Memos to the PRESIDENT

Future Tech Transition

Special Competitive Studies Project

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PRESIDENT

Subject: Winning the Race for the Technology Stack of the Future

Purpose: The purpose of this memo is to chart a path for the U.S. innovation ecosystem to lead in the development of future technologies that will be pivotal in the geopolitical competition.

Objectives: Given the critical nature of this decade to solidify American economic prosperity, social well-being, and global leadership, the United States should orient itself around three main objectives to dominate the technology stack of the future:

1. *Achieve and Maintain Leadership in Foundational Technologies.* The United States must achieve and maintain a clear lead in the foundational technologies that will underpin the future economy and military power. This includes artificial intelligence (AI), advanced compute and microelectronics, advanced networks, biotechnology, advanced manufacturing, and next-generation energy. Leadership in these technologies will be critical to fostering the next-generation of innovations that will shape the geopolitical competition for the years to come.
2. *Build a Resilient and Secure Technology Stack.* The United States needs to foster an innovation ecosystem that both facilitates new discoveries and secures our inventions from external shocks and adversarial exploitation.
3. *Mobilize the Nation for a Technological Transformation.* The United States must foster a society-wide effort to drive technological progress, similar to the national mobilization seen during the Space Race of the mid-twentieth century. This requires a renewed focus on people and talent, cutting bureaucratic red tape, and returning to a risk-taking innovation culture that will enable America to out maneuver and outpace China.

Background

The current state of the U.S.-China technology competition reveals a stark and evolving landscape. While the United States maintains a lead in the invention-oriented aspects of biotechnology, semiconductor design, and certain AI applications, China is rapidly advancing in the commercialization and deployment

of 5G infrastructure, advanced batteries, commercial drones, and advanced manufacturing.[1] China has proven capable of achieving its ambitions through its state-backed model, backed by a vast domestic market, and a laser focus on advanced manufacturing and infrastructure. The same playbook positions Beijing for dominance in the technologies that will define the rest of the decade, unless the United States can first confront some brutal truths:

1. **Short-Term Focus.** The constant firefight of today's crises distracts the federal government from strategic planning and investment in future technologies. This myopic focus leaves America ill-prepared for over-the-horizon technology challenges.

2. **Missed R&D Opportunities.** While the United States often pioneers groundbreaking technologies, China frequently stays one step ahead by rapidly adopting, refining, and scaling these innovations which allows it to dominate global markets. AI presents an unprecedented opportunity to reorient R&D to dominate the full innovation cycle, from scientific breakthroughs to adoption.

3. **Neglected Technology Infrastructure.** The under focus of U.S. national policy on technology infrastructure is eroding the country's global competitiveness. While rivals invest heavily in these foundational systems to drive innovation and economic growth, U.S. efforts remain fragmented and underfunded. This lack of strategic prioritization hampers the nation's ability to scale breakthrough technologies, maintain supply chain resilience, and capitalize on emerging markets.

4. **Bureaucratic Hurdles.** Red tape is hindering the development and commercialization of potentially groundbreaking technologies and constraining public-private partnerships that could redefine industries and bolster economic growth.

5. **Persistent Shortfalls in Security.** Against the backdrop that virtually everything connected to the Internet is hackable, and all technology is dual-use, the future technology security landscape will continue to be a cat-and-mouse game. The lack of an agile and adaptive approach to security and resilience will leave critical systems persistently vulnerable to exploitation, sabotage, and cyber attacks.

Recommendations

This memo outlines five key recommendations for navigating these five brutal truths. Together, they offer a strategic framework to **organize, innovate, build, deploy, and secure the technology stack of the future.**

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[1] For more on this, see SCSP's recent report, Welcome to the Arena: Who's Ahead, Who's Behind, and Where Are We Heading Next in the U.S.-China Technology Competition, Special Competitive Studies Project (2025).

Objective 1: Organize for the Era of Technology Competition

- **Establish a White House Technology Competitiveness Council** (**TCC**)[2] comprised of experts from government, industry, and academia, with the mandate to:

    o Conduct technology forecasting, comparative and red-team analysis to identify critical technology gaps and emerging trends;
    o Develop and execute a national technology strategy that aligns with national security and economic goals;
    o Prioritize government investments in research and development, in partnership with industry and academic partners; and
    o Coordinate across government agencies to ensure a cohesive and effective approach to technology competition.

- **Timeline:** Establish the TCC within the first 100 days of the new administration.

Objective 2: Innovate for the Future with New R&D Tools

- **Prioritize funding for AI-powered tools** that can accelerate scientific discovery and innovation. This includes:

    o **Cross-Discipline Data-Sharing Platforms:** Create secure platforms that enable researchers across different disciplines to share data and collaborate on complex scientific challenges.
    o **Quantum Information Science:** Support research and development in quantum computing, sensing, and communication, which have the potential to revolutionize fields like medicine, materials science, and cryptography.
    o **Self-Driving Labs:** Develop automated laboratories that can conduct experiments, analyze data, and generate new hypotheses with minimal human intervention.

