

Mid-Decade Challenges to National Competitiveness

Special Competitive Studies Project



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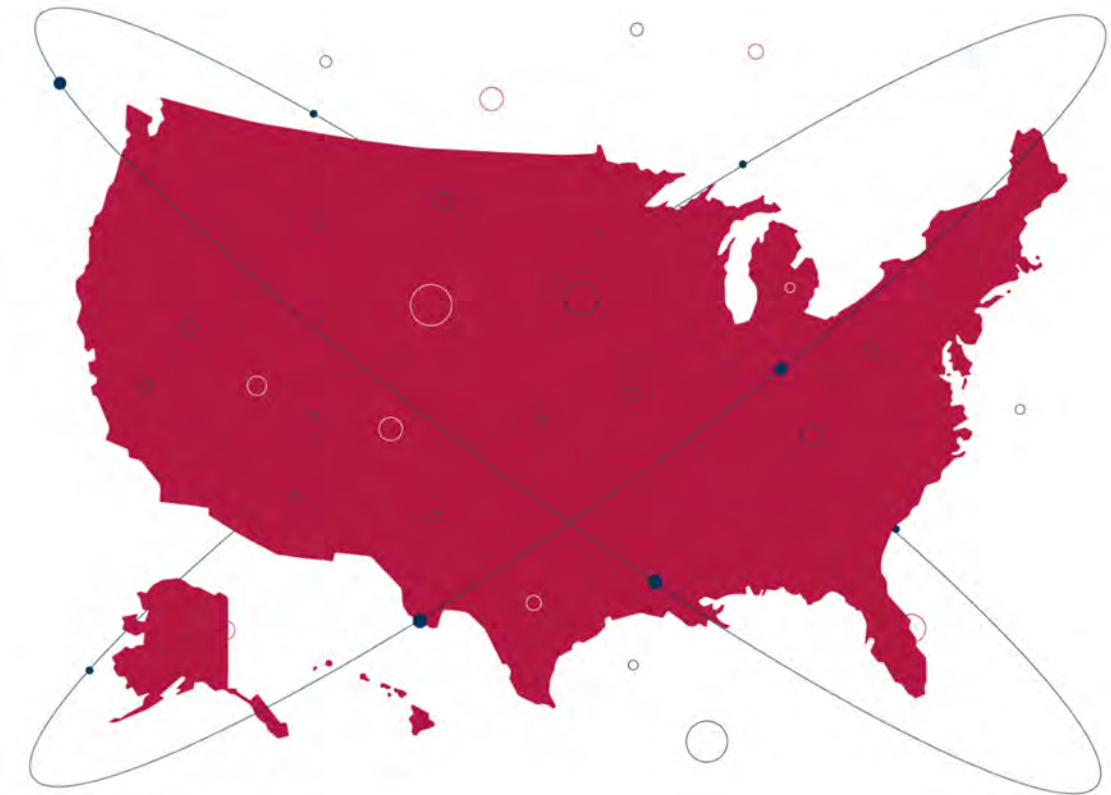
SCSP's mission is to make recommendations to strengthen America's long term competitiveness for a future where artificial intelligence (AI) and other emerging technologies reshape our national security, economy, and society.

The Purpose of the Report

- Build a conceptual framework and elevate the issues that merit Congressional and Administration attention to ensure we improve the U.S. position by 2025.
- Set an agenda for a technology-centered national competitiveness strategy to represent the initial **why** and **what** that outlines the logic for action and an agenda for the future.

The Next Phase of Our Work

- The remainder of the project will be focused on the **how** of the competitiveness agenda.
- SCSP will publish detailed action plans for technology priorities, organizational requirements, resource recommendations, and ways to bring the private sector, government, academia, and civil society, and U.S. allies and partners together for a common purpose.



The Process

- The Mid-Decade Challenges Report is the result of more than **4 board meetings, 26 panel meetings that included more than 225 experts, government officials, academic leaders, and many others, and more than 400 engagements.**
- While this is not a consensus report, this is the culmination of the SCSP staff's work up to this point and its effort to synthesize the wealth of information gathered from all of the individuals and entities with which we have engaged or consulted.

