Source: weerapat1003/stock.adobe.com.

Protecting Critical Technologies

Overview of recent work by the

U.S. Government Accountability Office

What are critical technologies?

- Technologies that provide new or improved capabilities necessary to maintain the U.S. technological advantage.

ANNEX

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

# How are critical technologies targeted and who protects them?

- GAO identified 8 government-wide programs aimed at protecting critical technologies from various forms of unauthorized transfer.

- Responsibility for these programs are shared across multiple federal agencies.
  - DOD is the only agency with an identified role in each.

Types of threats facing U.S. critical technologies

U.S. government protection programs
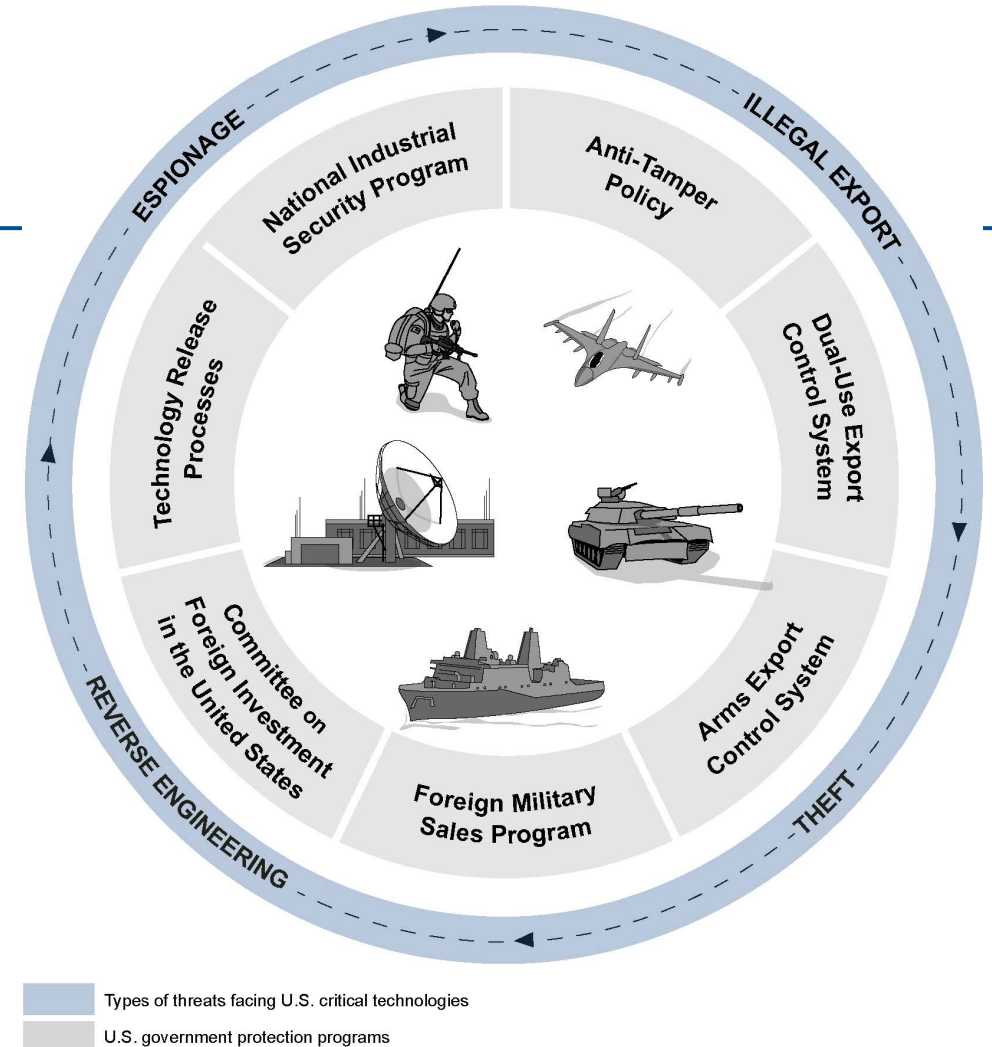
Source: GAO representation of U.S. government critical technology protection programs. | GAO-21-158

