AI models has grown by a factor of 2 to 3x per year for the past eight years, suggesting that the largest models will cost over a billion dollars by 2027…suggesting that frontier AI model training will be too expensive for all but the most well-funded organizations."[14] The federal government could support the AI industry via public-private partnerships and strategic investments in start-ups and capitalizing on returns, in a similar fashion to In-Q-Tel or by negotiating for royalties when joint research with private companies results in commercial products via cooperative R&D agreements.

Refocus & Prioritize the Safety & Security Strategy for Specific Classes of Threats Such as Biosecurity Risks. The 2023 Strategic Plan Update describes the strategy as "[a]dvanc[ing] knowledge of how to design AI systems that are trustworthy, reliable, dependable, and safe. This includes research to advance the ability to test, validate, and verify the functionality and accuracy of AI systems, and secure AI systems from cybersecurity and data vulnerabilities." The U.S. AI Safety Institute (AISI) has already engaged in extensive work in this area and should continue to do so. AISI should also begin to feed some of its findings into the R&D enterprise such that the strategy's goal is no longer simply to advance the knowledge of safety and security but to make it a core function of federal R&D. To be competitive with foreign AI R&D programs, the class of safety and security restrictions should be narrowly focused and targeted to national security threats, including biosecurity threats in specific. This approach would be similar to the approach that China is taking with its own AI R&D, which is narrowly tailored to national security restrictions.

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[13] THE WHITE HOUSE, AI TALENT REPORT (Jan. 14, 2025), https://bidenwhitehouse.archives.gov/cea/written-materials/2025/01/14/ai-talent-report/.

[14] Ben Cottier et al., *How Much Does It Cost to Train Frontier AI Models?* EPOCH AI (Jan. 13, 2025), https://epoch.ai/blog/how-much-does-it-cost-to-train-frontier-ai-models.