

OFFICE OF INSPECTOR GENERAL

**S&T Is Not Effectively
Coordinating Research
and Development Efforts
across DHS**



Homeland
Security

September 18, 2019
OIG-19-59



DHS OIG HIGHLIGHTS

S&T Is Not Effectively Coordinating Research and Development Efforts across DHS

September 18, 2019

Why We Did This Audit

We conducted this audit to determine whether the Science and Technology Directorate's (S&T) Integrated Product Team (IPT) process coordinated research and development (R&D) efforts across the Department.

What We Recommend

We made three recommendations to improve S&T's coordination of R&D activities across DHS.

For Further Information:

Contact our Office of Public Affairs at (202) 981-6000, or email us at DHS-OIG.OfficePublicAffairs@oig.dhs.gov

What We Found

S&T did not fully comply with requirements of the *Homeland Security Act of 2002*, as amended, by not effectively coordinating and integrating department-wide R&D activities. In August 2015, S&T established IPTs as the central mechanism to identify, track, and coordinate department-wide priority R&D efforts. However, S&T did not follow its IPT process as intended. Specifically:

- not all components submitted all information on capability gaps to the IPTs because some components believed they were not required to do so, and S&T believed it did not have the authority to enforce the requirement;
- S&T did not effectively gather, track, and manage data on the Department's R&D gaps and activities because the tools it had to capture the data were redundant, and S&T had not developed policies and procedures for integrating the data from them into a single, comprehensive database; and,
- S&T did not adequately monitor the IPT process to ensure it was effective because, according to S&T, it had limited staffing and the IPT process is restructuring.

Consequently, S&T may not be able to provide the Secretary of Homeland Security and Congress with an accurate profile of the Department's R&D activities or funding needs for a wide range of missions, including securing the border, detecting nuclear devices, and screening airline passengers.

S&T Response

S&T concurred with our recommendations. We have included a copy of S&T's response to our draft report at appendix A.



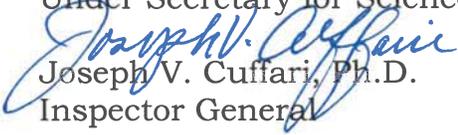
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Department of Homeland Security

Washington, DC 20528 / www.oig.dhs.gov

September 18, 2019

MEMORANDUM FOR: William Bryan
Senior Official Performing the Duties of the
Under Secretary for Science and Technology

FROM: 
Joseph V. Cuffari, Ph.D.
Inspector General

SUBJECT: *S&T Is Not Effectively Coordinating Research and
Development Efforts across DHS*

For your action is our final report, *S&T Is Not Effectively Coordinating Research and Development Efforts across DHS*. We incorporated the formal comments provided by your office.

The report contains three recommendations aimed at improving S&T's coordination of R&D activities across DHS. S&T concurred with all three recommendations. Based on information provided in your response to the draft report, we consider the three recommendations resolved and open. Once your office has fully implemented the recommendations, please submit a formal closeout letter to us within 30 days so that we may close the recommendations. The memorandum should be accompanied by evidence of completion of agreed-upon corrective actions. Please send your response or closure request to OIGAuditsFollowup@oig.dhs.gov.

Consistent with our responsibility under the *Inspector General Act*, we will provide copies of our report to congressional committees with oversight and appropriation responsibility over the Department of Homeland Security. We will post the report on our website for public dissemination.

Please call me with any questions, or your staff may contact Sondra McCauley, Assistant Inspector General for Audits, at (202) 981-6000.



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Background

The *Homeland Security Act of 2002*, as amended, gives the Science and Technology Directorate (S&T) primary responsibility for research and development (R&D) in the Department of Homeland Security. R&D is a systematic study and application of knowledge aimed at discovering and producing solutions to meet an operational need. To address identified capability gaps in DHS operations, S&T researches and develops technologies that are not commercially available and that require manufacturing or producing a solution through R&D. The Department's capability gaps can span a wide range of missions, including securing the border, detecting nuclear devices, and screening airline passengers.

DHS components may also conduct R&D to support their respective missions, but they must coordinate these activities through S&T. For fiscal years 2015 through 2018,¹ Congress appropriated approximately \$2.8 billion to DHS for R&D, with 71 percent of those funds appropriated directly to S&T.