Battlegrounds for Long-Term Leadership

Failure to connect technology developments to strategic competition – **artificial intelligence (AI), microelectronics, and fifth-generation wireless technology (5G)** – tell the story of a nation and its allies coming perilously close to ceding the current strategic technology competition. Strengthening U.S. competitiveness requires major investments across all three areas.

AI: Software

- Intelligent systems and applications driven by computing power, algorithms and data will connect a constellation of technologies to transform entire industries.
- A federal commission, the National Security Commission on Artificial Intelligence, had to develop such a plan four years after China.

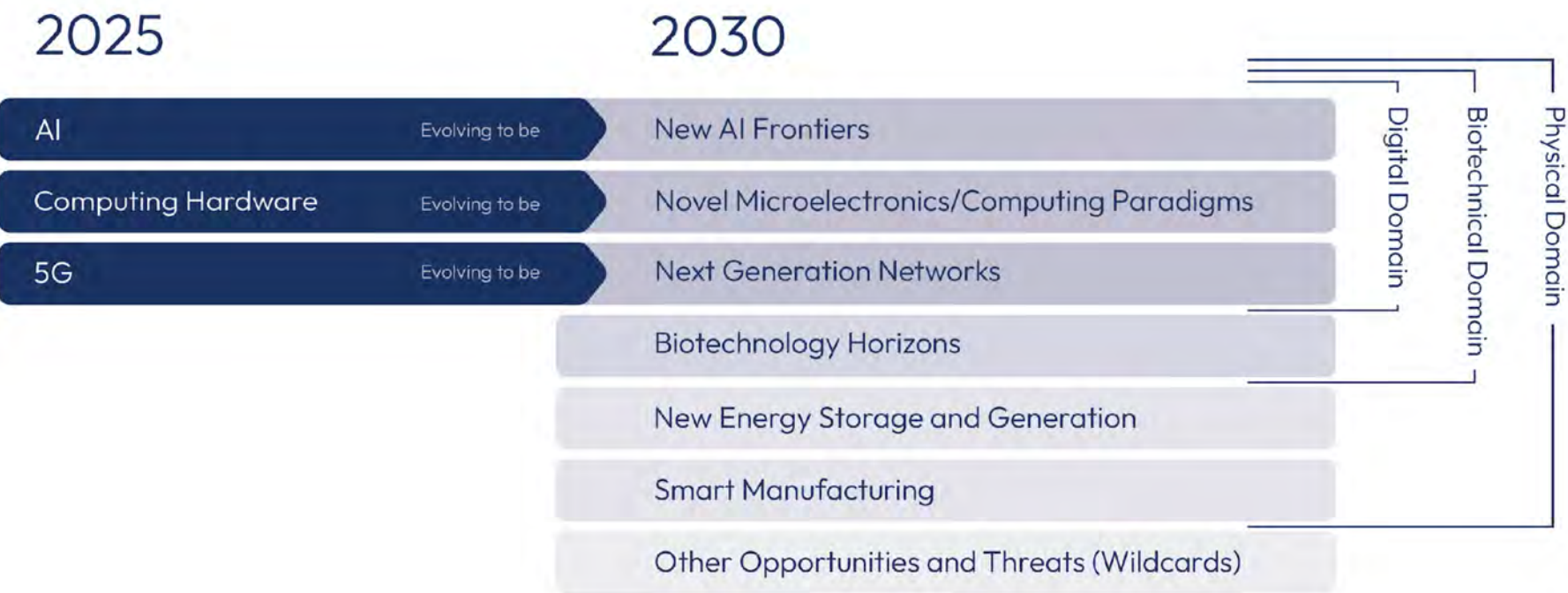
Microelectronics: Hardware

- Semiconductors are the brains of modern technology. 100 percent of advanced chips are produced in Asia, leaving the U.S. supply vulnerable.
- It will take time and investments before the U.S. regains manufacturing leadership and supply chain security.

5G: Network Infrastructure

- 5G and 6G networks promise to unlock commercial and public sector applications in smart manufacturing, smart cities, and other uses foundational to the next generation economy.
- Only a U.S. diplomatic campaign and export controls on select microchips have slowed China’s 5G march.

