Research Security Overview

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Naval Counter-Improvised Threat Knowledge Network

March 4, 2021

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Why Is S&T Protection Necessary?

Secretary of Defense Memorandum, Subject: Establishment of the Protecting Critical Technology Task Force, October 24, 2018

- DoD's Science and Technology (S&T) community, along with the defense industry and research enterprise "must ensure the integrity and security of our classified information, controlled unclassified information, and key data. The impacts of the loss of intellectual property and data cannot be overstated — we must move out to protect our resources and our forces."
- "Each year, it is estimated that American industry loses more than $600 billion dollars to theft and expropriation."
- "Far worse, the loss of classified and controlled unclassified information is putting the Department's investments at risk and eroding the lethality and survivability of our forces."

- ***Former Secretary of Defense, James Mattis***

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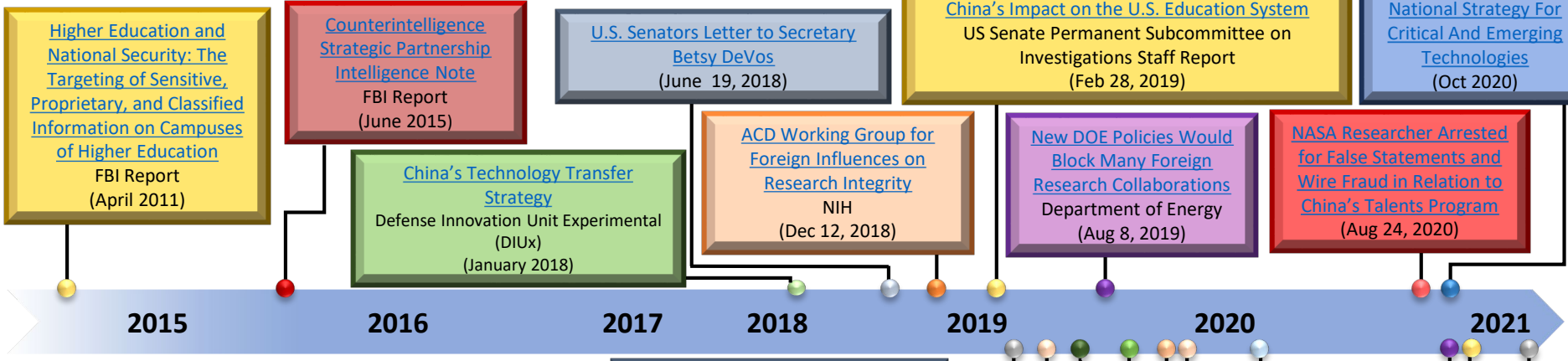
U.S. Government Articles, Reports, Letters of Concern to Academia (2011-2021)



Higher Education and National Security: The Targeting of Sensitive, Proprietary, and Classified Information on Campuses of Higher Education
FBI Report
(April 2011)

Counterintelligence Strategic Partnership Intelligence Note
FBI Report
(June 2015)

China's Technology Transfer Strategy
Defense Innovation Unit Experimental (DIUx)
(January 2018)

U.S. Senators Letter to Secretary Betsy DeVos
(June 19, 2018)

ACD Working Group for Foreign Influences on Research Integrity
NIH
(Dec 12, 2018)

China's Impact on the U.S. Education System
US Senate Permanent Subcommittee on Investigations Staff Report
(Feb 28, 2019)

New DOE Policies Would Block Many Foreign Research Collaborations
Department of Energy
(Aug 8, 2019)

NASA Researcher Arrested for False Statements and Wire Fraud in Relation to China's Talents Program
(Aug 24, 2020)

National Strategy For Critical And Emerging Technologies
(Oct 2020)

Actions for the Protection of Intellectual Property, Controlled Information, Key Personnel and Critical Technologies
Under Secretary of Defense Memorandum
(Mar 20, 2019)

American Council on Education Letter
(May 10, 2019)

Letter from Dr. Michael Griffin to the Senate Finance Committee
(Jul 1, 2019)