DOD efforts to protect critical technologies

- DOD has attempted to identify its most critical technologies in need of protection for decades.
  - 1979 to 2011: Militarily Critical Technologies List
  - 2016 to 2019: Critical Programs and Technologies List (managed by DOD's Office of the Under Secretary for Research and Engineering)
  - 2019 to 2021: Critical Programs and Technologies List (managed by the Protecting Critical Technology Task Force)
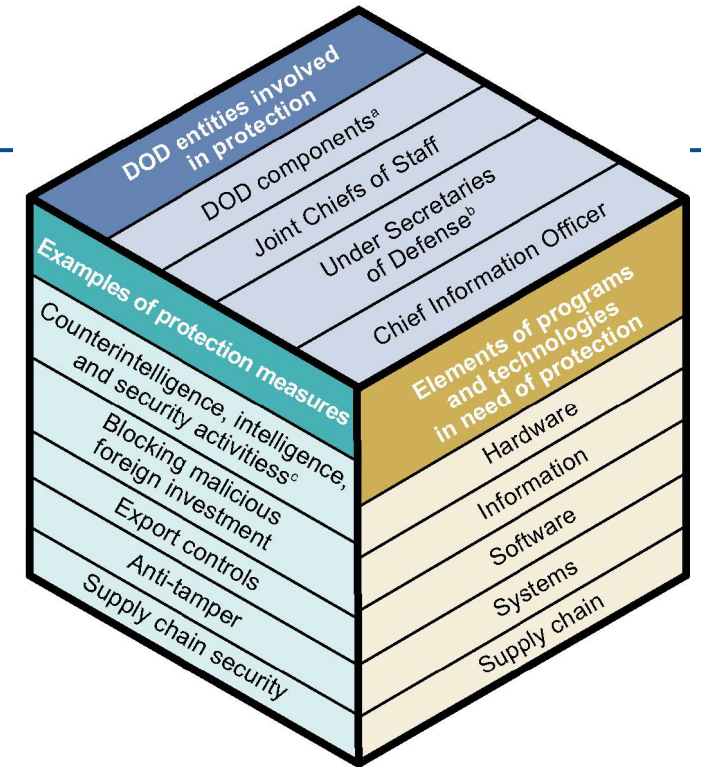
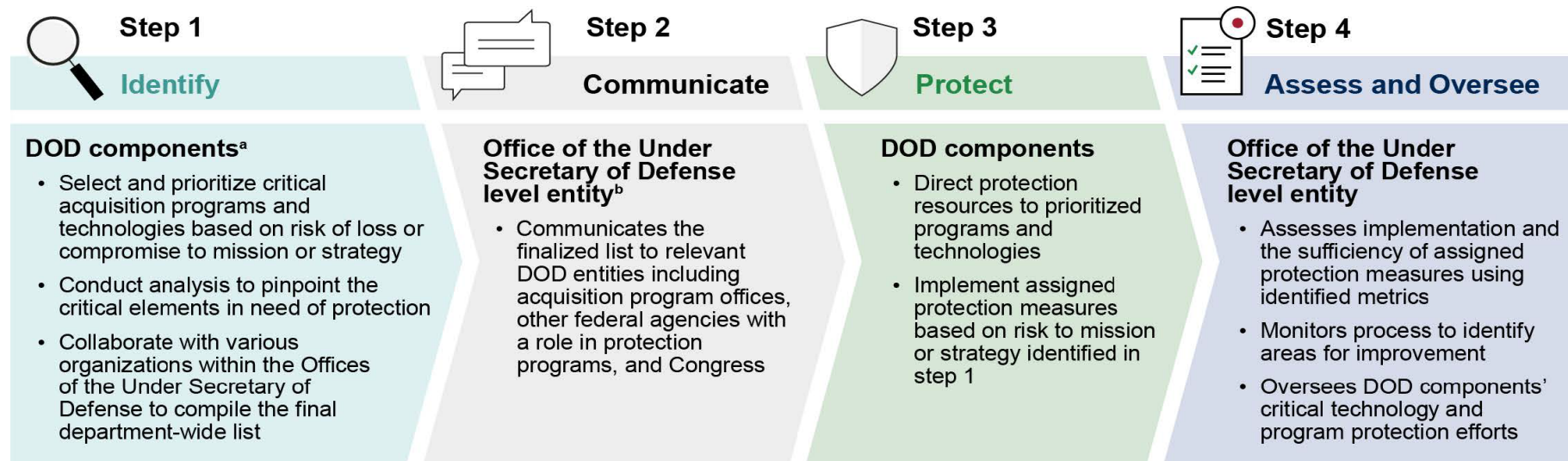Source: GAO depiction of Department of Defense (DOD) protection efforts. | GAO-21-158

