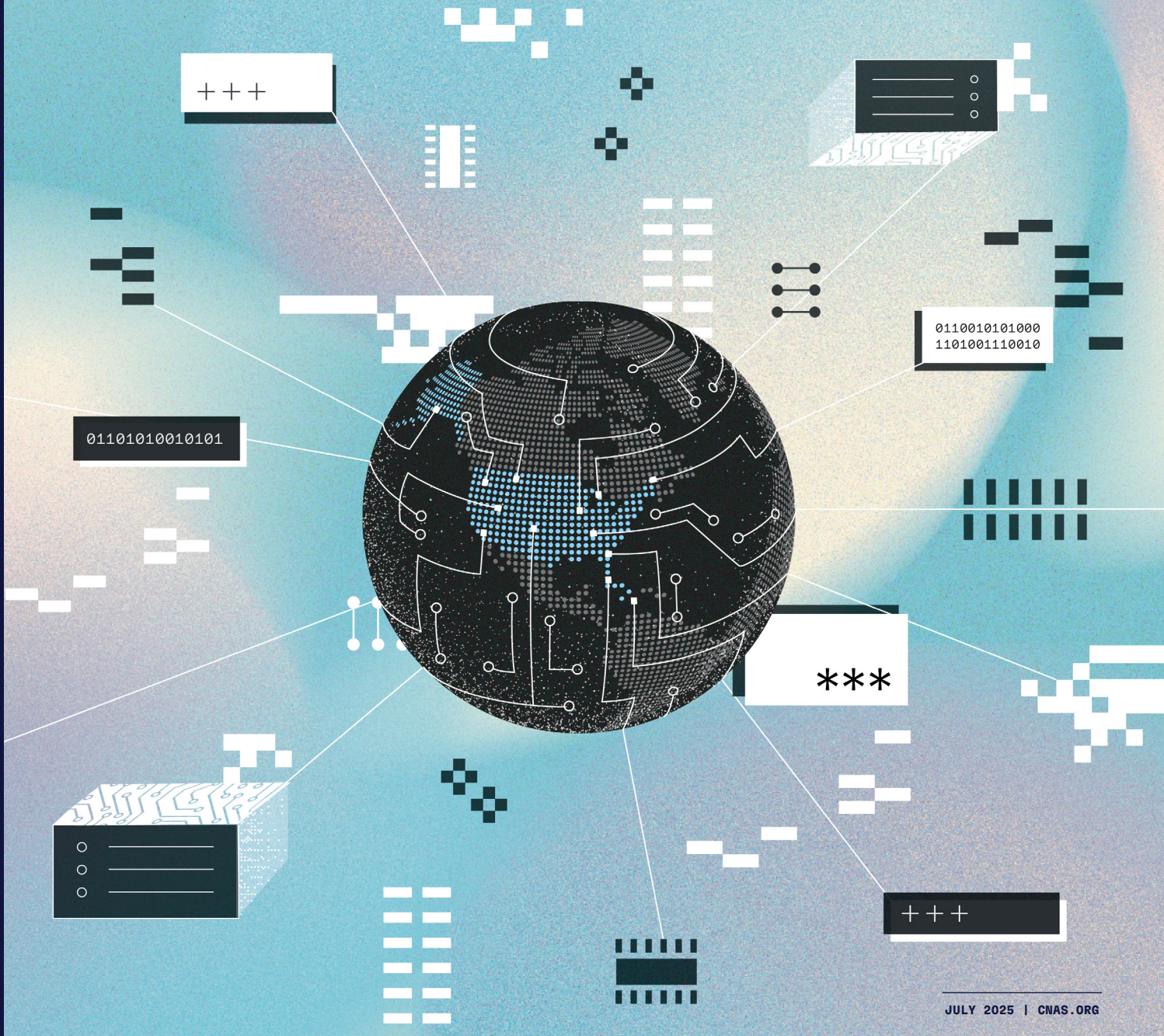
CNAS | AMERICA'S EDGE

GLOBAL COMPUTE AND NATIONAL SECURITY

Strengthening American AI Leadership Through Proactive Partnerships

Janet Egan



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About the Author

Janet Egan is a senior fellow with the Technology and National Security Program at the Center for a New American Security (CNAS). Her research focuses on the national security implications of artificial intelligence (AI) and other emerging technologies, including how compute policy can be used to manage the risks and opportunities of advanced AI systems. Prior to joining CNAS, Egan was a director in the Australian Government Department of the Prime Minister and Cabinet. She has applied experience working on policy at the intersection of national security, economics, and international relations. Her work has spanned issues such as 5G security, cybersecurity, countering foreign interference, foreign investment and trade, and critical infrastructure regulations. She was a member of the prime minister's task force on critical technologies and the inaugural director of policy in Australia's Office of Supply Chain Resilience. Egan holds a master's degree in public policy from the Harvard Kennedy School and a bachelor of arts from Monash University in Australia.

About the Technology and National Security Program

The CNAS Technology and National Security Program produces cutting-edge policy research to secure America's edge in emerging technologies, while managing potential risks to security and democratic values. The program produces bold, actionable recommendations to drive U.S. and allied leadership in responsible technology innovation, adoption, and governance. The Technology and National Security Program focuses on three high-impact technology areas: artificial intelligence, biotechnology, and quantum information sciences. It also conducts cross-cutting research to strengthen U.S. technology statecraft to promote secure, resilient, and rights-respecting digital infrastructure and ecosystems abroad. A focus of the program is convening the technology and policy communities to bridge gaps and develop solutions.

Acknowledgments

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EXECUTIVE SUMMARY

THE CURRENT PATHWAY TO BREAKTHROUGH artificial intelligence (AI) capabilities relies on amassing and leveraging vast "compute"—specialized chips housed within massive data centers that generate the computational power to train, enhance, and deploy advanced models. If current AI development trends continue, securing and extending U.S. access to a robust compute ecosystem will play a decisive role in whether the United States leads the world in AI or cedes its leadership to competitors. The nation that leads in deploying compute worldwide will wield critical leverage over the rules and norms governing its use. Most importantly, U.S. leadership can crowd out China's expanding sphere of technology influence and ensure the AI transition is underpinned by trusted democratic technologies. This goal necessitates a strategy with two key components: maintaining U.S. control of the most capable compute infrastructure in the world to ensure leadership at the AI frontier, while simultaneously providing subfrontier levels of compute to partners around the world.

Recent advances in AI efficiency, as demonstrated by Chinese AI models like DeepSeek-R1, have not negated the fundamental importance of compute for AI leadership.[1] The nation with the most robust compute ecosystem will retain key advantages: the ability to train the most advanced systems, enhance and deploy those systems at scale, and run the experiments necessary to drive new breakthroughs in model efficiency and training.[2] These advantages are likely to generate a self-reinforcing cycle of AI development, making it increasingly difficult for other nations to close the gap. If current technical trends hold, and as chip export controls increasingly hinder China's capabilities, the AI capability gap between the United States and China should widen. However, the United States cannot afford to be complacent.

Washington's efforts to protect America's AI leadership have relied heavily on controlling the export of advanced AI chips. Controls on semiconductor manufacturing equipment going to China were imposed as early as 2019, followed by AI chip export controls targeting U.S. adversaries in 2022, which were strengthened in 2023, 2024, and 2025.[3] In January 2025, the Biden administration's Framework for Artificial Intelligence Diffusion went a step further, placing caps on compute exports to most countries in the world.[4] While now rescinded, this unprecedented action sent a clear signal to other nations that the United States is willing and able to control AI compute access. However, a heavily protectionist approach faces challenges. Abroad, chip smuggling has provided China with illegal access to advanced chips, eroding the U.S. lead.[5] At home, permitting and regulatory constraints threaten to limit America's ability to meet the energy demand for large-scale AI data centers and chip fabrication. Nondemocratic countries that possess the regulatory flexibility, capital, and readily available energy now seek to rapidly build frontier-scale AI data centers, with the potential to surpass the United States' own compute ecosystem, absent adequate safeguards. Meanwhile, China's ongoing investments in its compute capacity could eventually create a viable alternative supply chain beyond U.S. control, while growing concerns over reliance on U.S. technology among traditional partners may fuel demand for non-U.S. compute offerings.

In light of these headwinds, this report argues for a more proactive "promote" approach to global compute provision to sustain and strengthen long-term U.S. AI leadership. The Trump administration has already taken significant steps in this direction, announcing major AI partnerships with the United

Arab Emirates and the Kingdom of Saudi Arabia in May 2025.[6] However, these initiatives should be integrated into a comprehensive AI diplomacy strategy that balances several strategic objectives:

- Keeping the frontier of AI training in the United States and its closest allies to identify, leverage, and secure the most groundbreaking AI capabilities in a way that supports U.S. national security;
- Preventing China from accessing U.S. and allied AI compute capabilities that could confer meaningful military or strategic advantages or strengthen authoritarian regimes; and
- Reinforcing the United States' position as the AI partner of choice, expanding its global compute footprint and drawing swing states more closely into the U.S. orbit through deeper technology partnerships.

To achieve these objectives and advance America's long-term AI leadership, the report makes the following recommendations to the U.S. government:

1. Harden export controls through stronger enforcement, technology-forward solutions, and engagement with key allies and partners.
2. Support the development of and access to valuable downstream AI applications to reduce demand for sovereign frontier compute and to increase the appeal of the United States as the AI partner of choice.
3. Use strategic investment vehicles to promote U.S. AI projects and applications overseas.
4. Expand engagement with key strategic partners to design mutually beneficial AI partnerships, specifically:
   - *The United Arab Emirates and Saudi Arabia*: Continue to partner on the development of secure data centers in the Gulf and globally, accompanied by security measures and safeguards that ensure that these nations do not overtake the United States' lead in AI compute.
   - *Brazil and India*: Through bespoke government-to-government partnerships, leverage their statuses as emerging technology economies with strong AI ambitions to bring them closer into the U.S. orbit.
   - *Australia and the United Kingdom*: Leverage the Australia–United Kingdom–United States trilateral security partnership, AUKUS, to enlist the United States' closest allies as trusted frontier AI partners, helping overcome U.S. domestic bottlenecks and ensuring that America can continue to benefit from returns to scale.
5. Champion technical privacy-preserving solutions to help address partners' "sovereignty" concerns.
6. Engage in multilateral and standard-setting bodies to build legitimacy and to strengthen AI data center security and risk management.

The United States faces a choice: leverage its current lead to promote U.S. AI infrastructure and applications globally, while preserving its edge at the frontier; or continue to primarily focus on protection, while other countries gradually narrow the gap. As Michael Kratsios, President Donald Trump's science and technology advisor, put it: "It is not enough to seek to protect America's technological lead. We also have a duty to promote American technological leadership."[7] The protect and promote strategy outlined in this report offers a path to sustainable leadership that both safeguards critical capabilities and expands American influence in the global AI ecosystem.

This report examines strategies to promote and protect America's AI advantage during a period of significant trade policy transformation. While the report analyzes pathways to enhancing U.S. AI leadership, it does not evaluate how the Trump administration's 2025 tariff policies might affect America's position as a global technology partner. The intersection of trade policy and technology leadership requires dedicated analysis to ensure coherence across economic and national security objectives. Future work should explore how considerations around reliable access to U.S. technology could be integrated into trade negotiations, tariff assessments, and international technology partnerships.[8] This could help align America's economic statecraft with its technological leadership goals, particularly in strategic domains such as AI.

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INTRODUCTION

IN MARCH 2025, PRESIDENT DONALD TRUMP wrote to Michael Kratsios, the director for the White House Office of Science and Technology Policy, to ask a momentous question: "How can the United States secure its position as the unrivaled world leader in critical and emerging technologies—such as artificial intelligence . . . ?"[9] This question reflects a growing consensus in Washington and capitals around the world that the nation that leads the world in advanced artificial intelligence (AI) will pioneer new scientific breakthroughs, unlock powerful military and intelligence capabilities, and turbocharge economic competitiveness. Although there is ongoing debate about the best pathway to long-term AI progress, large-scale AI models show the most transformative promise. Historically, AI systems were specialized, with training data narrowly tailored to their intended functions. Now, leading foundation models—which ingest vast collections spanning trillions of words from diverse sources—currently perform as well as purpose-built systems in specialized domains, as well as across general-purpose tasks.[10] The United States leads the world in large-scale AI development, driven in part by its leading talent and innovation ecosystem, but also by its access to cutting-edge "compute"—the specialized chips, data centers, and infrastructure needed to train and deploy the most capable AI systems.

But U.S. AI leadership is not guaranteed. The release of DeepSeek-R1, the first highly capable reasoning model from a Chinese firm, demonstrated China's capacity to apply breakthroughs in algorithmic efficiency to do more with fewer chips in the face of U.S. export controls. DeepSeek released R1 a little more than four months after OpenAI released its o1 model, with approximately the same performance. It is widely believed that DeepSeek-R1 leveraged OpenAI's know-how, whether through training a new model from the o1 model's outputs in a process known as "distillation," or through informal conversations at Silicon Valley parties.[11] This highlights the inherent difficulty of controlling the spread of technical knowledge and expertise.[12] In light of China's advancements, the U.S. government needs a clear strategy for protecting and enhancing its AI edge, and compute is one of its best levers available. Unlike algorithms and know-how, compute is physical, with a narrow, specialized supply chain, making it significantly more controllable through policy.