Report to Congress on Section 1286 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115-232)
U.S. Department of Defense
(Sep 13, 2019)

Threats to the U.S. Research Enterprise
China's Talent Recruitment Plans
US Senate Permanent Subcommittee on Investigations Staff Report
(Nov 18, 2019)

Fundamental Research Security
The JASON Report
(December 2019)

Institutional Compliance with Section 117 of the Higher Education Act of 1965
Department of Education
(Oct 2020)

Harvard University Professor and 2 Chinese Nationals Charged in 3 Separate China Related Cases
DOJ Release
(Jan 28, 2020)

Enhancing the Security and Integrity of America's Research Enterprise
Office of Science and Technology Policy
(Oct 15, 2020)

MIT Professor Arrested and Charged with Grant Fraud
DOJ Release
(Jan 14, 2021)

National Security Presidential Memorandum–33
(Jan 14, 2021)

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DoD-Sponsored Research Policy Activities

- June 29, 2020 USD(R&E) Memo, "Collecting Assistance Award Information As Required in Section 1281(d)(1) of the National Defense Authorization Act for Fiscal Year 2020," requires at least **annual reporting** of "Participants and Other Collaborating Organizations" **for all individuals participating** in DoD research.
- Department of Defense Instruction (DoDI) 5000.83, "Technology and Program Protections to Maintain Technological Advantage," includes requirement to **evaluate all research programs** for the **appropriateness of funding category** prior to program approval.
- Implementation guidance under development:
  - Pursuing a **standardized risk methodology** for S&T Program Managers to integrate into funding and award decisions.
  - Developing a methodology to make unwanted Foreign Talent Recruitment Program (FTRP) and participant data accessible by all S&T stakeholders in order to **identify and mitigate recruitment and retention activities by adversary talent recruitment programs.**

Collaborating with Research and Technology Protection Stakeholders across DoD

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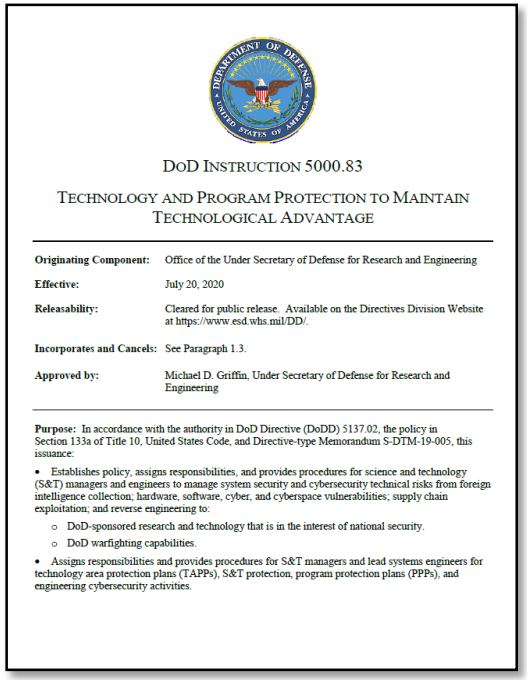
Technology, S&T, and Program Protection Planning



DoD Instruction 5000.83

Technology and Program Protection to Maintain Technological Advantage

Originating Component:	Office of the Under Secretary of Defense for Research and Engineering
Effective:	July 20, 2020
Releasability:	Cleared for public release. Available on the Directives Division Website at https://www.esd.whs.mil/DD/.
Incorporates and Cancels:	See Paragraph 1.3.
Approved by:	Michael D. Griffin, Under Secretary of Defense for Research and Engineering

Purpose: In accordance with the authority in DoD Directive (DoDD) 5137.02, the policy in Section 133a of Title 10, United States Code, and Directive-type Memorandum S-DTM-19-005, this issuance:

- Establishes policy, assigns responsibilities, and provides procedures for science and technology (S&T) managers and engineers to manage system security and cybersecurity technical risks from foreign intelligence collection; hardware, software, cyber, and cyberspace vulnerabilities; supply chain exploitation; and reverse engineering to:
  - DoD-sponsored research and technology that is in the interest of national security.
  - DoD warfighting capabilities.
- Assigns responsibilities and provides procedures for S&T managers and lead systems engineers for technology area protection plans (TAPPs), S&T protection, program protection plans (PPPs), and engineering cybersecurity activities.