Battlegrounds We Need to Win



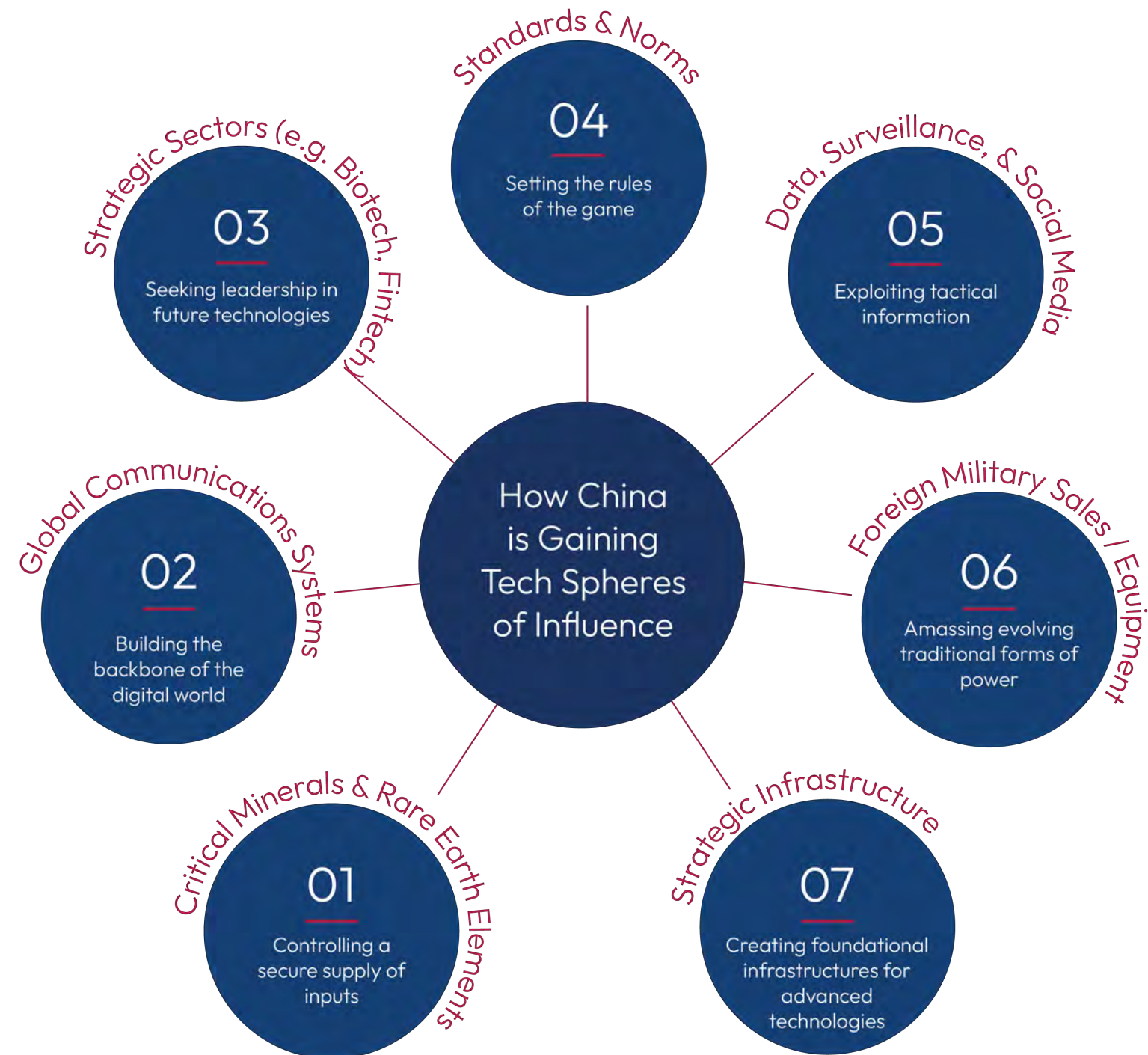
What if China Wins? A Different World

China's Path to Global Techno-Industrial Dominance

- Made in China 2025
- Military-Civil Fusion
- Dual-Circulation
- Belt and Road Initiative
- Digital Silk Road, and more

The Stakes for the U.S. and its Allies

- Dependence on China
- The Post-WWII Rules-Based Order
- A Loss of Freedom of Action in the World
- Smaller Techno-Industrial Base
- Worse Geopolitical Position
- Diminished Military Advantage
- Compromising of Democratic Values



Competitiveness Agenda for Action

The United States can be on a winning path by **2025** if it can solve **six challenges** to U.S. competitiveness. The cumulative answer to how we address these challenges constitutes an agenda for restoring America’s competitiveness.