Compute has become the engine of AI progress, with advanced chips and massive data centers enabling breakthroughs in AI capabilities and large-scale deployment. Although algorithmic progress is allowing AI models to become far more efficient—the compute needed to train models of equivalent capability drops by half every eight months—the availability of compute still drives the sophistication and scale of their deployment.[13] Critically, advancing the AI frontier continues to require exponentially more compute resources. All of this underscores the strategic imperative of maintaining and sustaining America's edge in compute.[14] In an age of escalating technology competition, nations with robust compute ecosystems will likely command a significant advantage in both AI development and deployment.

The United States' approach to preserving its AI compute advantage has historically relied heavily on export controls—an inherently restrictive measure. These controls have sought to solidify America's advantage over China and other competitors by limiting their access to advanced AI chips. This has allowed the United States to continue to lead in

AI data center build-outs. But this strategy faces mounting challenges: overreliance on restrictive measures risks alienating allies and encouraging the rise of alternative AI supply chains. The People's Republic of China (PRC) is investing to indigenize AI semiconductor production, including close to $100 billion through its state-owned National Integrated Circuit Industry Investment Fund.[15] Domestically, U.S. companies face constraints in energy availability, which hinders their ambitions to deploy large-scale computing infrastructure. Even traditionally close partners are growing skeptical of Washington's expanding use of economic tools for national security objectives, with even close allies calling for non-U.S. AI compute.[16]

> **"It is not enough to seek to protect America's technological lead. We also have a duty to promote American technological leadership."**
>
> —Michael Kratsios, director of the White House Office of Science and Technology Policy

Faced with these headwinds, the current U.S. lead may be short-lived. It is therefore imperative for policymakers to think strategically about how to leverage this advantage now to shape the global AI ecosystem. Washington needs a more proactive "promote" approach to turn its short-term lead into an enduring advantage, without allowing competitors to leapfrog the United States in AI compute.

The Trump administration has commenced decisive action on this front, announcing major AI partnerships with the United Arab Emirates and the Kingdom of Saudi Arabia in May 2025. The United Arab Emirates agreement includes plans for a five-gigawatt (GW) AI campus in Abu Dhabi and a deal for the United States to enable the import of 500,000 advanced NVIDIA AI chips annually, while the Saudi Arabia deal includes over $80 billion in cross-border AI investments through multiple company-to-company agreements.[17] While the details—and security measures—are still being developed, these initiatives represent a significant shift toward using AI partnerships as instruments of strategic competition, demonstrating a new willingness to deploy compute resources as tools of technological diplomacy rather than merely restricting access to competitors.

U.S. policy settings now need to catch up. Beyond individual deals, U.S. AI leadership requires moving from a policy of global restriction and control to responsible deployment and diffusion, accompanied by security measures and safeguards. Only then can the United States appropriately manage emerging national security threats from foreign and domestic AI progress and ensure democratic leadership of the global AI ecosystem.

This report outlines the ongoing importance of compute for the development and deployment of AI—even in the face of increasingly cost-efficient models. It articulates the national security rationale for active efforts to maintain and strengthen U.S. AI leadership. Assessing compute governance actions to date, it argues for a more proactive U.S. approach to global compute provision, shifting from purely protecting U.S. technology to a strategy of promotion and AI diplomacy, underpinned by partnerships with strategic countries. This report lays a path for near-term engagements, identifying six priority nations to engage with based on strategic importance, compute needs, and alignment potential: the United Arab Emirates, Saudi Arabia, Brazil, India, and AUKUS partners (Australia and the United Kingdom). The report sketches out next steps for advancing these critical partnerships, while strengthening controls on adversaries such as China. Finally, this report evaluates the role of multilateralism in sustaining and supporting U.S. AI leadership and makes a series of recommendations to inform American AI leadership.

Ultimately, AI and its impacts will transcend national borders. But the infrastructure that underpins it will remain firmly rooted in the physical world. The United States has a choice: proactively promote its AI globally to maintain technological leadership and shape the rules of AI development, or risk watching its advantage erode as competitors build alternative ecosystems that diminish America's power to manage AI opportunities and risks and ensure U.S. security and prosperity.

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COMPUTE: THE ENGINE OF AI PROGRESS

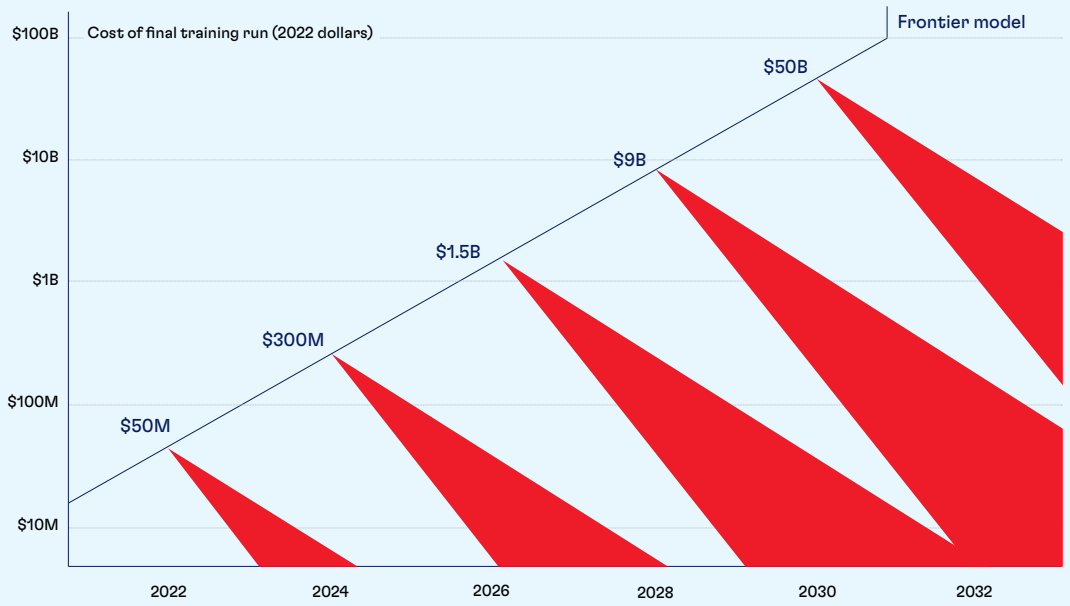
COMPUTE—THE SPECIALIZED CHIPS, DATA CENTERS, and infrastructure needed for AI systems—is the fuel of the AI revolution. Although advances in algorithms and data resources have also been crucial to AI progress, it is the unprecedented scale of computing power that enables these elements to coalesce into today's sophisticated AI systems.[18] This section explores why compute is central to leadership in frontier AI development and deployment—and why it must remain a cornerstone of U.S. AI strategy.

To the extent the United States has an AI strategy, it rests on the assumption that the country's ability to amass advanced AI chips—and control their global flow—cements American AI leadership over China. This so-called "chip moat" would effectively block China from catching the United States at the AI frontier.[19]

Recent developments in China may seem to challenge Washington's strategy. Through innovative architecture design and training techniques, DeepSeek-R1 achieved impressive performance with significantly less compute than comparable Western models.[20] However, closer analysis reveals that these breakthroughs are consistent with known trends.[21] It is much easier and cheaper to follow a trodden path than to forge a new one.[22] Research reveals that the compute needed to reach a given level of capability decreases over time: Algorithmic improvements halve the compute needed to train equivalent AI models approximately every eight months.[23] This dynamic means that AI capabilities at all levels will likely diffuse over time.[24] This happens especially rapidly when model weights are released publicly, allowing other actors to directly copy the architecture. Similar risks can also arise when models are accessed through an application programming interface (API) but lack protections from distillation—a process in which someone uses the outputs of an existing model to train a comparable model for a fraction of the compute. Some argue that this proliferation of AI capability undermines the centrality of compute for AI progress and Washington's broader strategy to maintain its AI leadership. Comments from DeepSeek's chief executive officer (CEO), Liang Wenfeng, suggest otherwise: "Money has never been the problem for us; bans on shipments of advanced chips are the problem."[25] Taking a closer look at the relationship between compute and AI training, enhancement, and deployment reveals the ongoing importance of compute, and the imperative of securing ongoing U.S. leadership in this critical domain.

Ultimately, AI and its impacts will transcend national borders. But the infrastructure that underpins it will remain firmly rooted in the physical world.

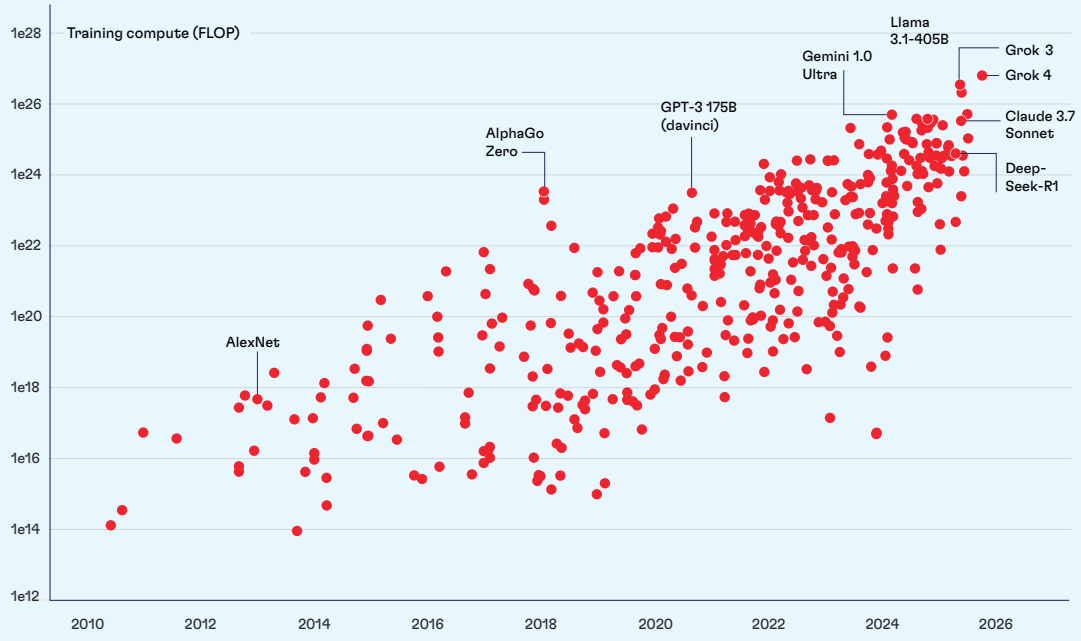
Figure 1 | Increasing Compute Efficiency over Time[26]



Advancing the frontier of AI capability continues to demand more compute, but the cost of any given level of capability decreases over time, enabling AI capabilities to diffuse.

See: Paul Scharre, *Future-Proofing Frontier AI Regulation: Projecting Future Compute for Frontier AI Models* (Center for a New American Security, March 13, 2024), https://www.cnas.org/publications/reports/future-proofing-frontier-ai-regulation.

Figure 2 | Compute Used for AI Training Runs



Since the emergence of the Deep Learning era in 2010, the compute used to train notable AI models has roughly doubled every six months.

Source: "Notable AI Models," Data on AI, Epoch AI, May 9, 2025, https://epoch.ai/data/notable-ai-models.

Compute for AI Training

Access to the most advanced compute capabilities—in both quality and quantity—will determine which nation advances the AI frontier. When training state-of-the-art AI, increased compute has meant increased capacity. Since the emergence of deep learning in 2010, top U.S. AI labs have benefited from a simple strategy: Throw exponentially more compute into pretraining to deliver better AI. Empirical studies of AI learning curves (so-called "scaling laws") show that increasing the computation used in training (measured in floating-point operations, or FLOP) yields predictable improvements in model performance.[27] This has led to a dramatic rise in compute requirements for cutting-edge AI: Training compute of notable AI models doubles roughly every five and a half months.[28] Epoch AI estimates that xAI's Grok 4, released in July 2025, was trained using approximately 6.4×10^{26} FLOP, making it the most compute-intensive AI model at the time of publication. xAI achieved this milestone with a supercomputing cluster comprising 200,000 NVIDIA graphics processing units (GPUs).[29] While some have speculated that performance returns to pretraining compute scaling may soon hit a wall, there has not yet been evidence of this happening. Indeed, early testing of Grok 4 against leading benchmarks indicates it is the most performant model yet.[30]

Compute for Enhancement and Deployment

Access to large-scale compute is also needed to effectively enhance and deploy models. Following pretraining, AI developers use compute posttraining to enhance and improve the model's performance for particular tasks. This includes techniques such as reinforcement learning from human feedback, or RLHF, and the use of reinforcement learning to teach reasoning skills.[31] The AI frontier has seen significant progress from leveraging more compute beyond training to elicit greater capabilities from a model at the time of deployment. Reasoning models, such as OpenAI's "o" series, are enhanced in posttraining to think step-by-step through problems.[32] These models then leverage more compute by generating "thinking tokens" during deployment to reason before giving a final answer. The longer the model thinks, the more compute it uses. The reasoning approach for AI models has yielded dramatic progress in verifiable tasks, such as problem-solving, scientific reasoning, and mathematics, to the point where they now rival human experts in some fields.[33] Likewise, deploying AI at scale—for example, running a large language model for millions of users, or running multiple in-depth experiments at the same time—demands significant compute resources.[34]

The Compute–Capability Cycle

Three mutually reinforcing trends will continue to elevate the importance of compute in driving AI progress, further cementing its role at the core of U.S. AI leadership. First, as previously outlined, the compute needed to advance the frontier is ever increasing, warranting exponential investments in compute and energy. As long as scaling laws hold, groundbreaking capabilities are most likely to emerge from companies that can access the most AI compute.

Greater compute availability enables more and better experiments, allowing for more optimized design of the next generation of AI models.

