

# NATIONAL STRATEGY for CRITICAL AND EMERGING TECHNOLOGIES

The National Strategy for C&ET, in accordance with the National Security Strategy (NSS), unifies the United States Government effort to maintain worldwide C&ET leadership with our allies and partners. The United States will lead in the highest-priority C&ET areas, contribute as a peer with allies and partners in high-priority C&ET areas, and manage technology risk in other C&ET areas. Worldwide C&ET leadership will be maintained by promoting our NSIB and protecting our technology advantage.

UNITED STATES GOVERNMENT CRITICAL AND EMERGING TECHNOLOGIES LIST — The Critical and Emerging Technologies (C&ET) list reflects the 20 technology areas that United States Government Departments and Agencies identified to the National Security Council staff as priorities for their missions. The list will be reviewed and updated annually via the interagency process coordinated by the National Security Council staff. The technology areas are arranged alphabetically.

- Advanced Computing
- Advanced Conventional Weapons Technologies
- Advanced Engineering Materials
- Advanced Manufacturing
- Advanced Sensing
- Aero-Engine Technologies
- Agricultural Technologies
- Artificial Intelligence
- Autonomous Systems
- Biotechnologies
- Chemical, Biological, Radiological, and Nuclear (CBRN) Mitigation Technologies
- Communication and Networking Technologies
- Data Science and Storage
- Distributed Ledger Technologies
- Energy Technologies
- Human-Machine Interfaces
- Medical and Public Health Technologies
- Quantum Information Science
- Semiconductors and Microelectronics
- Space Technologies

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## President of the United States (POTUS)

### Vision

The United States, with its allies and partners, continues to be the world leader in critical and emerging technologies (C&ET)

### Mission

To unify the United States Government effort to maintain worldwide C&ET leadership with our allies and partners

### Values

#### Technology

#### Innovation

**Leadership:** Technology Leader -- The United States will lead in the highest-priority technology areas to ensure its national security and economic prosperity. Technology leadership will require forecasting, prioritization due to limited resources, coordination with allies and partners, appropriate investments early in the development cycle, and periodic re-evaluation as technologies mature.

**Partnership:** Technology Peer -- As leadership is achieved or maintained in the highest-priority technology areas, the United States will remain a technology peer with its allies and partners in other high-priority technology areas. The United States will work with its allies and partners to advance C&ET based on a foundation of mutual benefit, teamwork, security, and proportional investment. The United States can share its talents and capabilities with allies and partners, and mutually benefit from access to the full breadth of C&ET available within the trusted community.

**Risk Management:** Technology Risk Management -- Some emerging technologies are globally diffuse or are too early in the R&D phase to have clearly identified implications for United States national security. In those cases, a risk management approach will be applied to gauge national security implications, inform investments, and monitor development. In managing risk, the United States Government will first identify, evaluate, and prioritize its technology risks, followed by a coordinated response to avoid, reduce, accept, or transfer risk.

## PILLAR I. National Security

### PROMOTE THE NATIONAL SECURITY INNOVATION BASE

Promoting the NSIB requires a sustained, long-term investment in all aspects of the NSIB, from science, technology, engineering, and mathematics (STEM) education; an advanced technical workforce; and early-stage R&D to innovation-friendly regulations; venture capital; collaboration between government, academia, and the private sector; and working with allies and partners. Priority Actions — The following actions will be considered or undertaken to promote C&ET development, and are not listed in any particular order:

#### I.A. S&T Workforce

*Develop the highest-quality science and technology (S&T) workforce in the world*

**Stakeholder(s):**

**S&T Workforce**

#### I.B. Inventors & Innovators

*Attract and retain inventors and innovators*

**Stakeholder(s):**

**Inventors**

**Innovators**

#### I.C. Capital & Expertise

*Leverage private capital and expertise to build and innovate*

**Stakeholder(s):**

**Private Sector**

#### I.D. Inventions & Innovations

*Rapidly field inventions and innovations*

#### I.E. Regulations, Policies & Bureaucracy

*Reduce burdensome regulations, policies, and bureaucratic processes that inhibit innovation and industry growth*