Actions We Must Take Between Now and 2025

The U.S. will set the foundation by 2025 to win the tech competition by 2030 if we address these challenges in the following ways:

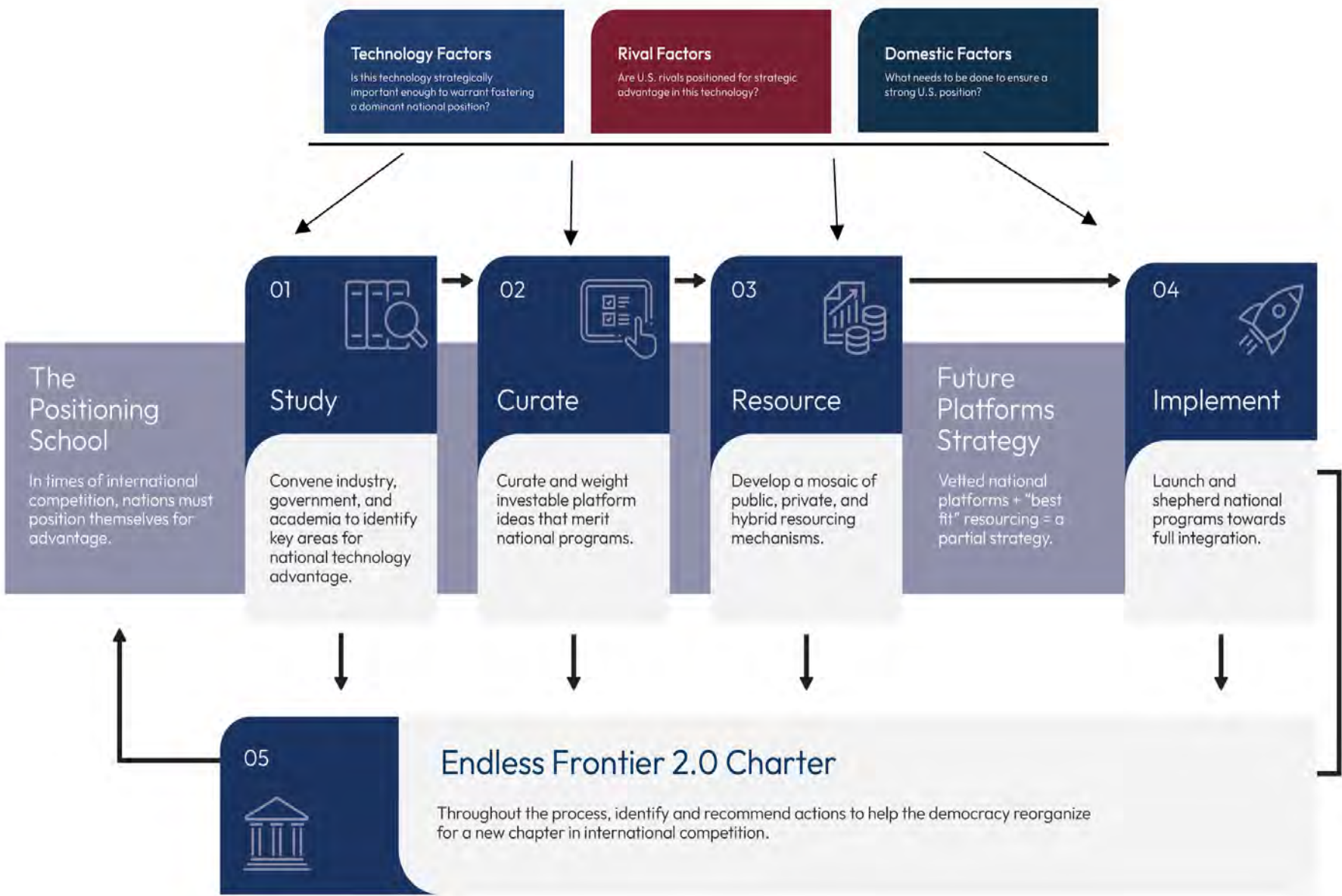
Harnessing the New Geometry of Innovation	The U.S. needs an organizational structure that would exemplify a new public-private model – one that could execute a focused strategy process for the United States to make informed judgments on national technology priorities and create action plans to accelerate tech adoption.
Restoring the Sources of Techno-Economic Advantage	The United States needs a techno-industrial strategy that increases economic output and fills economic and national security gaps.
An American Approach to AI Governance	The U.S. Government should encourage safe, responsible, publicly supported technology governance to gain competitive advantage and offer a model for the rest of the world that strikes a balance between innovation and tech-disruption.
Remaking U.S. Global Leadership in the Age of Technology Competition	The United States and its allies must marshal the resources and diplomatic efforts to compete across the world so nations have real choices about their futures.
The Future of Conflict and the New Requirements of Defense	The United States military should pursue an Offset-X strategy to circumvent China’s military advancements and concepts of operation, restore America’s ability to more freely project power in the Indo-Pacific, and position the U.S. to honor its commitments and preserve the stability of the region.
Intelligence in an Age of Data-Driven Competition	The U.S. Intelligence Community will have to master emerging technologies to deliver relevant and timely insight to decision makers and augment its efforts by focusing on foreign technology developments shaping military, economic, and political trends.