Second, the strategic benefits of AI are only as good as how well and how much an AI model is deployed. Using AI models to "think" for longer demands more compute, and deploying each additional instance of a model likewise necessitates more compute.[35]

Third, the most advanced AI capabilities tend to be reinvested into further advancing the frontier of AI, which again benefits actors who have significant compute at their disposal. This effectively creates a positive feedback loop of AI progress that could yield decisive advantages for companies at the AI frontier. Before models are released publicly, they are first accessed by the labs themselves, and can be used internally, including for experimentation and optimization of training for the next generation of AI models.

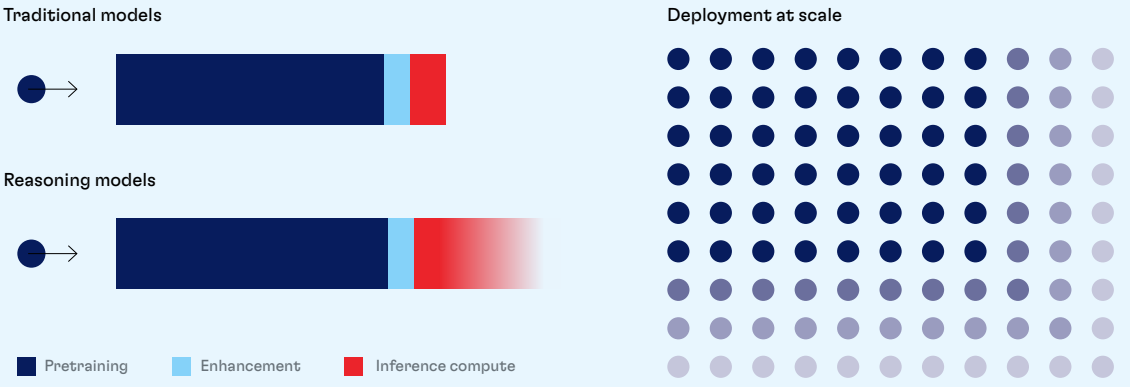
Here again, more compute—through both quality and quantity—can be used to generate and refine high-quality synthetic data, boosting performance gains from the scale of training and deployment.[36] Progress in optimizing and improving AI models comes from the ability to run experiments to uncover new insights. Greater compute availability enables more and better experiments, allowing for more optimized design of the next generation of AI models.

So although a model of any given capability might diffuse more quickly, overall leadership in AI—both in terms of advancing the frontier of capability and being the leading global provider—will likely continue to be shaped by the quantity and quality of compute. Nations with robust compute ecosystems therefore will likely maintain a significant and self-reinforcing advantage in both development and deployment.

This underscores a key point for policymakers: AI leadership is tightly interwoven with access to world-leading amounts of compute. Data and algorithms also matter, but can be copied and diffused rapidly, making them much harder to govern. Even the most innovative AI companies will face limits in what they can achieve without sufficient computing hardware and the energy to power it. On a domestic level, the importance of compute at scale is the reason that leading AI models are developed by companies with billions of dollars of investment, while academia—despite its intellectual talent—cannot meaningfully compete.[37] Compute has become a strategic asset.

While the United States occupies a dominant position across the entire AI stack, it is its compute ecosystem that offers the most meaningful advantage over China and other competitors. The United States has control or leverage over all critical parts of

Figure 3 | The Growing Role of Compute Posttraining



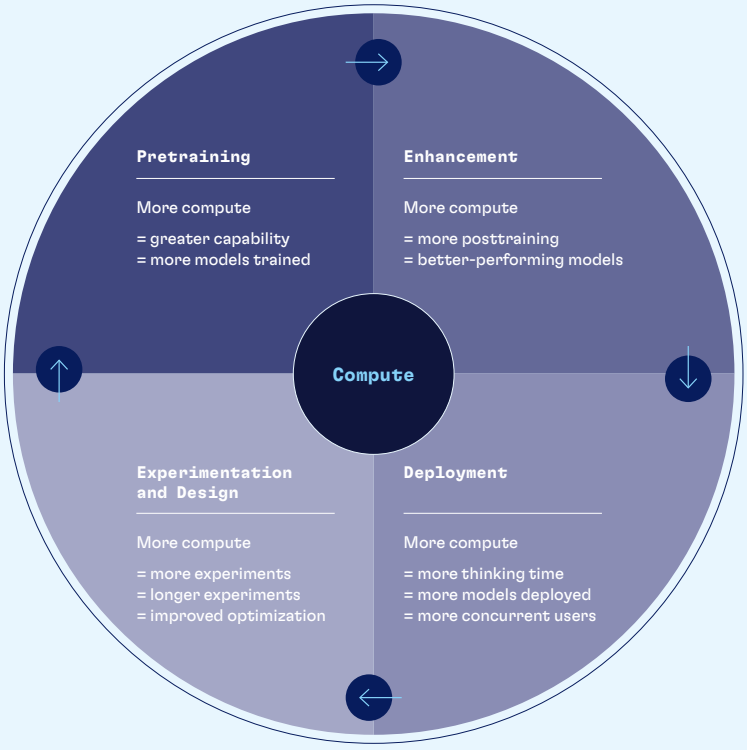
Compared to previous AI models, reasoning models use more compute at deployment time to "think" for longer periods. Compute use also increases, based on how many instances of a model are deployed. (Representation not to scale.)

Modified from: Jim Fan (@DrJimFan), "OpenAI Strawberry (o1) is out!" X (formerly Twitter), September 12, 2024, https://x.com/DrJimFan/status/1834279865933332752.

the AI hardware supply chain. American companies design most high-end AI chips, with NVIDIA alone holding approximately 90 percent of the data center AI GPU market.[38] Allied foundries using U.S. intellectual property handle much of the manufacturing, with the Taiwan Semiconductor Manufacturing Company (TSMC) producing about 90 percent of the world's most advanced chips for U.S. firms.[39] Further up the supply chain, Dutch company ASML maintains a complete monopoly on extreme ultraviolet (EUV) lithography machines—the highly specialized critical equipment required to manufacture the most advanced semiconductor chips—and has to date worked closely with the United States to control China's access.[40] For cloud compute, U.S. companies Amazon Web Services, Microsoft Azure, Google Cloud, and Oracle collectively command 66 percent of the global market.[41] The U.S. share for AI compute specifically is likely even higher.

Maintaining the AI compute advantage requires a dual-pronged strategy: maintaining U.S. control of the largest AI compute clusters in the world, while simultaneously enabling U.S. companies to globally provide subfrontier levels of compute.

Figure 4 | Compute: The Engine Behind the AI Flywheel



Access to compute underpins the training, refinement, development, and experimentation of AI models, driving a self-reinforcing loop of AI progress.

Concept inspired by Lennart Heim and Ashley Lin, "When AI Takes Time to Think: Implications of Test-Time Compute," RAND Corporation, March 26, 2025, https://www.rand.org/pubs/commentary/2025/03/when-ai-takes-time-to-think-implications-of-test-time.html.

THE STRATEGIC NECESSITY OF A U.S.-LED GLOBAL AI ECOSYSTEM

FOR THE UNITED STATES TO MAINTAIN ITS EDGE in AI, it is not enough to accelerate domestic development and diffusion—it must lead globally. This section outlines why international AI leadership is a strategic imperative for U.S. national security, and the role compute infrastructure plays in underpinning AI leadership.

The strategic advantages of international leadership are clear in other domains: U.S. control of the global dollar-based financial system has allowed it to set international standards and enforce sanctions against adversaries.[42] For example, in 2012, the United States leveraged its influence over the Society for Worldwide Interbank Financial Telecommunication (SWIFT) to disconnect Iranian banks from the global financial messaging system.[43] This effectively isolated Iran from the international financial network and was widely credited with bringing Iran to the negotiating table in 2015 to agree to the Iran Nuclear Deal, formally known as the Joint Comprehensive Plan of Action.[44] This financial dominance has been a cornerstone of American geopolitical power for decades, enabling the United States to advance its interests, promote stability, and counter threats without direct military intervention.

AI represents a similarly powerful lever of influence. The nation that becomes central to global AI deployment will play a key role in shaping the foundational norms, technical standards, and governance of this transformative technology.[45] By establishing itself as the key AI provider, the United States can set acceptable use policies, security requirements, and monitoring protocols that ensure the most advanced systems are used in alignment with U.S. interests and values. At a time when leading AI labs are warning of unprecedented capabilities, this influence will be vital to U.S. national security.

> **Nations with robust compute ecosystems will likely maintain a significant and self-reinforcing advantage in both development and deployment.**

Moreover, leadership in AI can grant the United States strategic advantages, allowing it to monitor technological advancements internationally, build alliances based on technological cooperation, and deter adversaries from misusing AI technologies. Compute providers—the private sector companies running AI data centers—can also play a role in ensuring that sensitive intellectual property is secured and access to compute is appropriately managed.[46] Ultimately, the nation that leads in AI will secure technological superiority and wield significant geopolitical influence.

The alternative—allowing other nations to fill this leadership vacuum—would significantly constrain America's power. As AI increasingly becomes the foundation of military and economic power, the absence of U.S. leadership would not only diminish American influence but could potentially subject U.S. companies to regulatory burden from competing governance models that are ill-suited to American interests: either the European Union's (EU's) precautionary, regulation-heavy approach that could stifle innovation, or the Chinese Communist Party's (CCP's) authoritarian vision that weaponizes AI for surveillance, censorship, and social control. The United States cannot afford to let others write the rules for a technology that will define global power dynamics for decades to come.

Compute Infrastructure in AI Leadership

In this competition, compute represents the most durable component of the AI supply chain. While software and AI models can—for the most part—be swapped in and out with relative ease, compute infrastructure requires massive investments in data centers and energy facilities that create long-term dependencies.[47] Decisions made today will shape the AI ecosystem for decades, as the enormous cost and disruption of replacing entire data centers and specialized chips will likely deter most nations and companies from switching providers later. The United States cannot afford to let other actors take over as the dominant providers of AI infrastructure. Such an outcome would undermine American influence over how AI is developed, deployed, and regulated worldwide, with profound implications for U.S. national security, economic competitiveness, and democratic values. Yet, at the same time, if the United States does not aid other nations in accessing advanced AI, China may seek to fill the void. Beijing has explicitly made AI a pillar of its global technology outreach strategy. Early signs suggest that China aims to replicate its telecommunications playbook—where Huawei gained dominant market share across multiple regions—in the AI domain.[48] It is already making developing countries promises of local data centers to entice them into the Chinese ecosystem.[49]

While China's ability to lead in the development and export of advanced AI systems is currently constrained by its limited access to cutting-edge AI chips, the U.S. lead is by no means guaranteed. Export controls on advanced AI chips and semiconductor manufacturing equipment have created barriers to China's frontier AI development. However, the PRC is investing—including close to $100 billion through its state-owned National Integrated Circuit Industry Investment Fund—to develop indigenous semiconductor manufacturing capabilities and create alternative AI hardware solutions.[50] While these efforts have faced significant technical challenges, Washington should not underestimate the PRC's determination to achieve self-sufficiency in this strategic sector. The United States must act decisively to capitalize on the current window of opportunity created by China's compute constraints, lest it be short-lived.

While the United States occupies a dominant position across the entire AI stack, it is its compute ecosystem that offers the most meaningful advantage over China and other competitors.

This section outlines two key reasons why a U.S.-led AI ecosystem—from AI compute to models to AI-enabled services—is a strategic national security imperative: first, to preempt China's growing technological influence and prevent the establishment of AI dependencies that could be leveraged against American interests; and second, to shape global standards and governance frameworks that harness AI's transformative opportunities and effectively manage its unique risks.

Preempting Chinese AI Influence

The strong uptake of China's Digital Silk Road provides clear evidence that nations are willing to accept inferior technology offerings, even with associated risks, if alternatives are too costly or too complicated to secure. Launched in 2015 as the digital dimension of the broader Belt and Road Initiative, the Digital Silk Road encompasses investments in

foundational digital infrastructure, including the construction of data centers, fiber-optic cables, 5G networks, smart city projects and, crucially, AI offerings.[51] China has a growing focus on AI infrastructure in strategic regions across Africa, Southeast Asia, and the Middle East, with Chinese tech giants such as Huawei, Alibaba Cloud, and Tencent building data centers and digital ecosystems that could potentially serve as platforms for future AI deployment.[52] Through these investments, Beijing aims to set technical standards and establish long-term digital dependencies, with the potential to ultimately undermine the centrality of U.S. AI and compute offerings.[53]

This strategy is more than just economic; it's geopolitical. China's provision of critical, foundational technologies is a tool to increase its influence over other nations, including through espionage, coercion, and censorship.

Risks of Espionage

Reliance on Chinese AI infrastructure and ecosystems would make nations highly vulnerable to espionage. The PRC's 2017 National Intelligence Law explicitly requires Chinese companies to cooperate with government intelligence efforts when requested, with no meaningful recourse to refuse.[54] This creates a fundamental security problem: Chinese technology deployed internationally can potentially be leveraged for intelligence gathering at Beijing's direction. For critical technologies such as AI, this risk becomes especially acute.

Huawei's leadership in 5G offers a sobering precedent. The Chinese telecommunications giant succeeded in gaining a meaningful lead in 5G infrastructure before the United States and its allies identified the risks and mobilized a response. Only after Huawei equipment had been broadly installed globally, including in the United States and the United Kingdom (UK), did technical analysis reveal that it is fundamentally impossible to isolate and protect a 5G network from the vendor that supplies it. The provider retains privileged access that can be exploited at any time.[55] The result was costly, as the United States and the United Kingdom undertook necessary "rip and replace" operations for Huawei infrastructure to address security concerns. In the United States, the process remains incomplete, with rural U.S. telecommunications providers still working to remove Chinese equipment, leading Congress to authorize another $3 billion in assistance in late 2024.[56] In the UK, the leading telecommunications company, BT, estimates the costs of rip and replace to be around $646 million over five years.[57] The United States has spearheaded global education campaigns about the risk of Chinese telecommunications equipment, including through the first Trump administration's Clean Network Initiative, but Huawei still makes up 30 percent of telecommunications equipment worldwide.[58] For a technology as important as AI, the United States must preempt a similar situation.