#### I.F. Norms, Standards & Governance

*Lead the development of worldwide technology norms, standards, and governance models that reflect democratic values and interests*

**I.G. National Security Innovation Base**

*Support the development of a robust National Security Innovation Base (NSIB), to include academic institutions, laboratories, supporting infrastructure, venture funding, supporting businesses, and industry*

**Stakeholder(s):**

**Academic Institutions**

**Venture Capitalists**

**Laboratories**

**Businesses**

**Infrastructure Providers**

**Industry**

**I.H. R&D Budgets**

*Increase priority of research and development (R&D) in developing United States Government budgets*

**I.I. Advanced Applications**

*Develop and adopt advanced technology applications within government and improve the desirability of the government as a customer of the private sector*

**Stakeholder(s):**

**Private Sector**

**I.J. Public-Private Partnerships**

*Encourage public-private partnerships*

**I.K. Ally Partnerships**

*Build strong and lasting technology partnerships with like-minded allies and partners and promote democratic values and principles*

**Stakeholder(s):**

**Allies**

**Partners**

**I.L. Messaging**

*With the private sector, create positive messaging to increase public acceptance of critical and emerging technologies (C&ET)*

**Stakeholder(s):**

**Private Sector**

**The Public**

**I.M. State & Local Governments**

*Encourage state and local governments to adopt similar actions*

**Stakeholder(s):**

**State Governments**

**Local Governments**

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## PILLAR II. Technology

### PROTECT TECHNOLOGY ADVANTAGE

A second way to maintain and improve American leadership in C&ET is to protect our technology advantage both domestically and in conjunction with likeminded allies and partners. The United States does not tolerate intellectual property theft, the exploitation of open scientific norms, or economic aggression regarding C&ET. Relationships will be rooted in fairness, reciprocity, and faithful adherence to agreements. Protecting the United States technology advantage includes strengthening rules where gaps exist, enforcing agreements, and working with like-minded allies and partners to ensure our common principles prevail. Another part of protecting the United States technology advantage is defending our NSIB, which requires domestic and international collaboration between companies, industries, universities, and government agencies. The United States will also stand with allies and partners to oppose attacks on their respective NSIBs. Priority Actions — The following actions will be considered or undertaken to protect C&ET technology advantage, and are not listed in any particular order:

#### II.A. IP, Research & Technologies

*Ensure that competitors do not use illicit means to acquire United States intellectual property, research, development, or technologies*

#### II.B. Security

*Require security design early in the technology development stages, and work with allies and partners to take similar action*

**Stakeholder(s):**

**Allies**

**Partners**

#### II.C. Research Security

*Protect the integrity of the R&D enterprise by fostering research security in academic institutions, laboratories, and industry, while balancing the valuable contributions of foreign researchers*

**Stakeholder(s):**

**Academic Institutions**

**Industry**

**Laboratories**

**Foreign Researchers**

#### II.D. Export Controls

*Ensure appropriate aspects of C&ET are adequately controlled under export laws and regulations, as well as multilateral export regimes*

**II.E. Processes**

*Engage allies and partners to develop their own processes similar to those executed by CFIUS*

**Stakeholder(s):**

**Allies**

**CFIUS**

**Partners**

**II.F. Private Sector**

*Engage with the private sector to benefit from its understanding of C&ET as well as future strategic vulnerabilities related to C&ET*

**Stakeholder(s):**

**Private Sector**

**II.G. Policies, Capabilities & Trends**

*Assess worldwide S&T policies, capabilities, and trends, and how they are likely to influence, or undermine, American strategies and programs*

**II.H. Supply Chains**

*Ensure secure supply chains, and encourage allies and partners to do the same*

**Stakeholder(s):**

**Allies**

**Partners**

**II.I. Messaging & Assistance**

*Message to key stakeholders the importance of protecting technology advantage and offer practical assistance whenever possible*

**Administrative Information**

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