In a 2015 memorandum, the Secretary of Homeland Security reestablished Integrated Product Teams (IPT) within S&T as the primary mechanism to identify and coordinate R&D activities across the Department.² IPTs are cross-component working groups comprising senior-level DHS officials. S&T uses IPTs to identify and prioritize capability gaps and to provide innovative R&D remedies for components and stakeholders. Figure 1 shows the Department's six IPTs, which track core mission areas. Components report to one or more of the IPTs, depending on their operational duties, responsibilities, and needs.

Figure 1: DHS Integrated Product Teams



Source: DHS Office of Inspector General (OIG)-created from S&T information

¹ Congress appropriated FY 2018 funds to use during a 2-year period for certain DHS components.

² The DHS Secretary reestablished IPTs in the *Memorandum for Component Heads, Establishment of Integrated Product Teams*, August 25, 2015.

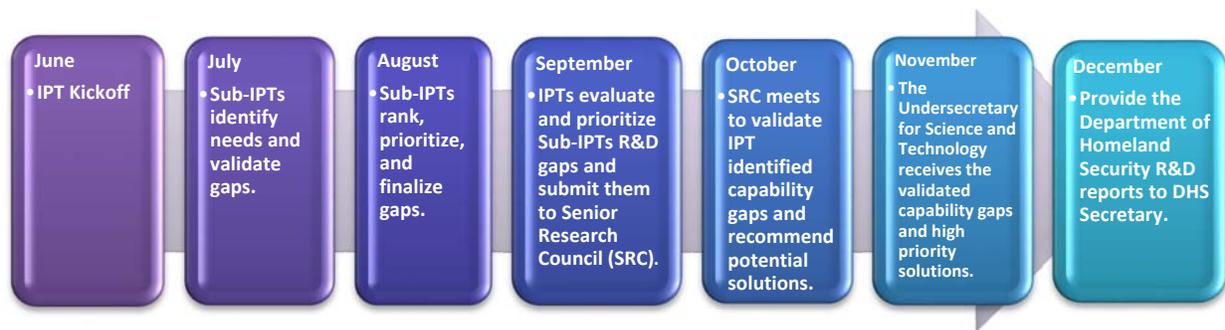


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S&T's policy, *Coordinating DHS R&D through Integrated Product Teams (IPTs), FY 17–18 Guidance for IPTs and Sub-IPTs, June 2017*, governs the IPT process. Each fiscal year cycle, S&T requests that DHS components identify and submit lists of their capability gaps to begin the IPT process. Once components submit capability gap data, each IPT is supposed to use its sub-IPTs³ to help identify, validate, and prioritize R&D gaps. The IPTs generate a prioritized list of gaps for each of the six core cross-cutting mission areas. Figure 2 shows significant milestones in an IPT cycle.

Figure 2: IPT Process Significant Milestones



Source: DHS OIG-created from S&T information

Once the IPTs aggregate identified R&D gaps, the Senior Research Council (SRC), a working group composed of component executive leadership, prioritizes and assigns a final department-wide list of high priority capability gaps and potential R&D solutions. S&T then compiles the information into an annual report, *Integrated Product Teams for Department of Homeland Security R&D Report*. These reports provide information to the Secretary of Homeland Security and the Under Secretary of S&T to help focus future investments DHS-wide. The reports also help ensure that resource decisions align with the Department's greatest priority gaps and provide input into DHS' annual planning, programming, budgeting, and accountability processes. According to the 2015 memo that reestablished the IPT process, a major goal is to prevent the Department from investing in duplicative technologies.

Results of Audit

Not All Components Submitted Information on Capability Gaps

In January 2017, DHS leadership issued Management Directive 069-02, (Rev. 01), *Integrated Product Teams for Research and Development Coordination*,

³ Sub-IPT membership includes DHS program managers with specific expertise in the individual mission areas.



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requiring DHS components to follow the IPT process, and to identify and report to S&T all R&D activities that are in progress, funded, planned, or recently completed. To fulfill the requirement, during the IPT cycle, IPTs first request a list of capability gaps from the components. Although required to do so, not all components consistently submitted all their R&D information through the IPT process. For example, the United States Secret Service did not submit data for all classified R&D capability gaps because it did not believe it was required to do so. In another example, officials in the newly established Countering Weapons of Mass Destruction Office reported they have their own internal process for identifying and prioritizing capability gaps, and did not participate in any aspect of the IPT process. Furthermore, according to the Cyber Security IPT, the SRC was unaware of all of its capability gaps because its sub-IPT missed the gap submission deadline during IPT cycles.