[a]DOD components include the military departments, defense agencies such as the Defense Advanced Research Projects Agency, and the Joint Staff, among others.
[b]This includes the Offices of the Under Secretary of Defense for Research and Engineering; Intelligence and Security; Acquisition and Sustainment; and Policy.

Recent changes to DOD's protection of critical technologies

- The Protecting Critical Technology Task Force was established in October 2018 to stop the exfiltration of critical technologies by reforming the ways DOD protects them and their related sensitive information.
  - The task force's first step was to create a repeatable process to identify and prioritize critical technologies and assign consistent protection measures commensurate with their criticality.

Step 1

Identify

DOD components[a]
- Select and prioritize critical acquisition programs and technologies based on risk of loss or compromise to mission or strategy
- Conduct analysis to pinpoint the critical elements in need of protection
- Collaborate with various organizations within the Offices of the Under Secretary of Defense to compile the final department-wide list

Step 2

Communicate

Office of the Under Secretary of Defense level entity[b]
- Communicates the finalized list to relevant DOD entities including acquisition program offices, other federal agencies with a role in protection programs, and Congress

Step 3

Protect

DOD components
- Direct protection resources to prioritized programs and technologies
- Implement assigned protection measures based on risk to mission or strategy identified in step 1

Step 4

Assess and Oversee

Office of the Under Secretary of Defense level entity
- Assesses implementation and the sufficiency of assigned protection measures using identified metrics
- Monitors process to identify areas for improvement
- Oversees DOD components' critical technology and program protection efforts

Source: GAO depiction of Department of Defense's (DOD) process. | GAO-21-158

[a]DOD components include the military departments, defense agencies such as the Defense Advanced Research Projects Agency, and the Joint Staff, among others.
[b]According to DOD officials, in 2020, this entity is the Protecting Critical Technology Task Force.

What was missing in the process

- At the time of GAO's review, the task force was focused on finalizing the process for identifying and protecting critical technologies.

- This left gaps in how the department was:
  - planning to communicate the critical technologies list
  - assessing whether the protection measures are implemented and sufficient
  - identifying who will oversee the process once the task force is dissolved

Where things stand

- Since GAO's report published in January 2021—
  - DOD issued its 2021 critical technologies list
  - DOD's Protecting Critical Technology Task Force was dissolved in June 2021
  - DOD's Office of the Under Secretary of Defense for Research and Engineering is refining the process to develop the annual critical technologies list and working with a federally funded research and development center to determine the appropriate protection measures to institute.

	Status (as of March 2022)
Rec 1	Closed-implemented
Rec 2	Open
Re 3	Closed-implemented

What's next

- GAO will continue to monitor the area through its bi-annual High Risk report.

- 5 key aspects are considered:
  - Leadership commitment
  - Capacity
  - Action plan
  - Monitoring
  - Demonstrated progress

- GAO's next High Risk report is expected to be published in 2023.

Ensuring the Effective Protection of Technologies Critical to U.S. National Security Interests

LEADERSHIP COMMITMENT

Met
Partially Met
Not Met

DEMONSTRATED PROGRESS

CAPACITY

MONITORING

ACTION PLAN

Source: GAO analysis. | GAO-21-119SP