When nations adopt Chinese AI solutions, they implicitly accept the value system and restrictions embedded within these technologies. This poses a direct threat to free expression and democratic discourse.

AI infrastructure presents even greater risks. Nations that build and run their AI capabilities on Chinese compute infrastructure may find themselves unable to detect—let alone prevent—surveillance, data harvesting, or manipulation of their most sensitive systems. Even if such compromises were discovered, once these systems underpin key parts of the economy, the damage to national security, economic competitiveness, and sovereignty may already be severe.

Vulnerability to Coercion

If a nation's critical systems rely on Chinese infrastructure, that country is likely to be more vulnerable to coercion and reluctant to oppose the PRC on international issues, strengthening China's hand globally. The PRC has a clear history of leveraging its entanglement in other nations' ecosystems to exert political pressure on and coerce other nations. In 2010, after the Norwegian Nobel Committee awarded the Peace Prize to Chinese dissident Liu Xiaobo, the PRC retaliated by imposing restrictions on Norwegian salmon imports, citing contamination concerns.[59] Norwegian salmon rapidly plummeted from constituting

approximately 90 percent of China's salmon imports in 2010 to less than 30 percent in 2013.[60] Similarly, after Australia advocated for an independent inquiry into the origins of COVID-19 in 2020, the PRC banned the import of Australian rock lobsters, under the pretense of heavy metal contamination.[61] This ban devastated Australia's lobster industry, which had previously sent more than 90 percent of its exports to China, and increased domestic political pressure on the Australian government to moderate its stance.[62]

These examples underscore the PRC's established pattern of utilizing its leverage to influence or penalize countries that take positions contrary to its authoritarian interests, while maintaining plausible deniability through technical or regulatory justifications. AI systems could provide even more powerful levers for such coercion. Given the inherent complexity and opacity of AI systems, China could potentially disrupt critical infrastructure or introduce subtle malfunctions that would be difficult to definitively attribute to deliberate interference. The technical complexity of AI would provide China with enhanced ability to deny responsibility, claiming that issues were simply technical glitches or implementation problems rather than deliberate retaliation.

Censorship and Misinformation

Other nations' reliance on Chinese AI infrastructure and ecosystems would give Beijing unprecedented power to shape global information environments through censorship and content manipulation. Unlike traditional media controls that primarily affect China's domestic audience, AI systems integrated into other nations' ecosystems could extend China's censorship reach more broadly. When nations adopt Chinese AI solutions, they implicitly accept the value system and restrictions embedded within these technologies. This poses a direct threat to free expression and democratic discourse.

The cautionary example of WeChat censorship in Australia illustrates the danger of extraterritorial CCP censorship. In 2020, during diplomatic tensions between Australia and China, the Australian prime minister's post on WeChat to the Chinese Australian community was taken down by the platform, which cited that the post involved "the use of words, pictures, videos" that would "incite, mislead, and violate objective facts, fabricating social hot topics, distorting historical events, and confusing the public."[63] This censorship intensified in 2022, when in the critical lead-up to Australia's federal election, the prime minister's WeChat account was blocked from the platform, effectively preventing Australia's head of government from communicating with the Chinese Australian community on a highly popular messaging and news channel.[64] While WeChat claimed the account was merely transferred due to ownership disputes, the timing and selective enforcement strongly suggests political motivation. This incident vividly demonstrates how control of digital platforms can be weaponized to shape political narratives beyond China's borders, silencing foreign government officials when their messages conflict with Beijing's interests.

AI systems present an even more concerning threat vector for censorship and content manipulation. Unlike messaging apps, which primarily transmit existing content, generative AI actively shapes knowledge production through research assistance, content creation, and information discovery. If Chinese-controlled AI systems dominate global markets, they could subtly reshape what information is accessible, how questions are answered, and which viewpoints are amplified or suppressed. For instance, AI models could be engineered to avoid generating content about sensitive topics such as Taiwan's status, Tiananmen Square, or human rights abuses in the Xinjiang Uyghur Autonomous Region, effectively globalizing the CCP's domestic censorship regime. Evidence of such censorship has already emerged in the case of DeepSeek-R1.[65] The risk extends beyond individual expression to potentially reshape collective understanding on issues in which China seeks to influence global narratives, undermining the information foundation upon which democratic deliberation depends.

Shaping Global Standards

Beyond competing with China, leadership in AI development and deployment is essential for shaping global standards that align with U.S. interests. As AI capabilities rapidly advance, experts warn of potentially significant risks. These range from sophisticated, autonomous cyberattacks at scale to the potential for AI to aid in developing biological weapons.[66] Leading AI developers—including OpenAI, Anthropic, and

xAI—all acknowledge such risks, with OpenAI recently stating that its "models are on the cusp of being able to meaningfully help novices create known biological threats."[67] Mismanaged, such risks could upset the global balance of power. While the full spectrum of risks remains uncertain, the potential stakes are too high to ignore. The United States must be positioned to guide international norms and technical standards, based on its values and security interests.

If allied nations adopt American AI models, APIs, and safety practices, those approaches become de facto standards.

U.S. leadership in AI confers the technical expertise and credibility needed to shape these global standards, which should promote democratic values and freedom of expression while establishing guardrails for managing national and global security risks. If allied nations adopt American AI models, APIs, and safety practices, those approaches become de facto standards. The United States can best enable this by remaining at the technological frontier, actively promoting U.S. AI technology internationally, and ensuring it has the capability to anticipate problems and develop effective safeguards.

Importantly, effective global standards should eventually include, rather than exclude, China. The COVID-19 pandemic serves as a clear reminder that risks can transcend national borders, harming U.S. interests even when they originate overseas. While the origins of COVID-19 may never definitively be known, multiple intelligence assessments—including from U.S. agencies and German intelligence officials—have concluded that COVID-19 most likely originated from a laboratory incident rather than natural transmission.[68] Just as inadequate biosafety standards in foreign laboratories may have led to a pandemic causing more than one million American deaths and trillions in economic damage, risks arising from unsafe AI development abroad could similarly harm U.S. national interests, regardless of where they originate.[69]

Building a U.S.-led global AI ecosystem is about shaping the environment in which AI evolves, rather than ceding that terrain. It complements defensive measures by ensuring that trusted countries move forward together. It is not only a national security imperative, but an economic imperative as well. As Microsoft President Brad Smith noted, "Exporting American AI to our allies and friends" not only bolsters our partnerships but "bolsters our domestic economy."[70] As the next sections will show, the United States has begun to sketch the outlines of this ecosystem through frameworks and alliances, but further work is needed to fully realize this vision.

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COMPUTE CONTAINMENT: A RESTRICTIVE APPROACH TO U.S. LEADERSHIP

AS OF PUBLICATION, THE MAJORITY OF THE United States' actions to preserve its AI leadership have been primarily focused on technology protection. By controlling chip intellectual property, design software, and critical manufacturing equipment, the United States has maintained influence over who can build and deploy advanced AI hardware.

Export controls on AI chips and technology have been a bipartisan priority for the past eight years. Beginning in 2017, the Trump administration initiated measures to limit China's access to advanced semiconductor technology.[71] In 2019, the United States successfully persuaded the Netherlands to restrict sales to China of ASML's EUV lithography machines—equipment essential for manufacturing the most advanced AI chips.[72] The Wassenaar Arrangement multilateralized these controls in December 2019.[73] These diplomatic actions set the stage for the United States to launch more aggressive measures in October 2022, when the Biden administration implemented comprehensive export controls targeting China's access to advanced AI chips and semiconductor manufacturing equipment.[74] The Biden administration significantly strengthened these controls in 2023, further restricting China's access to powerful AI accelerators, while closing loopholes in earlier rules.[75]

In December 2024, the Department of Commerce's Bureau of Industry and Security (BIS) introduced stricter regulations aimed at curtailing China's ability to produce advanced-node semiconductors.[76] These rules included controls on 24 types of semiconductor manufacturing equipment and three types of software tools used in semiconductor development and production.[77] Additionally, the updated regulations targeted high-bandwidth memory, or HBM, technologies—an essential piece of AI chips in particular—and placed 140 Chinese entities on the Entity List, significantly restricting their access to U.S. semiconductor equipment and technology.[78] The BIS explicitly designed these measures to limit China's ability to circumvent prior export restrictions through offshore production.[79]

Perhaps the most far-reaching use of export control authorities in the United States was the Biden administration's January 2025 Framework for Artificial Intelligence Diffusion (the Framework). Despite being rescinded by the Trump administration in May 2025, the Framework put the world on notice that America was ready to utilize the full spectrum of economic and regulatory levers to safeguard its compute edge.[80] The Framework not only restricted a small number of adversaries from

accessing AI chips, but also stratified the world into three tiers—effectively establishing a new global hierarchy for AI chip access.[81] Under this hierarchy, the closest U.S. allies had essentially unrestricted access to advanced AI chips, while adversaries such as China and Russia faced comprehensive denial. Companies from a large middle tier of countries could access limited quantities of advanced AI chips without licenses, with the possibility of higher allocations if the importing company met security standards and divested from Chinese technology dependencies. Under the rule, U.S. companies could export and build AI computing infrastructure overseas, provided they met security standards and kept the majority of their overall AI compute in the United States. The Framework also introduced security requirements for the export of model weights—the technical artifacts that encapsulate an AI model's capabilities—marking the first attempt to regulate the flow of frontier AI software.[82] It also closed a well-known loophole by requiring companies in the United States and abroad to prevent Chinese actors from training frontier AI models through the cloud.[83] The Framework sparked significant backlash from U.S. allies and partners, who perceived it as another example of American technological overreach—the unilateral imposition of U.S. preferences on the global technology ecosystem without meaningful consultation or shared decision-making.[84]

The Right Goals, But an Incomplete Strategy

The United States' compute containment approach has had a strategic rationale: maintaining American AI leadership by restricting China's access to advanced chips and carefully managing the diffusion of AI capabilities to other nations. This dual objective seeks to prevent China's technological advancement and the possibility that other countries might import massive quantities of AI chips to suddenly surpass U.S. capabilities. While these strategic goals are fundamentally sound, their implementation has been problematic. The predominantly restrictive and unilateral approach has generated significant diplomatic friction, leading to demands for alternative technology ecosystems.

The Trump administration has started to take more proactive action, including through significant AI chip deals with partners in the Persian Gulf region.[85] But these actions have yet to translate into a more comprehensive policy approach supported by appropriate security standards and safeguards. As the Trump administration considers the shape of what should replace the Framework for AI Diffusion, it should use this opportunity to clarify and set security standards. Continuing to rely on overly broad controls may inadvertently undercut U.S. industry's global reach, reduce foreign demand for U.S. technology, and spur neutral countries to invest in non-U.S. computing ecosystems.[86]

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HEADWINDS TO U.S. AI LEADERSHIP

DRIVEN IN PART BY INCOMPLETE IMPLEMENTATION, the current U.S. approach to AI leadership faces growing headwinds that could ultimately undermine the very edge the United States seeks to preserve. Other nations, frustrated by U.S. export restrictions and trade actions, have shown growing mistrust in U.S. technology.[87] Gaps in export control enforcement are facilitating China's technological advancement, as chip smuggling operations and inadequate due diligence by semiconductor foundries enable controlled AI chips to circumvent restrictions and reach Chinese entities.[88] Although narrow parts of the semiconductor supply chain have proven difficult to replicate, new breakthroughs may eventually enable China to leapfrog the United States. Domestically, limited access to energy risks constraining America's ability to continue its AI lead.[89]

Diminishing Trust in U.S. AI Offerings

The United States' restrictive approach to AI compute has led other nations, even traditionally close partners, to publicly voice concerns about their technological dependence on U.S. suppliers. During the tenure of the Framework for AI Diffusion, European leaders protested the policy as overreach.[90] The European Commission argued that EU access to the AI chip market serves as "an economic opportunity for the United States, not a security risk."[91] Some partners were even more blunt: In response to Poland's exclusion from the top tier, the country's deputy prime minister blasted the rule as "incomprehensible" and "not based on any substantive reasons," urging EU officials to push back against Washington.[92] Israel, which was also excluded from the top tier, convened an emergency panel to discuss the issue, with one senior researcher noting, "In an era when infrastructure is a precondition for the next technological revolution and AI chips are a key raw material, Israel needs a clear national AI strategy."[93] Major emerging economies echoed these concerns. India—also relegated to the second tier—signaled it would raise objections with Washington, amid expert warnings that the GPU cap could "stifle innovation and raise costs as India looks to scale up its AI capabilities."[94] Yet even for countries that did not have compute-intensive AI aspirations, the perception that the Framework for AI Diffusion limited their technical sovereignty was potentially as damaging as any practical impacts.