Organizing to Pursue National Technology Priorities

Key Judgments

- + Technology development cannot be left to chance. Nations must have a process for identifying and acting on strategically significant technologies to remain competitive.
- + Unifying public and private actors to fill national technology gaps and seize opportunities requires a systematic strategic approach to scanning the technology horizon.
- + Achieving national technology goals requires action plans that consider both the technology itself and the factors in its broader ecosystem that would enable it to scale, deploy, and commercialize.
- + To best match China’s fused public-private innovation ecosystem, America requires a more coordinated whole-of-nation effort to energize its own innovation ecosystem toward developing positional advantage.
- + Today’s techno-economic competition demands organizational reform to coordinate a new public-private partnership model and implement the outlined technology strategy process.

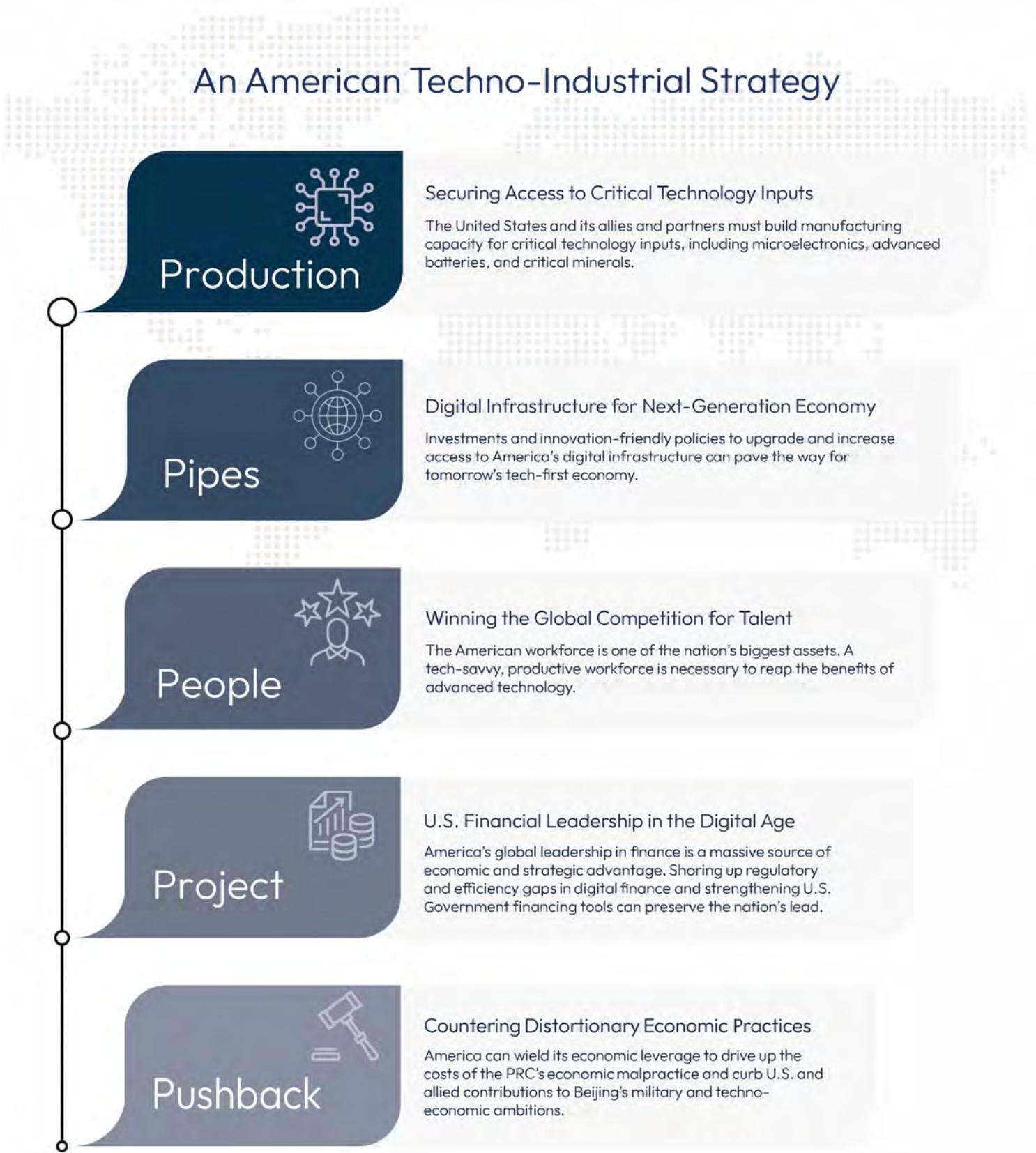
A National Technology Strategy Process



Restoring United States Techno-Economic Advantage

The Strategic Backdrop: A strong economy is the foundation for succeeding in the technology competition and delivering prosperity for Americans. The United States has immense economic advantages, but there are warning lights flashing.

The United States needs a **Techno-Industrial Strategy** – a public-private initiative that boosts technology diffusion and fills economic and national security gaps in strategic sectors.



An American Way for AI Governance

The U.S. Government should encourage **safe, responsible, publicly supported technology governance** to gain competitive advantage and offer a model for the rest of the world that strikes a balance between innovation and tech-disruption.

Success in striking the balance between driving innovation and minimizing harm hinges on the **norms, rules, frameworks, regulations, and laws** that determine how technologies are applied.

Shaping the development and use of AI will require calibrating the **full range of governance mechanisms, regulatory and non-regulatory**, to strike the right balance.

4 Principles for American AI Governance