Main Content

- **Safeguard information**
- **Control DoD-sponsored research**
- **Design for security and cyber resiliency**
- **Protect the system against cyber attacks from enabling and supporting systems**
- **Protect fielded systems**
- **Enhance protection for critical programs and technologies**

Technology Area Protection Plan (TAPP)

- OUSD(R&E) identifies broad technology elements to protect that are central to accelerating Warfighter capabilities in key technology areas across the Department
- Set boundaries on what should be communicated by stakeholder groups for protection purposes

S&T Protection Plan

- Management tool to guide protection activities for S&T Investments at DoD Component-level
- Implement risk-based protection measures to reduce compromise or loss to competitor nations through transition to acquisition

Program Protection Plan (PPP)

- Acquisition management tool to guide the systems security engineering, to include cyber resilient engineering, activities across the life cycle
- Informed by TAPP and S&T Protection Plans

DoD S&T (Budget Activities 6.1 - 6.4)

DoD RDT&E Programs (Budget Activities 6.4+)

Manage risk of adversarial exploitation and compromise beginning with early S&T and continues through the Acquisition lifecycle

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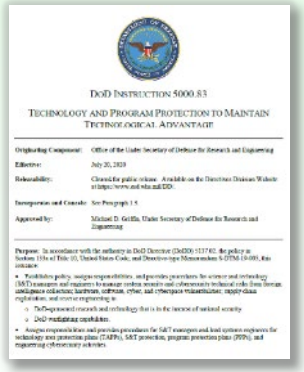
S&T Protection Policy and Guidance Overview

Policy

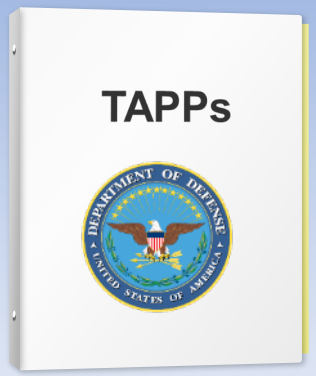

DoD Instruction 5000.83

Technology and Program Protection to Maintain Technological Advantage

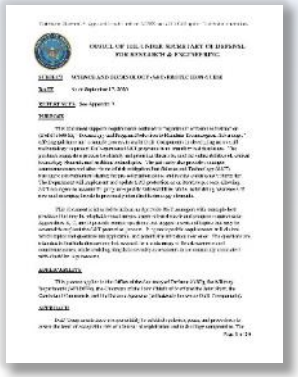
DoDI 5000.83 – Published July 20, 2020

Implemented Through

Guidance



Technology Area Protection Plans – Published 2020-2021



S&T Protection Guide – DRAFT

Supports Adoption of

Templates and Tools

Detailed Risk Assessment (Grants) - DRAFT

Detailed Risk Assessment Tool (In Development)

S&T Protection Plan Template - DRAFT

DoD Components with Templates in Development:

- DARPA
- Army
- Air Force
- Navy
- MDA

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Technology Area Protection Plan Stakeholders

- Established by USD(R&E) to provide horizontal protection guidance for technology modernization priorities
  - Documents department-wide messaging guidance
  - Identifies and informs international engagement opportunities
  - Provides focus for counterintelligence, security and law enforcement activities
  - Creates opportunities for open research and collaboration by identifying what requires protection
  - Provides provenance for protecting technologies in acquisition programs
- Shared with Federal interagency partners to inform federal guidelines and consistent implementation

Provides consistent protection priorities and messaging across diverse stakeholders