America's restrictive approach is accelerating foreign moves to secure independent AI infrastructure. While no alternative supply chain currently exists for cutting-edge AI capabilities, the reality is more nuanced than unilateral U.S. control. In reality, the AI chip supply chain spans a small group of key countries—most notably Taiwan, the Netherlands, Japan, South Korea, and Germany—many of which control critical chokepoints in semiconductor manufacturing, lithography, and advanced materials. As an April 2025 *Foreign Affairs* analysis highlights, the efficacy of U.S. export controls fundamentally depends on allied compliance.[95] Growing discontent among these critical allies could lead them to realign toward supply chains that are less subject to U.S. direction. The U.S. cloud computing provider Oracle captured this growing sentiment: "The Diffusion Framework is

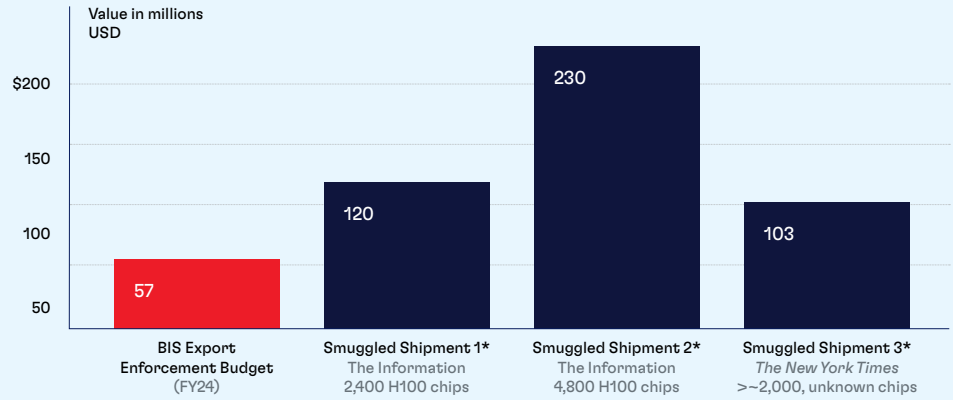
more aptly called the 'Export Control Framework for the Advancement of Alibaba, Huawei, Tencent, and SMIC.'"[96]

Across Europe and beyond, governments are seeking to reduce reliance on U.S. compute providers. In the Netherlands, parliament recently approved motions to build a national cloud platform under Dutch control, aiming to end dependence on U.S. tech giants.[97] This reflects a wider European trend toward digital sovereignty: Dozens of EU tech firms have urged Brussels to create a sovereign tech investment fund and a "Buy European" mandate for cloud infrastructure.[98] The European Commission's April 2025 *AI Continent Action Plan* explicitly states that "excessive dependence on non-EU infrastructure may bring economic security risks and is a concern," with the EU's InvestAI initiative seeking to mobilize the equivalent of $230 billion of investment in AI compute "gigafactories."[99] Similar sentiments are evident elsewhere. Gulf states are establishing local cloud hubs and actively pursuing "sovereign compute" capacity to avoid overreliance on U.S. vendors or policies.[100] The risk for Washington is a fragmented global compute ecosystem that sidelines U.S. companies, born in part from allies' desire for autonomy in the face of U.S. export controls, as well as broader shifts in diplomatic dynamics.

Export Control Gaps Fueling China's AI Progress

U.S. export controls on advanced AI chips have proven porous. Chinese firms have exploited loopholes to stockpile and smuggle advanced chips to boost their AI development. Following the October 2022 controls, China effectively stockpiled chips that NVIDIA specifically designed to fall below the controls' technical specifications, while maintaining comparable performance.[101] The BIS did not update export controls to address this loophole until October 2023—a year in which NVIDIA made more than $9 billion in revenue from sales to China.[102] Since the adoption of stricter controls, investigative journalists have reportedly identified significant numbers of smuggled AI chip shipments into China, with June 2025 analysis estimating approximately 140,000 GPUs were smuggled

Figure 5 | Disparity Between Enforcement Spending and Illicit AI Chip Shipments



*Shipment values represent amounts paid by Chinese buyers

There is a dramatic disparity between the Bureau of Industry and Security's enforcement budget and the scale of chip smuggling to China. This image shows just three discrete smuggling shipments, as reported by investigative journalists. The actual scale of chip smuggling is likely much greater.

Sources: *Fiscal Year 2025 President's Budget Request* (Bureau of Industry and Security, U.S. Department of Commerce, January 2024), https://www.commerce.gov/sites/default/files/2024-03/BIS-FY2025-Congressional-Budget-Submission.pdf; Ana Swanson and Claire Fu, "With Smugglers and Front Companies, China Is Skirting American A.I. Bans," *The New York Times*, August 4, 2024, https://www.nytimes.com/2024/08/04/technology/china-ai-microchips.html; and Qianer Liu, "Nvidia AI Chip Smuggling to China Becomes an Industry," The Information, August 12, 2024, https://www.theinformation.com/articles/nvidia-ai-chip-smuggling-to-china-becomes-an-industry.

into China in 2024 alone.[103] One of the shipments discovered was worth almost double the BIS's annual enforcement budget of $57 million.[104] Most concerningly, Huawei illegally accessed more than 2.9 million advanced chips from Taiwanese chip fabricator TSMC through a shell company.[105] Still, these failings do not make export controls irrelevant; they still impose a differential cost on China.[106] However, the gaps do render export controls much less effective. To truly fortify the United States' advantage, Washington needs to finance and follow through on enforcement.

China's Drive for Chip Self-Sufficiency

Over time, Chinese investment in domestic chipmaking could erode America's hardware advantage by developing an alternative AI compute supply chain. Beyond the nearly $100 billion in financing for national champions through the state-owned National Integrated Circuit Industry Investment Fund, China's local governments have also established dozens of semiconductor funds and joint ventures, injecting additional billions of dollars into domestic chip production.[107] For example, the Shanghai Semiconductor Industry Investment Fund recently expanded its capital base to approximately $2 billion, and Shenzhen is accelerating its establishment of a similar fund worth $10 billion.[108] These investments are not solely for AI chips, as China is building out both mature and advanced node capabilities.[109] However, given the PRC's stated goal of becoming the global AI leader by 2030, combined with the pressure of Washington's export controls, it is reasonable to assume AI chips are a priority in this effort.[110]

China is also actively seeking to acquire semiconductor manufacturing equipment and expertise. Germany's optics giant Zeiss—the sole supplier of critical lenses for ASML's EUV lithography machines—saw orders related to semiconductor manufacturing equipment jump 11 percent in 2024, buoyed by "special circumstances such as strong demand for semiconductor production equipment in China."[111] Evidence has emerged that Chinese companies have sought to poach staff from ASML and Zeiss, offering triple their salaries according to some reports.[112]

As the PRC seeks to replicate the existing AI chip supply chain, it is also pursuing new innovations to leapfrog the United States. The Center for Security and Emerging Technology's Emerging Technology Observatory has identified China as the global leader in semiconductor research publications, with Chinese authors contributing to 34 percent of all papers on chip design and fabrication, compared to 15 percent for the United States.[113] While this statistic may partially reflect a shift in Western research practices—with U.S. and allied innovation increasingly conducted behind closed doors within private industry to safeguard intellectual property—it nevertheless signals China's sustained commitment to semiconductor advancement.[114] This robust publication output demonstrates not only China's intense focus on closing the technology gap, but also creates the conditions for potential breakthrough innovations that could challenge U.S. hardware advantages.

Nevertheless, while China is demonstrating strong intent, its current level of AI compute manufacturing capacity should not be overstated. China's National Integrated Circuit Industry Investment Fund has come under scrutiny for fraud and corruption.[115] Furthermore, China has not yet demonstrated an ability to manufacture competitive AI chips at scale. Large quantities of China's leading AI chips—the Huawei Ascend 910B (which can be copackaged to form the Ascend 910C chip)—were reportedly made in Taiwan by TSMC and subsequently shipped to China via a shell company, in violation of export controls.[116] Despite billions in investment and strategic prioritization, China continues to face significant technological hurdles in achieving semiconductor self-sufficiency, with indigenous chip production still lagging considerably behind the cutting-edge capabilities required for frontier AI development.

Energy Constraints Slowing U.S. Domestic Build-Out

As China pursues access to compute, the United States faces significant headwinds from a lack of domestic energy and lengthy construction delays. Since 2020, the United States has developed 70 percent of the world's most compute-intensive AI models, propelled by its access to world-leading compute.[117] But America's advantage in deployed compute may be ending. Energy availability is emerging as a critical vulnerability. According to analysis by the Institute for Progress, training a leading AI model will likely require 5 gigawatts of power by as soon as 2030—the equivalent of five

full-scale nuclear reactors.[118] RAND predicts it could be as high as 8 gigawatts in the same time frame.[119] But the aging electricity grid in the United States is already straining to keep pace. Insufficient power has increased wait times for projects—data centers in Virginia, for example, must now wait between four and seven years to connect to the grid.[120] In 2023, the queue of requests to connect new energy projects to the grid was at 2,600 gigawatts nationwide—the equivalent of 1,300 Hoover Dams of energy capacity.[121]

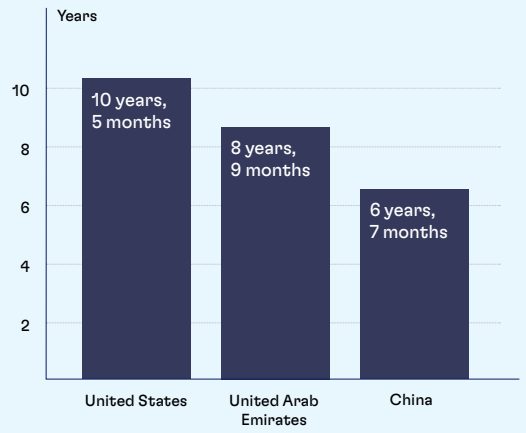
Lengthy approval processes and red tape are delaying new energy sources from coming online to meet surging demand. Nuclear is a particularly strategic energy source for AI, given its ability to generate reliable, continuous power at scale. However, it took four years for the Nuclear Regulatory Commission to approve the construction and operating licenses for the most recent nuclear plants to come online in the United States—Vogtle 3 and Vogtle 4 in Georgia, which came online in early 2023 and 2024, respectively.[122] New high-voltage transmission lines, used to deliver power to data centers, can take a decade or more to approve, as projects must navigate those approvals and often survive prolonged litigation across numerous jurisdictions.[123] While some AI companies and their compute providers are exploring behind-the-meter energy generation—new power sources that bypass the energy grid and are directly connected to data centers—this approach is more costly with less power stability.

If energy emerges as the key bottleneck to deploying compute for AI, the United States is at a disadvantage compared to key competitors. Authoritarian states such as the PRC and the United Arab Emirates can unilaterally override permitting processes, allowing for faster infrastructure development. In contrast, the U.S. regulatory framework—shaped over decades of democratic process, public input, and safeguards—cannot be rapidly restructured without a congressional mandate. Beyond permitting, China and the United Arab Emirates have also demonstrated their abilities to build out nuclear power far faster than the United States. According to the International Atomic Energy Agency's Power Reactor Information System (PRIS) database, while the United States takes an average of 10 years and 5 months to build nuclear reactors, the United Arab Emirates can complete them in 8 years and 9 months on average, while China has expedited nuclear reactor build-out to just 6 years and 7 months.[124]

Recent administrative action will help to expedite new American energy sources, but this alone will be insufficient. Executive Order 14154 on Unleashing American Energy greatly lessens the environmental review requirements under the National Environmental Policy Act, while Executive Order 14141 on Advancing United States Leadership in Artificial Intelligence Infrastructure seeks to unlock federal lands for expedited AI infrastructure and energy construction.[125] Nevertheless, absent action from Congress, legal challenges on a project-by-project basis will still produce lengthy delays.

These domestic hurdles reinforce the importance of chip export restrictions, as well as proactive AI partnerships. If energy hurdles persist, U.S. companies will be incentivized to start siting new AI infrastructure in more agile environments abroad—a shift that would hollow out America's compute advantage. A more proactive approach is needed to ensure that the United States and its closest allies and partners continue to advance the AI frontier while globally promoting U.S. AI applications and subfrontier compute.

Figure 6 | Construction Time for Nuclear Reactors



With energy as a key bottleneck to compute build-out, the United States could be at a comparative disadvantage. It takes longer to build nuclear reactors in the United States than in China or the United Arab Emirates (calculated by average construction time, from breaking ground to commercial operation, for nuclear reactors that have come online between 2020 and 2025, not including permitting time).

Source (country statistics, world statistics, and information on individual nuclear reactors): "The Database on Nuclear Power Reactors," Power Reactor Information System, International Atomic Energy Agency, accessed April 20, 2025, https://pris.iaea.org/PRIS/home.aspx.

THE WAY FORWARD: AI DIPLOMACY WITH COMPUTE LEADERSHIP

THE UNITED STATES CANNOT RISK RELYING ON the status quo for continued AI leadership. It must adopt a more proactive strategy to preserve its edge in AI compute, with international engagement as a key pillar. The U.S. government should directly partner with its closest allies to build and maintain control of the largest AI compute clusters in the world, while simultaneously supporting U.S. companies to provide subfrontier levels of compute internationally. Rather than solely using unilateral restrictions, Washington should leverage its current advantages to build alliances, set standards, and expand AI benefits for partners in a way that embeds more durable U.S. AI leadership.

Through targeted bilateral engagement and agreements customized to each partner's distinct AI ambitions and risk profiles, the United States can forge strategic partnerships that better cater to their specific needs—reducing their incentives to pursue sovereign or alternative compute ecosystems. The key task will be designing and implementing such agreements in a way that preserves and extends the United States' influence and benefits both the United States and its allies and partners. Done correctly, this can bring partners more deeply into the U.S. technology ecosystem and strengthen U.S. global technology leadership. However, this approach demands substantial diplomatic resources and sustained engagement. It will therefore be important to prioritize partners that are most consequential to U.S. technological and security interests.