6 Decisive Enablers for Increasing Justified Public Confidence in AI



The United States needs to strengthen privacy protections now while exploring how the proliferation of technology innovations will continue to challenge our society’s conceptions of privacy.



AI uses that have a high risk of causing harm require mechanisms for recourse.



Facial recognition raises significant concerns that should be addressed through targeted use-case restrictions.



More timely and effective governance requires capabilities to better explore and understand the complex sociotechnical implications of AI prior to and during use.



We need to increase efforts to operationalize the principle of mitigating unwanted bias in AI.



Social media platforms need a multi-pronged governance approach to address societal harms and mitigate disinformation.

Remaking U.S. Leadership in the Age of Tech Competition

Technology is now the heart of a long-term, systemic competition between open, democratic societies and closed, authoritarian systems to shape the future of the international rules-based order.

FOUR OBJECTIVES

- 1

Promoting Digital Freedom

 - Reinforce norms of acceptable practices
 - Build a digital freedom playbook, with lessons learned from government and industry responses to Russia/Ukraine
 - Invest in digital freedom technology
 - Double down on civil society globally
- 2

Safeguarding Global Digital Infrastructure

 - Create a “Global Technology Accelerator Center”
 - Expand EXIM’s and DFC’s authorities
 - Build out digital public goods
- 3

Extending Tech Partnerships to the “Swing States”

 - Build a common threat perception for tech competition
 - Expose the PRC’s failures
 - Focus less on rhetoric, and more on investments
 - Maintain the open door, increase leadership and tech exchanges
- 4

Constructing a New Relationship with China that Reflects Tech Competition

 - Scope and prioritize the tech areas for disentanglement
 - Maintain dialogue to mitigate against miscalculation and preserve stability
 - Prioritize people-to-people engagements with Chinese citizens

THREE PILLARS

1

Alliance Resilience and Partnerships

Globalize alliance coordination, expand the definition of “winning” to include allies, integrate alliance comparative advantages.