Customers & Stakeholders

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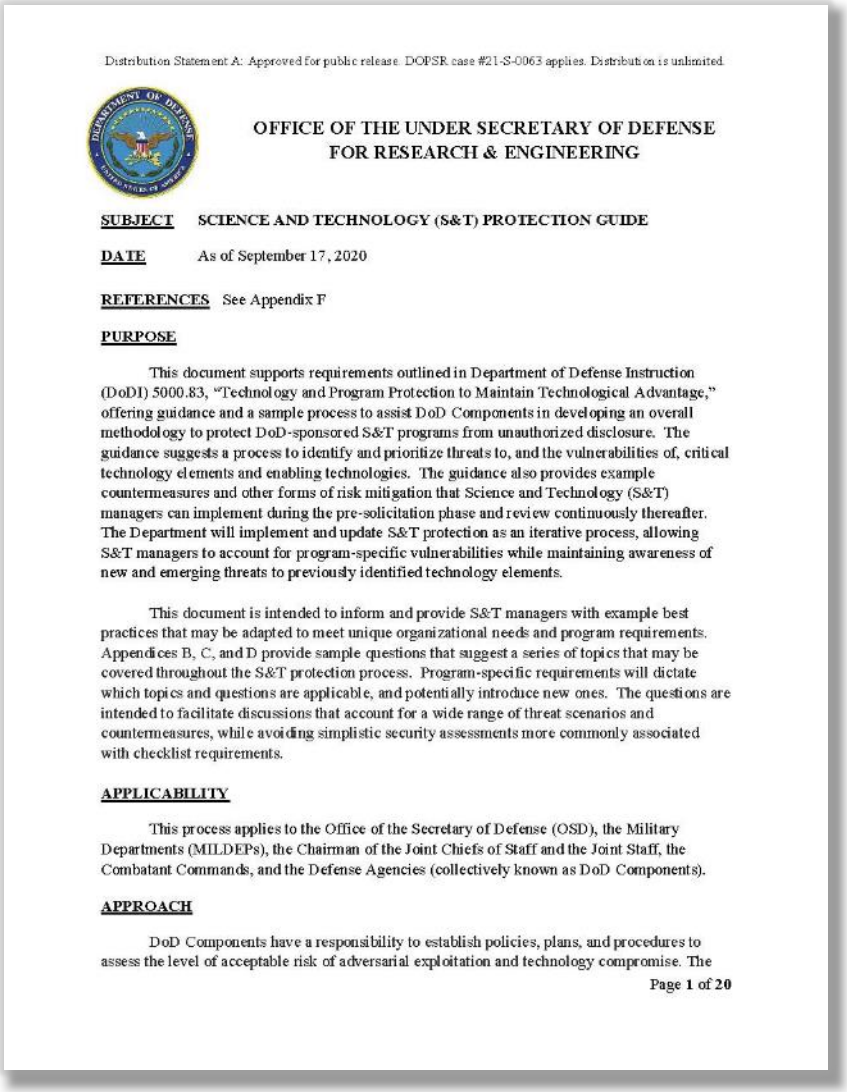
S&T Protection Guide



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OFFICE OF THE UNDER SECRETARY OF DEFENSE
FOR RESEARCH & ENGINEERING

SUBJECT SCIENCE AND TECHNOLOGY (S&T) PROTECTION GUIDE

DATE As of September 17, 2020

REFERENCES See Appendix F

PURPOSE

This document supports requirements outlined in Department of Defense Instruction (DoDI) 5000.83, "Technology and Program Protection to Maintain Technological Advantage," offering guidance and a sample process to assist DoD Components in developing an overall methodology to protect DoD-sponsored S&T programs from unauthorized disclosure. The guidance suggests a process to identify and prioritize threats to, and the vulnerabilities of, critical technology elements and enabling technologies. The guidance also provides example countermeasures and other forms of risk mitigation that Science and Technology (S&T) managers can implement during the pre-solicitation phase and review continuously thereafter. The Department will implement and update S&T protection as an iterative process, allowing S&T managers to account for program-specific vulnerabilities while maintaining awareness of new and emerging threats to previously identified technology elements.