Given the previously discussed headwinds to long-term U.S. AI leadership, three key criteria (not mutually exclusive) emerge for assessing priority international partners:

1. Nondemocratic states with the potential to compete with U.S. compute leadership, due to their abundant energy, resources, and other favorable conditions for large-scale AI infrastructure development

2. Emerging economies with strong AI ambitions, which have the potential to be drawn more closely into China's orbit

3. The closest U.S. allies that are willing and able to partner with the United States on frontier AI development, helping to manage domestic U.S. constraints and advancing the frontier of AI

Key AI Partner Characteristics	Priority Partners
Nondemocratic states with the potential to compete with U.S. compute leadership	United Arab Emirates, Saudi Arabia
Emerging economies with strong AI ambitions	India, Brazil
Closest allies willing and able to partner with the United States on frontier AI development	Australia, United Kingdom (through AUKUS)

The United Arab Emirates, Saudi Arabia, India, and Brazil represent both challenges and opportunities for U.S. AI leadership. Conversely, the uniquely close partnership of AUKUS offers a way to harness more capabilities and resources to continue to drive forward U.S. and allied AI capabilities. The following country snapshots provide initial insight into prospective opportunities—and risks. Further engagement by the BIS, in cooperation with the Department of State, will be needed to flesh out and refine government-to-government agreements.

United Arab Emirates

The United Arab Emirates has exceptionally ambitious AI goals, as it seeks to transition its economy away from oil by becoming a global AI leader and technology hub. Its national strategy explicitly targets becoming one of the world's leading AI nations by 2031, and efforts to supercharge AI progress have backing at the highest levels of government.[126] The deputy ruler of Abu Dhabi and the national security advisor, Sheikh Tahnoon bin Zayed Al Nahyan, spearheads the nation's AI agenda, and reportedly also controls $1.5 trillion in sovereign wealth.[127] According to some sources, Sheikh Tahnoon bin Zayed is a true believer in artificial general intelligence (AGI), anticipating that AI will replace human labor and lead an economic and national security revolution.[128]

The United Arab Emirates comprehends the strategic value of compute in achieving its AI leadership goals. Sheikh Tahnoon bin Zayed is also the chair of G42—the Emirati AI national champion, which is actively building out compute in United Arab Emirates and internationally. In April 2024, Microsoft announced a $1.5 billion investment in G42 to expand AI compute in the United Arab Emirates.[129] In December 2024, the U.S. government approved the export of advanced AI chips to the Microsoft-run facility, following lengthy negotiations and G42's agreement to divest its Chinese partnerships and technology.[130] These early partnerships laid the groundwork for more ambitious collaboration, with experts from the Center for Strategic and International Studies, the Carnegie Endowment for International Peace, and RAND assessing that "G42's deal with Microsoft to build two 30-megawatt and one 100-megawatt data center in the United Arab Emirates is only the beginning of a much bigger project to spread 'intelligence-as-utility' worldwide."[131]

These aspirations reached a new milestone in May 2025, when the Trump administration announced a comprehensive AI partnership with the United Arab Emirates. The agreement includes plans for a five-gigawatt AI campus in Abu Dhabi, with an initial one-gigawatt segment already breaking ground, alongside a landmark chip deal reportedly allowing the United Arab Emirates to import 500,000 of NVIDIA's most advanced AI chips annually through 2027, with the possibility of extension to 2030.[132] Under the agreement, 20 percent of the chips will reportedly go to G42, while the remainder will support U.S. companies building data centers in the United Arab Emirates.[133] The framework requires G42 to build equivalent facilities in the United States for every facility constructed in the United Arab Emirates, ensuring reciprocal investment and shared technological development.[134]

> **It is in Washington's strategic interest to . . . prevent inadvertently ceding U.S. technological superiority to a partner that neither shares American democratic values nor has completely severed its ties with China.**

The United Arab Emirates possesses the resources and capacity to support its ambitious AI development goals. With significant sovereign wealth funds, abundant low-cost energy, and experience in building data centers, the United Arab Emirates is an ideal country to host compute-heavy ventures such as AI training and mass

deployment.[135] The United Arab Emirates' political system, in which all executive, legislative, and judicial authority ultimately rests with the hereditary rulers of the seven emirates, creates the ability for the United Arab Emirates to quickly cut through domestic regulatory barriers in pursuit of its goals.[136]

The United Arab Emirates is also investing in the U.S. AI ecosystem. Beyond the May 2025 partnership, the United Arab Emirates has demonstrated its commitment through substantial investments, including the $30 billion Global AI Infrastructure Investment Partnership with Microsoft, Blackrock, and Global Infrastructure Partners and approximately $7 billion into the Stargate Project, led by Softbank, Oracle, and OpenAI.[137] It also announced an investment of $12.5 billion in energy solutions for U.S. data centers following President Trump's March 2025 meeting with Sheikh Tahnoon bin Zayed.[138]

However, the United Arab Emirates maintains a hedged geopolitical position—sustaining a close security partnership with the United States while simultaneously preserving strong economic, security, and technological relationships with China.[139] Although the Microsoft deal required G42 to divest its Chinese connections, these investments were reportedly transferred to another investment fund also under Sheikh Tahnoon bin Zayed's control.[140] This raises a fundamental strategic question: What security implications might arise if the United Arab Emirates is enabled to develop sufficient AI compute capacity to overtake U.S. compute leadership and no longer requires U.S. partnerships?

It is in Washington's strategic interest to continue partnering with the United Arab Emirates to firmly anchor its AI ecosystem within the U.S. technological sphere while implementing appropriate safeguards to prevent inadvertently ceding U.S. technological superiority to a partner that neither shares American democratic values nor has completely severed its ties with China. The May 2025 partnership represents an opportunity to move in this direction, with U.S. Secretary of Commerce Howard Lutnick noting that "the agreement also contains strong security guarantees to prevent diversion of U.S. technology."[141] The details of these arrangements are not public as of publication, but to effectively protect U.S. AI leadership they will need to include strong cybersecurity and physical security standards to protect sensitive AI intellectual property stored in these data centers, robust know-your-customer requirements to prevent unauthorized access to AI compute through the cloud, and technical and nontechnical mechanisms to ensure specialized AI chips and equipment are not diverted to China. The security requirements outlined in the now-rescinded Framework for AI Diffusion can offer a baseline to build upon.

In addition to a United Arab Emirates–based build-out, there is a significant opportunity for the United States and the United Arab Emirates to continue to *jointly* build out AI compute in other countries. This could aid AI diffusion, particularly in the Global South, while still enabling sufficient U.S. ownership to ensure safeguards and controls are adequately implemented and maintained. As Colin H. Kahl, former under secretary of defense for policy, aptly summarizes, "U.S. firms remain wary of high-cost, long-term projects in countries with emerging markets that lack the scale or purchasing power to justify large investments without external support."[142] The United Arab Emirates' partnership here could be invaluable. A successful template is already in motion: The $1 billion geothermal-powered data center in Kenya, built by G42 and Microsoft.[143] Continuing to implement such projects could be mutually beneficial and help keep U.S. and United Arab Emirates AI interests aligned. The United States would benefit from the United Arab Emirates' burgeoning data center construction expertise, strong capital contributions, and links to the Global South, while the United Arab Emirates would benefit from expedited advanced chip shipments. As a representative from a prominent AI lab put it, "If you want to do business in Africa, open a location in Dubai."[144] Governance structures, akin to the G42 and Microsoft deal, could be established to ensure that appropriate standards are implemented, critical intellectual property is kept secure, and advanced AI computing is used by Global South entities rather than China.

The United Arab Emirates may resist such requirements. But absent a viable alternative supply chain for advanced AI chips, adhering to these requirements likely remains the most feasible way forward for its agenda. The United States should continue to assess the maturity of alternative supply chains and calibrate its approach as needed.

Saudi Arabia

The Kingdom of Saudi Arabia, like the United Arab Emirates, has grand AI ambitions backed by deep pockets, but on an even larger scale commensurate with its size. Saudi Arabia has the largest economy of the Gulf region, with a population of more than 36 million, 67 percent of whom are under the age of 30.[145] The Saudi government is driving massive transformation with its Vision 2030 strategy, as it seeks to diversify its economy away from oil and develop new industries and employment for its population.[146] AI forms a cornerstone of this vision.[147] The kingdom's AI agenda is spearheaded by Crown Prince Mohammed bin Salman.[148]

Under the crown prince's leadership, Saudi Arabia has made massive investments into AI compute, supported by unprecedented bureaucratic cut-through. In 2024, Saudi Arabia announced Project Transcendence—a $100-billion investment initiative designed to establish the kingdom as a leading AI ecosystem to rival the United Arab Emirates and other global technology hubs.[149] This includes investments in AI data centers and supporting infrastructure, as well as start-ups and AI applications.[150] Also in 2024, U.S. AI chip company Groq partnered with Saudi Arabia's leading oil company, Saudi Aramco, to build the region's largest AI inference cluster—a data center designed to efficiently deploy AI models.[151] In February 2025, a further $1.5 billion was committed to expand the project. That same month, Saudi Arabia announced a $5 billion deal to build a sustainable 1.5-gigawatt AI data center.[152]

The U.S.-Saudi AI partnership accelerated dramatically during President Trump's May 2025 visit to Riyadh. Rather than a single massive deal, the visit sparked multiple bilateral agreements between individual companies.[153] Among the largest, DataVolt, Saudi Arabia's main colocation company, announced a $20 billion partnership with Super Micro Computer to invest in AI data centers and energy infrastructure across both countries.[154] Technology giants Oracle, Google, Salesforce, and Uber committed to a combined $80 billion in investments in cutting-edge transformative technologies across both nations.[155] HUMAIN, a new AI company launched by the Saudi sovereign wealth fund just before Trump's arrival, secured agreements for 500 megawatts of AI compute capacity from both NVIDIA and AMD.[156] There are signals of more to come. HUMAIN's CEO indicated the company seeks not only chip purchases but also U.S. equity partners to develop a 6.6-gigawatt facility by 2034.[157]

Like the United Arab Emirates, Saudi Arabia has the energy availability and access to capital to enable swift build-out of AI data centers.[158] The Saudi Arabia power generation market is expected to grow from 83 gigawatts in 2023 to 110 gigawatts by 2028, with a focus on additional renewable energy capacity.[159] As of mid-2024, it had more than 21 gigawatts in planned renewable energy projects.[160] Saudi Arabia aims to source at least 50 percent of its power from renewable energy by 2030, which may constrain additional new nonrenewable energy sources from coming online.[161]

Saudi Arabia's pragmatic willingness to partner with any technology provider makes strategic U.S. engagement essential.

But as an absolute monarchy, Saudi Arabia's ruler retains the ability to change laws within weeks if they impede the regime's strategic direction.[162]

Yet unlike the United Arab Emirates, Saudi Arabia appears to be investing in AI compute as an "all-of-the-above" investment strategy, rather than because it deems it as inherently more valuable than other aspects of the AI supply chain.[163] Engagement with Saudi officials and industry indicated an equal focus on other elements needed for the kingdom to become the region's leading AI hub. Such areas include start-ups and human capital, as the country seeks to equip its young people as a tech-ready workforce.[164] These reveal additional areas in which U.S. partnership could be welcome.

Geopolitically, Saudi Arabia continues to balance relationships with the PRC and the United States. While maintaining its security partnership with Washington, Riyadh has simultaneously strengthened its economic relationship with Beijing—now Saudi Arabia's largest trading partner. Bilateral Sino-Saudi trade surged to $107 billion in 2023, up from $67 billion in 2020.[165] Unlike the United Arab Emirates,

Saudi Arabia has not made any pretense of divesting AI and technology ties from China. The kingdom collaborates with Huawei as its primary vendor for 5G infrastructure and smart city development, while simultaneously welcoming data center investments from American technology giants Microsoft, Amazon, and Google.[166] Beyond these bilateral relationships, Saudi Arabia is positioning itself as a regional leader and global diplomatic player, as evidenced by its hosting of high-profile peace negotiations—first between the United States and Russia, and subsequently between the United States and Ukraine—in February and March 2025.[167]

Saudi Arabia's pragmatic willingness to partner with any technology provider makes strategic U.S. engagement essential. Yet at the same time, Chinese access to advanced AI capabilities via Saudi Arabia remains a key security concern. Further negotiations are needed to determine appropriate compute access levels and security safeguards to responsibly manage chip diffusion to the kingdom. These discussions should build upon clear shared interests in talent development, AI applications, and technical knowledge. Ongoing exchange partnerships offer valuable opportunities to further align Saudi interests with those of the U.S. technological ecosystem.

India

India's first national AI strategy, launched in 2018, centered on the principle of "AI for All," aiming to harness AI for inclusive and sustainable growth, with a focus on applications across healthcare, agriculture, education, smart cities, and infrastructure.[168] Acknowledging that India had yet to produce globally pioneering AI technologies, the strategy sought to maximize India's late-mover advantage by adapting and innovating AI for the nation's needs.[169] India updated its approach in 2024, with its India AI Mission, a comprehensive program to build a robust AI ecosystem aligned with national development goals.[170] The mission is supported by $1.24 billion in investment.[171] Envisioning India as a global AI leader, the mission includes expanding AI compute as a key pillar, with plans to procure 10,000 GPUs, with six other pillars including talent, start-up financing, and safe and trusted AI.[172] As part of this mission, India issued a call in early 2025 for proposals to develop India's own large language models and domain-specific AI models using Indian datasets.[173] As per its approach to telecommunications and other technologies, India is focusing on talent, initiating AI-ready courses in 200 universities.[174]

India recognizes that achieving its AI ambitions requires heavy investment in underlying infrastructure. Its AI compute capacity is set to expand rapidly. The Reliance Group, an Indian conglomerate, is reportedly planning to spend $20 to $30 billion building out a 3-gigawatt AI data center that hosts NVIDIA chips.[175] U.S. hyperscalers are also building out in India, with Microsoft announcing a further $3 billion investment into computing capacity and the broader AI stack.[176]

By proposing international guidelines on issues such as data center physical security, supply chain integrity for AI chips, and responsible cross-border data use, the United States can write the rulebook that others will follow.