Recommendations:

- Create a 6G small group
- Build the “DemTech” Alliance with new institutions like a “DemTech Bank”

2

Aligning the Private Sector with Strategic Technology Priorities

Public-private alignment around strategic technology interests, democratic guardrails, and governance and regulatory frameworks.

Recommendations:

- Double down on democratic leadership in standards-setting bodies
- Support the free flow of data for digital trade

3

Foreign Policy Organization, Tools, and Workforce: A “Goldwater-Nichols” for Foreign Policy

Streamline and modernize authorities, organizations, programs, funding, and talent for the global tech competition.

Recommendations:

- Establish an Office of Technology Transition Initiatives and a Peace Corps for technology - a Global Tech Corps
- Increase training for STEM policy literacy
- Build out tech officer positions in the Department of State

The Future of Conflict and New Requirements of Defense

The Future of War and Peace: Drivers of Change

- Emerging technologies
- Novel operational concepts
- Intensifying geopolitical rivalry

PRC Theory of Victory: Systems Destruction Warfare

- Bring America’s economy to a standstill
- Paralyze the U.S. military
- Present U.S. leaders with a strategic dilemma

Offset-X Recommendations

- | | |
|---|--|
| ▶ Fully Embrace Distributed, Network-based Operations. | ▶ Undermine Adversary’s C3 Systems. |
| ▶ Lead the World’s Militaries in Human-Machine Collaboration and Human-Machine Teaming. | ▶ Evolve Deliberate War Planning. |
| ▶ Gain and Maintain Software Advantage. | ▶ Help Allies and Partners Develop Interchangeability with U.S. Forces. |
| ▶ Ensure Resilience in Our Ability to Sense, Communicate, Attack, and Supply. | ▶ Implement a New Public-Private Partnering Model with Industry, Academia, Investors, and Civil Society. |
| ▶ Undermine Adversary’s Censorship System. | ▶ Develop and Field Counter-Autonomy. |



Intelligence in an Age of Data-Driven Competition

The mid-decade challenge for the U.S. Intelligence Community is winning the accelerating race for actionable insight to enable U.S. statecraft in a more information-rich and geopolitically competitive world.

7 Practices to Adapt

IC Elements to the Technological Era and Rivalry through Digital Transformation

1. Establish a Digital Experimentation and Transformation Unit to run pilot projects for digital transformation.
2. Drive reforms from the leadership level.
3. Ensure the right combination of people with expertise, processes that enable human-machine teaming, and technology to handle data at scale.
4. Establish new standards for acceptable risks.
5. Set new security goals for the integration of needed expertise and technology.
6. Modernize hiring, retention, and exchange policies to ensure access to needed expertise.
7. Learn from other large, complex organizations, but tailor to the IC’s specialized mission.

6 Steps to Leverage

Insights and Information through Open Source Capabilities

1. Place the collection and processing of public and commercial information at the core of expanded U.S. Government open source efforts.
2. Create a new institutional home for open source collection, acquisition, processing, and analysis.
3. Enable the new entity to serve as a gateway for open source data and analysis between the IC, U.S. Government, and external actors.
4. Run a series of internal pilot projects to build skills in exploiting open sources with AI tools.
5. Leverage open source successes to spotlight best “use cases” for scaling AI across the IC.
6. Publish select open source products to create a virtuous cycle of collaboration with outside experts.

6 Ways to Create

New Capacities to Capture and Master Techno-Economic Intelligence

1. Leverage private sector insights of adversaries’ economic, financial, and technological capabilities.
2. Establish a National Techno-Economic Intelligence Center.
3. Design a new techno-economic analyst career track.
4. Strengthen existing in-house intelligence elements of Departments with techno-economic capabilities.
5. Establish the authorities and capabilities to make techno-economic net assessments.
6. Prioritize collection on adversaries’ scientific and technological research.