- **Timeline:** Increase funding for AI for science initiatives by 50% over the next five years.

Objective 3: Build Deep Technology[3] Infrastructure

- **Break ground on critical technology infrastructure projects** with the help of new and reinvigorated public-private partnerships focused on areas such as:

    o **Bioreactors:** Support the development and deployment of advanced bioreactors to enhance domestic biotechnology, pharmaceutical, and agricultural capabilities and reduce reliance on foreign suppliers.
    o **Next-Generation Energy Systems:** Invest in research and development of next-

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[2] The National Security Commission on Artificial Intelligence (NSCAI) in 2021 proposed the establishment of a Technology Competition Council (TCC), a recommendation that SCSP has echoed, to empower a single entity in the White House to set strategic direction and oversee a coordinated approach to technology competition. See Final Report, National Security Commission on Artificial Intelligence at 166 (2021); Harnessing the New Geometry of Innovation, Special Competitive Studies Project at 49 (2022).

[3] Deeptech, or hardtech, refers to technology rooted in significant scientific or engineering advancements that solve complex challenges and create transformative impacts. Unlike software-based innovations, deeptech often involves breakthroughs in fields like materials science, biotechnology, quantum computing, or energy systems, requiring long development cycles, significant infrastructure investments, substantial R&D, and specialized expertise. The field's focus is on addressing fundamental problems with high technical barriers, often reshaping industries and economies.

generation energy technologies, such as small modular reactors, fusion energy, and advanced battery storage.

- o **Non-Terrestrial Networks:** Support the launch of new and expanded non-terrestrial networks, including satellite constellations and high-altitude platforms, to provide advanced connectivity and expand Internet access.

- **Timeline:** Launch a national deeptech infrastructure initiative within the first year of the new administration.

Objective 4: Organize for the Era of Technology Competition

- **Create regional innovation zones** across the country to empower localities to become first movers in their region to adopt emerging technologies. These zones would build on existing federal and state/local place-based innovation initiatives, but focus more narrowly on deeptech and emerging technologies such as robotics, autonomous vehicles, and other strategic, infrastructure-intensive, dual-use technologies. These zones should:

  - o Co-locate research and development facilities with manufacturing and experimental deployment sites;
  - o Incentivize place-based venture funds through tax incentives or matching grant programs focused on deeptech; and
  - o Develop regulatory sandboxes for deeptech testbeds and and first-of-a-kind deployments.

- **Timeline:** Launch pilot regional innovation zones in five key regions within two years.

Objective 5: Secure Future Industries from Vulnerabilities

- **Bolster security from development to deployment** by enhancing research security, cyber security, and supply chain security while protecting the intellectual property of AI and other emerging technologies. This includes:

  - o Making more security resources available to startups, researchers, and small businesses;
  - o Improving threat intelligence sharing and best practices between government and industry stakeholders;
  - o Expanding and improving implementation of robust cybersecurity standards for critical infrastructure building on U.S. government actions over the last decade;[4]
  - o Ensuring existing legal frameworks promote and promote the intellectual property of inventions and creations in an era in which emerging technologies are reshaping innovation paradigms;

- **Timeline:** Develop a technology and national security playbook and intellectual property protection plan tailored for startups, small businesses, and academic researchers within the first

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[4] These actions include NIST's cybersecurity framework, first released in February 2014, Executive Order 13800 in 2017, and the 2024 creation of the Department of Homeland Security's Artificial Intelligence Safety and Security Board, which released a framework on AI and critical infrastructure security in November 2024. See Framework for Improving Critical Infrastructure Cybersecurity, National Institute for Standards & Technology (2014); Executive Order on Strengthening the Cybersecurity of Federal Networks and Critical Infrastructure, U.S. Cybersecurity & Infrastructure Security Agency (2017); Artificial Intelligence Safety and Security Board, U.S. Department of Homeland Security (last accessed 2025); Roles and Responsibilities Framework for Artificial Intelligence in Critical Infrastructure, U.S. Department of Homeland Security (2024).

year of the new administration.

Conclusion

The U.S.-China technology competition is not just a present challenge, but a defining battleground for the 21st century. The victor will shape the future—a future where technological dominance translates into economic prosperity, national security, and global influence. The above steps offer a strategy for reasserting American technological leadership for the 21st century. They require further development with concrete action plans, timelines, and budgetary allocations for effective implementation. Successful execution will require a whole-of-government approach, with strong leadership from the White House, collaboration across agencies, and partnerships with the private sector, academia, and key allies. The result will be a new wave of innovation that drives economic growth, safeguards America's national interests, and architects the technology stack of the future.