A technology powerhouse with the world's largest population and fastest-growing economy, India is a member of the BRICS (Brazil, Russia, India, China, and South Africa) group and an influential global actor.[177] India has been cautious with Chinese partnerships in the AI and technology domain. After Sino-Indian geopolitical tensions escalated in 2020, India imposed sweeping restrictions on Chinese tech companies, banning more than 200 Chinese mobile apps (including TikTok and WeChat) on national security grounds.[178] India has also effectively excluded Chinese vendors such as Huawei from its 5G network rollouts. Some members of India's parliament have gone so far as to call for bans on DeepSeek, citing privacy and surveillance concerns.[179]

India and the United States have been steadily strengthening ties during the past two decades, focusing more recently on their shared strategic concerns about China's rising military and economic power. India works closely within the Quadrilateral Security Dialogue (Quad) grouping—made up of the United States, India, Australia, and Japan—which

seeks to establish rules and norms in the Indo-Pacific and to counter Chinese economic and military coercion.[180] Yet at the same time, India maintains close ties with Russia, relying on Moscow for defense hardware, bypassing sanctions to access cheap Russian oil, and enabling the smuggling of AI chips to Russia.[181]

The United States' growing strategic partnership with India and the Trump administration's recent announcement of the U.S.-India Transforming the Relationship Utilizing Strategic Technology (TRUST) initiative affords an opportunity to reinforce the bilateral relationship and explore beneficial AI collaborations.[182] India's population of 1.4 billion, and focus on digital governance, could allow for novel large-scale applications of AI to improve efficient service provision.[183] There may also be opportunities to collaborate on developing AI applications for pharmaceutical development, given India's vision of continuing to build its $64 billion industry to become the "pharmacy of the world."[184]

Codesigning a joint AI agreement between the United States and India would strengthen the U.S.-India technology relationship and help balance the PRC's technological influence in the Indo-Pacific. If American compute and AI models power the world's fastest-growing economy, it will generate significant economic returns for industry in the United States—reinforcing U.S. leadership in AI through reinvestment, while limiting China's access to this vast and strategically important market.

Brazil

Brazil is aiming for national sovereignty in AI.[185] As President Luiz Inacio Lula da Silva stated, Brazil "must dare to make things happen," rather than waiting for AI to come from China, the United States, South Korea, or Japan.[186] In July 2024, Brazil's government unveiled a proposal of $4.07 billion over four years for an artificial intelligence investment plan that focuses on AI infrastructure, talent development, public services enhancement, business innovation, and ethical governance.[187] Out of that plan, $1 billion is for AI infrastructure, and Brazil has ambitious plans.[188] It has dedicated $300 million to building a high-performance AI computer, as well as domestically developing high-performance AI processors.[189] This is a bold undertaking. Brazil's fledgling semiconductor industry currently meets around 8 percent of national demand and is designed for use cases such as smartphones, laptops, and servers, rather than the parallel processing needed for AI.[190] Nevertheless, these goals indicate Brazil's high aspirations for securing strategic autonomy in key technologies.

Brazil is already the data center powerhouse of Latin America. More than 50 percent of all data center capacity in Latin America is concentrated in Brazil, and the sector is projected to grow more than 30 percent by 2030.[191] Brazil has a strong focus on sustainably powering these data centers. It recently updated its climate commitments, announcing in 2024 that it will cut emissions by 67 percent by 2035.[192] Renewables already make up 85 percent of the country's energy mix, and Brazil is investing a further $87.6 million in a program aimed at creating more sustainable data centers for AI.[193]

Brazil has significant AI compute potential. The country's flagship AI compute project, Scala AI City, will see $50 billion invested into a 4.75-gigawatt compute cluster.[194] It will initially have 54 megawatts of capacity, ahead of further planned expansion.[195] Local laws have been amended to remove regulatory barriers and accelerate development of this project.[196] As a colocation service provider, Scala AI focuses on building and managing data centers tailored to the needs of foreign hyperscalers. While many of its customers are U.S. companies, it is highly likely some are Chinese, given Brazil's strong technology partnerships with China.[197]

Brazil's approach to managing ties with the United States and China is fundamentally driven by principles of autonomy and sovereignty. As a prominent member of BRICS and an influential voice in the Global South, Brazil prioritizes technological independence, resisting alignment with either country. In its technology choices, Brazil's strategic pragmatism is evident. Despite U.S. diplomatic pressure to exclude Huawei from its 5G infrastructure, Brazil permitted the Chinese company's participation in its networks, with Huawei's substantially lower costs being a key factor.[198] In AI, although President Lula has been vocally critical of the technology development practices of China and the United States, Brazil has courted investments from both sides.[199] In 2023, President Lula visited a Huawei research

and development (R&D) center in Shanghai, where he highlighted Brazil's openness to cooperation in advanced tech.[200] In March 2024, a senior Brazilian delegation traveled to Washington to meet with senior officials and technology companies on AI issues and opportunities.[201]

Brazil has the potential to emerge as a regional leader in AI compute infrastructure, contingent upon access to advanced U.S. AI chips. Given Brazil's strategic importance as Latin America's largest economy and a democratic anchor in the region, the United States cannot afford to neglect this relationship. However, given Brazil's geopolitical positioning and substantial economic ties with the PRC, providing Brazil with unrestricted access to AI chips could facilitate Chinese access to advanced AI capabilities through Brazil's existing technology partnerships and infrastructure. The United States should therefore ensure large AI compute exports to Brazil are accompanied by appropriate controls, including measures that prevent China from remotely accessing frontier levels of compute from Brazil, while offsetting these restrictions with cooperation in AI beyond hardware access, such as agricultural applications.[202]

Brazil is a massive and rapidly growing economy, and ensuring that U.S. AI models and compute infrastructure form the foundation of its digital and economic development is a strategic imperative. The United States' advantage in AI is likely to be time limited. Once China can export frontier compute at scale, it will do so aggressively. Securing a foothold now in key emerging markets such as Brazil is essential to shaping global AI norms, driving long-term economic returns, and preserving U.S. leadership in the face of accelerating competition.

AUKUS

If the United States remains hamstrung by domestic energy bottlenecks, it will need to look abroad to maintain leadership at the frontier of AI capabilities. But advancing the cutting edge of AI progress in another jurisdiction requires high degrees of trust: Frontier AI capabilities could give rise to unexpected capabilities, including dual-use and high-risk capabilities. Such discoveries must be managed securely by trusted allies. The AUKUS partnership between the United States, United Kingdom, and Australia—initially focused on nuclear submarines and defense technologies—provides an established framework of exceptional mutual trust that could be expanded to include AI compute infrastructure collaboration.[203] Australia and the UK have potential advantages they could offer to the United States.

Australia

Australia has unique advantages for hosting frontier levels of compute. It has vast land and is politically stable, allowing the development of secure sites that are safe from most physical threats. There is clear precedent for Australia hosting highly sensitive infrastructure in partnership with the United States. Pine Gap is a joint U.S.-Australian top-secret facility in the middle of the Australian outback.[204] It was established via treaty in 1966 as a joint defense space research facility maintained and operated by the U.S. government. It continues to operate today with a mixture of personnel from the United States and Australia.[205] A similar physically remote facility, designed and protected in alignment with U.S. security standards, could be used for frontier AI compute.

An Australian-based AI compute center would still require substantial energy resources, and while Australia's energy sector presents opportunities, it also faces challenges. Australia possesses significant energy production capacity, exporting more than two-thirds of its energy output, including as coal and liquefied natural gas.[206] The country also boasts exceptional solar and wind resources, with average solar radiation per square meter among the highest globally, and it is increasingly deploying large-scale renewable projects.[207] Although intermittent renewable energy sources present reliability challenges for AI training operations—which demand consistent high-power delivery—solar generation combined with advanced battery storage systems could manage these limitations. Utility-scale battery storage technology continues to improve in commercial viability, with U.S. companies having already implemented energy-storage projects exceeding six gigawatts of capacity.[208]

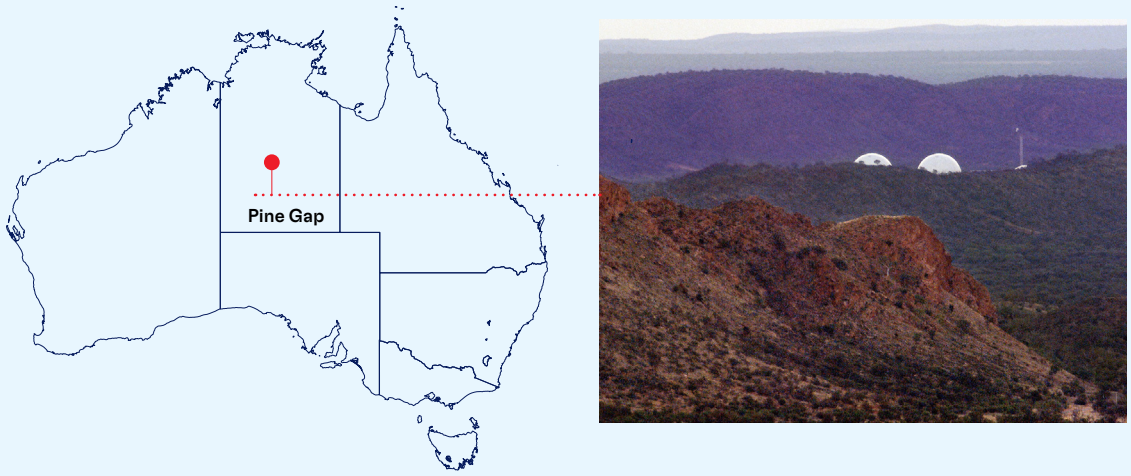
United Kingdom

The UK has the potential to serve as a regulatory testbed, offering policy insights the United States

can refine and build upon. The UK's AI Growth Zones, established as part of its January 2025 AI Opportunities Action Plan, highlight the nation's ambitions to engage in frontier AI compute development.[209] These designated zones aim to offer streamlined planning permissions, expedited grid connections, and more flexible regulatory frameworks to help expedite deployment of AI infrastructure. While the UK faces substantial challenges that complicate this vision, including high energy costs, permitting delays, and local opposition to data center development, valuable lessons could be learned that could support the United States and Australia for more ambitious compute build-outs.[210]

The UK can also contribute its frontier AI talent and expertise to joint AUKUS undertakings. From global research hubs such as Google DeepMind and leading universities (Oxford University, Cambridge University, and University College London) to the technical capabilities of the UK's Government Communications Headquarters, or GCHQ, and the AI Security Institute, the UK brings strong assets to the table. The UK has emerged as a pivotal ally on AI security issues, with the AI Security Institute working in close coordination with its American counterparts to evaluate frontier models and develop testing protocols.[211] This technical and institutional alignment—combined with the broader intelligence and military cooperation between these countries—offers a credible foundation for deepening AUKUS cooperation on AI. Enlisting the UK's contributions will help share both the burden and benefits of AI advancement and the creation of secure, aligned AI development that reinforces these nations' technological leadership. In this way, the United States has an opportunity to further explore collaboration opportunities with its two closest allies, building on the strong engagement to date.

Figure 7 | The Joint U.S.-Australia Defense Facility of Pine Gap



Located in remote central Australia, Pine Gap provides a clear precedent for Australia hosting and comanaging highly sensitive infrastructure in partnership with the United States.

Right: The radar domes of Pine Gap peek over the ridges of the West MacDonnell Ranges near Alice Springs. (Torsten Blackwood/AFP via Getty Images)

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RECOMMENDATIONS

THESE POLICY RECOMMENDATIONS FOR THE U.S. government would help chart a path toward stronger, more durable American AI leadership. Together, they aim to

- Solidify the United States' advantages through continued, and better enforced, export controls on adversaries;
- Strengthen the United States' position as a preferred AI collaboration partner and entice key swing states with AI compute potential more closely into the U.S. orbit;
- Reduce incentives for countries to invest in alternate or sovereign AI compute supply chains; and
- Cement U.S. interests in international norms and standards and gain legitimacy through multilateralism, where appropriate.

Harden export controls through stronger enforcement, technology-forward solutions, and engagement with key allies and partners.

The United States should shore up the effectiveness of its export control regime while mitigating unintended fallout. This begins with enhancing enforcement capabilities. Currently, the BIS is underresourced and overwhelmed: Its licensing workload has doubled in the past decade, yet staff still rely on "antiquated" information technology systems from the early 2000s.[212] The BIS urgently requires additional export control specialists to ensure comprehensive monitoring of AI chip movements and to prevent smuggling to China.

Solutions lie not just in resourcing but also in technology-forward solutions: Previous Center for a New American Security Technology and National Security Program research suggests that hardware-enabled mechanisms can enhance chip security while enabling exporters to verify the geolocation of their products in real time, effectively addressing smuggling concerns.[213] Such technologies need further development and testing before being integrated into commercial chips. The Department of Defense should direct the Defense Advanced Research Projects Agency to fund further research and development of this promising technology application.