6 Methods to Counter

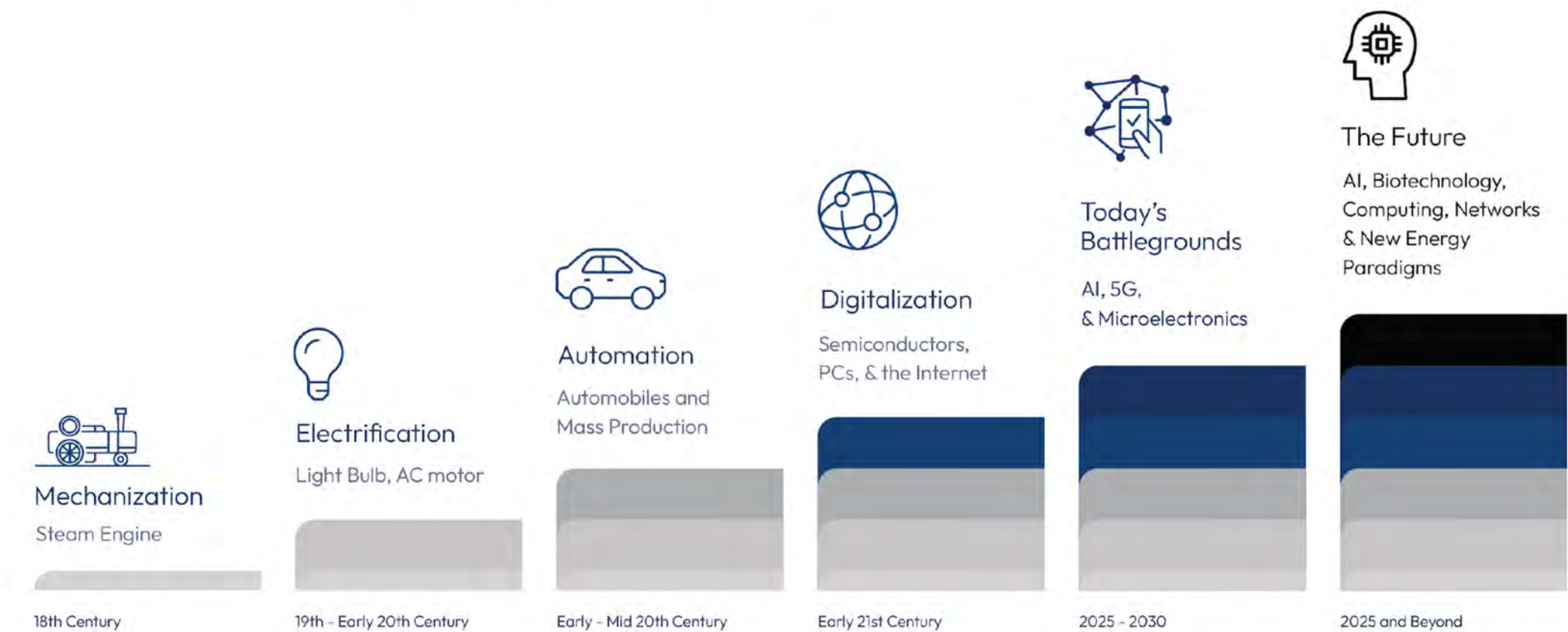
Foreign Adversarial Influence Operations

1. Operationalize the Foreign Malign Influence Response Center and create a Joint Interagency Task Force (JIATF).
2. “Prebunk” foreign adversarial influence operations through early public disclosures.
3. Alert of foreign disinformation operations that target U.S. social cohesion.
4. Build a public notice board of adversary-generated false narratives and themes.
5. Designate a focal point to counter foreign denigration efforts against senior U.S. officials.
6. Incorporate new technologies and mitigation techniques quickly.

The Technologies that Will Drive Future American Competitiveness

The innovations of the last two decades primarily unfolded in the digital realm. The next phase of technological innovation involves multiple emerging and evolving general purpose technologies (GPTs) that are unfolding across three intersecting domains: the physical (atoms), the digital (bits), and the biotechnical (cells). This portends an epochal reshuffling of the global geopolitical and economic status quo.

Waves of General Purpose Technologies (GPTs)



The ABC's of the Technology Competition

- Atoms:** The Physical
- Bits:** The Digital
- Cells:** The Biotechnical