This document is intended to inform and provide S&T managers with example best practices that may be adapted to meet unique organizational needs and program requirements. Appendices B, C, and D provide sample questions that suggest a series of topics that may be covered throughout the S&T protection process. Program-specific requirements will dictate which topics and questions are applicable, and potentially introduce new ones. The questions are intended to facilitate discussions that account for a wide range of threat scenarios and countermeasures, while avoiding simplistic security assessments more commonly associated with checklist requirements.

APPLICABILITY

This process applies to the Office of the Secretary of Defense (OSD), the Military Departments (MILDEPs), the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, and the Defense Agencies (collectively known as DoD Components).

APPROACH

DoD Components have a responsibility to establish policies, plans, and procedures to assess the level of acceptable risk of adversarial exploitation and technology compromise. The

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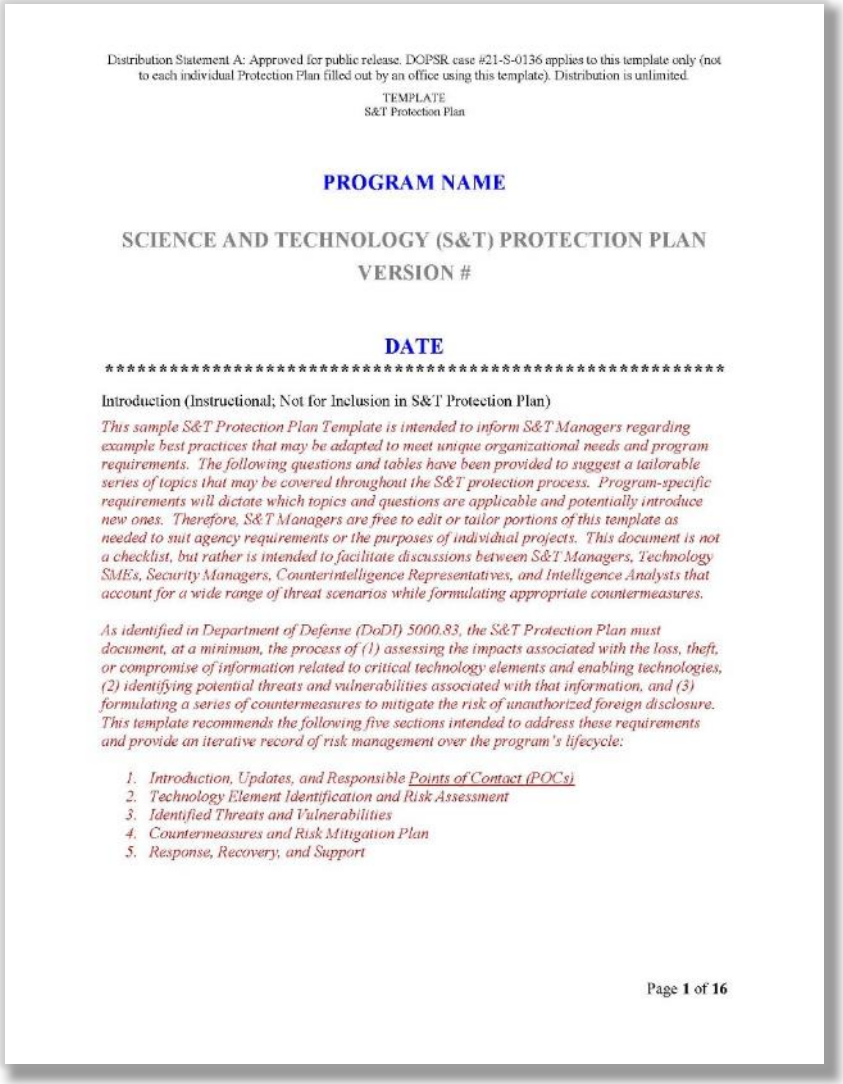
The S&T Protection Guide:

- Offers a sample process to assist DoD Components in developing an overall methodology to protect DoD-sponsored S&T programs from unauthorized disclosure
- Suggests a process to identify and prioritize threats to, and the vulnerabilities of, critical technology elements and enabling technologies
- Provides countermeasures and other forms of risk mitigation to be implemented during the pre-solicitation phase and reviewed continuously thereafter
- Informs S&T managers of best practices that may be adapted to meet unique organizational needs and program requirements

S&T Protection Plan Template



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TEMPLATE
S&T Protection Plan

PROGRAM NAME

SCIENCE AND TECHNOLOGY (S&T) PROTECTION PLAN
VERSION #

DATE

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Introduction (Instructional; Not for Inclusion in S&T Protection Plan)

This sample S&T Protection Plan Template is intended to inform S&T Managers regarding example best practices that may be adapted to meet unique organizational needs and program requirements. The following questions and tables have been provided to suggest a tailorable series of topics that may be covered throughout the S&T protection process. Program-specific requirements will dictate which topics and questions are applicable and potentially introduce new ones. Therefore, S&T Managers are free to edit or tailor portions of this template as needed to suit agency requirements or the purposes of individual projects. This document is not a checklist, but rather is intended to facilitate discussions between S&T Managers, Technology SMEs, Security Managers, Counterintelligence Representatives, and Intelligence Analysts that account for a wide range of threat scenarios while formulating appropriate countermeasures.

As identified in Department of Defense (DoDI) 5000.83, the S&T Protection Plan must document, at a minimum, the process of (1) assessing the impacts associated with the loss, theft, or compromise of information related to critical technology elements and enabling technologies, (2) identifying potential threats and vulnerabilities associated with that information, and (3) formulating a series of countermeasures to mitigate the risk of unauthorized foreign disclosure. This template recommends the following five sections intended to address these requirements and provide an iterative record of risk management over the program's lifecycle:

1. *Introduction, Updates, and Responsible Points of Contact (POCs)*
2. *Technology Element Identification and Risk Assessment*
3. *Identified Threats and Vulnerabilities*
4. *Countermeasures and Risk Mitigation Plan*
5. *Response, Recovery, and Support*

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The S&T Protection Plan Template:

- Is a tailorable document for research risk identification and mitigation
- Facilitates discussions between S&T managers, technology subject matter experts, security managers, counterintelligence personnel, and intelligence analysts regarding threat scenarios and appropriate countermeasures
- Is iterative, supporting the continuous identification and documentation of risk factors and countermeasures over a program's lifecycle
- Is informed by the processes and best practices outlined in the S&T Protection Guide

Research Risk Process

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S&T Protection Education

Complete

Defense Acquisition University (DAU) Training

Incorporated changes throughout STM 101 – Introduction to DoD Science & Technology Management. Changes reflect the requirements and best practices outlined in DoDI 5000.83 and related guidance.

DoD Community Outreach

Developed "Security Fundamentals for S&T Professionals" desk reference – Presents a summary of recent developments in research security policy while outlining security resources and best practices.

In Progress

General Research Security

- Best Practices
- Resource Guides
- Integrating research security in additional DoD coursework, national and international forums, etc.

S&T Protection Guide & Template

- "How-To" Guide designed to support DoD components in developing tailored S&T Protection Plans

Risk Analysis Training

- Detailed Risk Methodology
- Identifying risk factors and drafting risk questions to support holistic program protection

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Takeaways

- Continue to update and iterate TAPPs with OUSD(R&E) Principal Directors and S&T Communities of Interest
- Engaging with DoD Components to integrate Technology Area Protection Plans into ongoing processes and activities
- Crafting implementation protection policy and align with requirements, acquisition and security policies
- Developing education, training and tools to enable the DoD enterprise
- Engagements for additional horizontal protection including:
  - Small Business Innovation Research
  - International
  - National Security innovation base, industrial policy
- Collaborating with organizations across the Federal Government on Research Security

Comprehensive approach to create and maintain technology advantage

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