Additional resourcing for the BIS should also be dedicated to stronger engagement with allies that also play a key role in the advanced chip supply chain. The Netherlands and Japan play critical roles in advanced semiconductor manufacturing equipment and materials. Should these nations diverge from U.S. policy and expand their exports to China, it would significantly enhance China's abilities to design and manufacture its own advanced AI chips—a particular concern given rising international resistance to unilateral U.S. actions.[214] Furthermore, the BIS should deploy additional engagement specialists to develop stronger partnerships with Germany and South Korea to ensure that other critical segments

of advanced chip supply chains remain secure. Germany's sophisticated electronics and optics firms (including Zeiss) are integral to semiconductor manufacturing equipment, while South Korea plays a key role in high-bandwidth memory production—a critical input into chips for AI deployment.[215] Securing political support from these additional partners, although challenging and time consuming to achieve, would substantially enhance the international legitimacy and effectiveness of U.S.-led semiconductor export controls.

Support the development of and access to valuable downstream AI applications to reduce demand for sovereign frontier compute and to increase the appeal of the United States as the AI partner of choice.

Sharing AI benefits can advance U.S. interests.[216] The United States should extend benefit sharing beyond chip access to encompass cloud computing, AI model partnerships, and downstream applications—from drug discovery to industrial use cases—to deliver tangible value and demonstrate the benefits of partnering with the United States on AI.[217] To support the country's influence globally, the United States should develop beneficial applications of AI and make them accessible to other states.

The U.S. AI sector's current focus on advancing frontier capabilities is likely creating a significant underinvestment in beneficial real-world AI applications. Leading AI companies, many explicitly pursuing AGI, are concentrating their talent and resources on pushing technological boundaries rather than maximizing the utility of existing capabilities.[218] This prioritization is economically rational, given how quickly capabilities advance: Organizations that invest substantial resources in tailoring GPT-3 for specific applications may find their work quickly obsolete when GPT-4.5 emerges just two years later with vastly superior baseline capabilities. This rapid advancement cycle creates a disincentive for developing specialized applications at any given capability level, resulting in a systemic underinvestment in applying AI for beneficial outcomes today.

The U.S. government should support and incentivize research and investment in beneficial AI applications, from drug discovery to healthcare optimization to agricultural applications and industrial use cases. As White House Office of Science and Technology Policy Director Kratsios outlines, "We must be more creative in our use of public research and development money and set actual priorities."[219] Nations are increasingly looking for applications of "AI for good," seeking examples of where capabilities have been applied for real benefit in the world.[220] Sharing success in such areas can strengthen the reputation of American AI, reduce the appeal of rival powers' overtures, and decrease other countries' motivations to make costly investments in their own sovereign AI computing infrastructure.

There is an opportunity to pursue this approach in partnership with other nations. The U.S. government could subsidize access to American AI systems and compute resources.[221] Working with leading U.S. AI companies, the government could offer computational credits to academic, government, and nongovernment organizations in partner countries. By focusing on key regions across the Global South and the Indo-Pacific, the United States could use this approach to counter growing Chinese influence in emerging economies.

Use strategic investment vehicles to promote U.S. AI projects and applications overseas.

Existing U.S. investment vehicles remain underutilized for AI promotion. The Development Finance Corporation (DFC), launched by President Trump in 2019, aims to "advance U.S. foreign policy and strengthen national security by mobilizing private capital around the world."[222] With an investment cap of $60 billion, the DFC commands a range of tools including debt financing, equity investment, and technical assistance to support strategic deals, acting as a counterbalance to China's Belt and Road Initiative.[223] Yet the remit of the DFC is tremendously broad: It has active investments in 114 countries, supporting everything from critical minerals to cashew production to solar energy projects to the construction of an international hotel.[224] While technology is a pillar of its portfolio, this broad remit, combined with just shy of 700 staff, limits this vehicle's ability to directly support U.S. AI leadership goals.[225] It is also restricted from operating in high-income countries, leaving more than 100 nations off limits.[226] This could hamper the United States from making strategic AI deals with its full suite of instruments. The DFC is

due for reauthorization by October 2025, and has invested close to $50 billion of its $60 billion cap.[227] In the process of reauthorization, Congress should significantly increase its funding, give it greater flexibility in choosing partner countries, and make AI projects that leverage U.S. models or companies a priority investment area.

The Export-Import Bank of the United States (EXIM) represents another underutilized investment tool in America's economic arsenal that could be leveraged for the diffusion of U.S. AI compute and applications.[228] As an export credit agency, EXIM's mandate focuses on supporting U.S. exports by providing financial instruments that help American companies compete against subsidized foreign competitors, including China.[229] It plays a key role wherever private sector lenders are unable or unwilling to provide financing. With a substantial $135 billion in financing authority and various financial tools—including direct loans, loan guarantees, and insurance—EXIM could be leveraged toward promoting U.S. AI diffusion, in conjunction with DFC support.[230]

Expand engagement with the United Arab Emirates, Saudi Arabia, India, and Brazil to customize mutually beneficial AI deals.

There will be significant advantages of proactively pulling influential partners closer into the U.S. AI ecosystem. Currently, the United States retains considerable leverage, as no viable alternative compute ecosystem exists. Washington should use this position to negotiate and implement proportionate security standards, enabling U.S. compute to diffuse only when accompanied by appropriate safeguards and when it supports U.S. AI leadership. Additionally, focusing on joint ventures to expand compute access across regions, and concentrating on other areas of shared AI interest outside of chips, could strengthen U.S. leadership. The Department of State should deepen its engagement with AI interlocutors in these identified priority nations and explore the potential of using technology-forward safeguards (such as hardware-enabled mechanisms; see the recommendation to harden export controls) to support the secure export of larger quantities of chips in a way that manages risks to U.S. leadership.

Leverage the AUKUS framework to discuss the potential for joint frontier AI compute projects with the United States' most trusted partners.

Notwithstanding recent executive actions to cut red tape in energy development, energy bottlenecks will likely continue to constrain U.S. frontier AI build-out. The United States should be prepared to partner abroad to continue its progress. Given the potential for the most advanced AI training runs to give rise to novel and dual-use capabilities and risks, the United States should only rely on its closest, most trusted partners—Australia and the UK. Through the AUKUS agreement, there is an opportunity to explore joint ventures and shared compute ecosystems that can help ensure continued U.S. and allied AI leadership. Australia has the potential to provide the land and dedicated energy infrastructure to support joint frontier AI compute, while the UK's talent ecosystem and frontier AI expertise could contribute to understanding and harnessing emerging capabilities for mutual benefit.

Champion technical privacy-preserving solutions to help address partners' "sovereignty" concerns.

A major barrier to foreign reliance on U.S. AI and general compute services is concern over data sovereignty—the fear that using U.S.-based cloud or chips could expose sensitive data to American surveillance or legal reach.[231] To alleviate these concerns, the United States should champion and commit to privacy-preserving computing technologies that allow other jurisdictions to use U.S. AI compute and platforms with strong guarantees of confidentiality. By championing technical solutions to protect partners' data from even the U.S. compute provider, Washington can make U.S. AI infrastructure more palatable and undermine the case for completely sovereign stacks. This can serve as a clear market differentiator from Chinese offerings, in which companies are obliged and incentivized to cooperate and share data with the PRC intelligence agencies when requested.[232]

One key approach is confidential computing. This technology uses hardware-based secure enclaves to keep data encrypted, even while they are being processed in memory.[233] The result is that even the cloud provider cannot see the customer's data in

unencrypted form.[234] Microsoft, Amazon, and Google are all developing confidential cloud services with localized control layers to meet country-specific requirements. Microsoft's development of a sovereign cloud for the Abu Dhabi government, in partnership with United Arab Emirates firm Core42, is a key example of how U.S. compute provision can align with interests from foreign partners to maintain "sovereignty."[235]

Additionally, Washington should fast-track research in privacy-enhancing technologies such as federated learning in which AI models are trained across decentralized data silos without sharing raw data and homomorphic encryption in which computations are performed directly on encrypted data. These tools would let countries benefit from U.S.-developed AI models or cloud compute, while maintaining certainty that their data remain safe and unaccessed. The U.S. government should charge the new Center for AI Standards and Innovation to chart a path forward on how the U.S. government can mature and scale such initiatives to support global uptake of American AI compute offerings.[236]

Engage in multilateral and standard-setting bodies to build legitimacy and strengthen AI data center security and risk management.

America's AI compute strategy must ultimately scale from the bilateral and regional stages to the multilateral stage. To secure a lasting advantage, the United States should complement unilateral controls by shaping global norms for AI infrastructure. This means actively working with allies and partners in forums such as the Organisation for Economic Co-operation and Development (OECD), G7, and G20, as well as technical groupings such as the International Organization for Standardization (ISO), Institute of Electrical and Electronics Engineers (IEEE), and International Telecommunication Union (ITU), to establish common security standards for AI data centers and other risk management tools. By proposing international guidelines on issues such as data center physical security, supply chain integrity for AI chips, and responsible cross-border data use, the United States can write the rulebook that others will follow. Such standards, when agreed and adopted by leading economies, would help manage potentially significant risks from AI and also make it harder for adversaries to exploit weakest-link jurisdictions.

While standards-setting processes are often consensus-based and slow, disengagement of the United States brings significant risk. China is already looking to shape global norms, including through its 2023 Global AI Governance Initiative, that it continues to promote in multilateral forums.[237] It will be important for the United States and its allies to put forward a counternarrative that supports privacy, freedom of speech, and democratic values.

Multilateral engagement also helps dispel the perception of U.S. technological unilateralism that diminishes trust in U.S. tech. When democracies coordinate their approaches, policies such as export controls or investment screening mechanisms gain substantially greater international weight and legitimacy. A concerted approach through alliances can help shift the narrative from the United States "blocking" technology to a broad coalition responsibly governing its diffusion. The success of such an approach can be seen in U.S. sanctions against Iran in the 2010s, in which UN Security Council Resolution 1929 provided crucial international legitimacy to American sanctions, enabling even secondary sanctions on financial institutions in third countries that would have otherwise generated significant diplomatic resistance.[238]

Engaging with allies and partners can also help ensure that other countries pull their own weight and ensure an equitable distribution of security responsibilities. For decades, the United States has shouldered a disproportionate burden in upholding global security frameworks, with U.S. defense spending consistently outpacing European contributions; the United States spent 3.4 percent of gross domestic product (GDP) on defense in 2024 compared to the EU average of just 1.9 percent.[239] Encouragingly, other nations are developing valuable scientific and technical expertise that can contribute to addressing shared AI challenges. For example, the UK's AI Security Institute has emerged as a complementary center of expertise on frontier model evaluation and safety. By continuing to engage with partners, the United States can benefit from shared expertise and more evenly distributed responsibilities.

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RISKS AND SENSITIVITIES

THIS STRATEGY RESTS ON THE ASSUMPTION that significant amounts of compute will continue to be central to frontier AI development and deployment. While current trends appear to reinforce this, a variety of technical developments may challenge this norm. There is always the chance that scaling laws might plateau, algorithmic breakthroughs could reduce compute requirements, or novel architectures might emerge that bypass current bottlenecks.[240]

America's broader approach to global security and trade issues will also influence the perception of U.S. technology offerings. As the Trump administration deploys record tariffs and trade actions, there is a risk that the measures proposed above will be insufficient for incentivizing cooperation from allies and partners. European countries, in particular, have long raised issues with data protections and surveillance in U.S. technology that could extend to AI compute.[241] Nevertheless, intent alone is insufficient to shift entrenched supply chains, as seen in the critical minerals sector, where diversification away from China has long been urged but not materialized at scale.[242] Countries must also be willing to foot the bill for constructing alternative supply chains.

Some critics may argue that any restrictions or security requirements on chip exports to countries such as the United Arab Emirates and Saudi Arabia could cause these nations to strengthen their technological partnerships with China. However, this concern overlooks the current reality of China's compute ecosystem. Despite significant investments, China continues to struggle to meet its own domestic compute demands for frontier AI development, making it implausible that Chinese suppliers could satisfy the ambitious AI infrastructure needs of Gulf states or other countries in the near term. The technological gap created by U.S. export controls on advanced AI chips has left China with limited capacity to serve as a viable alternative provider. Some analysts estimate that China lags at least four years behind the United States in hardware.[243] While this dynamic may evolve, the immediate risk of Gulf states pivoting completely to Chinese technology is minimal. Nevertheless, the United States should maintain vigilant monitoring of China's progress in developing its AI compute capabilities, allowing for timely reassessment of export policies if the competitive landscape shifts significantly.

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CONCLUSION

THE UNITED STATES STANDS AT A CRITICAL juncture in the global AI landscape. While its current AI leadership is significant, particularly in the compute ecosystem that underpins its advancement, this advantage is neither permanent nor secure. Through the strategic approach outlined in this report—hardening export controls, developing valuable AI applications, engaging key partners, and shaping international standards—the United States can transform its temporary lead into enduring influence.

This more inclusive approach to global compute provision balances competing imperatives: maintaining the absolute frontier of AI capabilities within the United States and its closest allies, preventing adversaries from accessing technology with military applications, and positioning the United States as the global AI partner of choice. By strategically engaging with key nations such as the United Arab Emirates, Saudi Arabia, India, Brazil, and AUKUS partners, the United States can protect its technological edge and extend its global influence.

The pathway forward requires not just defensive measures to protect American advantages, but proactive moves to establish the United States at the center of a robust, democratic AI ecosystem. The nation that leads in AI compute provision will have unparalleled leverage in shaping the rules and norms that govern this transformative technology. For the United States, the choice is clear: Leverage its current position to shape a global AI future that advances American security, prosperity, and values, or risk watching that future be shaped by others.

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