Not all components submitted all information on capability gaps because S&T did not effectively communicate and institute controls to enforce the requirement in Management Directive 069-02 to do so. In addition, although current guidance requires components to submit data on R&D activities, S&T officials told us the guidance did not give S&T the authority to compel components to do so. As a result, S&T did not capture all the Department's capability gaps through the IPT process. An incomplete profile of capability gaps hinders S&T's ability to identify and understand the Department's existing and emerging needs, as well as its ability to make informed investment decisions.

S&T Did Not Effectively Gather, Track, and Manage R&D Data

S&T had several separate tools to capture the Department's R&D capability gaps and activities. However, S&T did not require components to use the tools. S&T also did not integrate the disparate data on R&D capability gaps and activities from the multiple redundant tools into a single, comprehensive database because S&T did not develop policies and procedures that included roles and responsibilities to do so. Further, some of the data in these tools were updated manually with few automated controls. For example, rather than using an automated process to update and transfer capability gap data between two similar tracking tools, an S&T official reported manually transferring the data from one tracking tool to another. As a result, data transmission between the tracking tools and reporting for S&T can be inefficient, time consuming, and error prone. The lack of policies and procedures hinders S&T's ability to aggregate accurate and readily available R&D data.

These issues compiling R&D data contributed to S&T not reporting a



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comprehensive R&D profile to the Secretary of Homeland Security, and to DHS missing congressional statutory reporting deadlines. For example, in the 2017 *Integrated Product Teams for Department of Homeland Security R&D Report* to the Secretary of Homeland Security, S&T reported that the tool capturing all of the Department's ongoing R&D activities did not include data from two components. S&T reported the information was not included in the report because the two components did not respond. In addition, S&T missed the 2017 and 2018 reporting deadlines outlined in the *National Defense Authorization Act for FY 2017*. Under the Act, DHS was required to submit to Congress a detailed list of ongoing R&D projects every January, starting in 2017. This requirement would have allowed DHS only 9 days to meet the reporting deadline for the 2017 report. In August 2018 (19 months later), S&T submitted a report to Congress, intended to meet the 2017 and 2018 reporting requirements. S&T officials reported missing the deadline because they were compiling data for both the 2017 and 2018 report, and due to an extensive report review process. However, if S&T's compiled R&D data had been accurate and readily accessible, DHS may have been able to submit the congressionally mandated report on time.

S&T Did Not Adequately Monitor the IPT Process to Ensure It Was Effective

IPT Operations (IPT Ops) in S&T is responsible for monitoring and integrating all aspects of the IPT process, including drafting policies and guidance, developing tools, and approving charters. According to S&T's policy, *Coordinating DHS R&D through Integrated Product Teams*, charters formalize the commitment of the IPT membership and describe each IPT's mission, objectives, and outputs. However, IPT Ops reviewed and approved only 9 of 17 charters that should have been approved during the FY 2015 to FY 2018 IPT cycles. This occurred because IPT Ops did not provide oversight to ensure the IPTs prepared charters as required by policy. According to a senior official in IPT Ops, the office has limited staffing resources to achieve its mission due to vacant mission-critical positions. Without fully developed and approved charters for each IPT cycle, IPTs may not fully understand their roles, responsibilities, and expected outputs.

In addition, IPT Ops did not ensure the FY 2017 to FY 2018 IPT cycles were completed or deadlines were met for issuing to the Secretary of Homeland Security the *Integrated Product Teams for Department of Homeland Security R&D Report*, which describes high priority capability gaps and correlating high-priority R&D solutions. According to senior IPT Ops officials, S&T is restructuring to improve the IPT process, which they also said would delay future IPT cycles. Significant changes to the current IPT process, though



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warranted, may cause further delays, preventing S&T from presenting the Secretary of Homeland Security with critical information about R&D investments to address risks and emerging threats.

Finally, S&T's policy governing the IPT process, *Coordinating DHS R&D through Integrated Product Teams*, contains required best practices for recommending R&D solutions. These best practices include designating personnel to undertake project management duties to ensure R&D solutions are timely and appropriate to close the Department's capability gaps. Although S&T has identified this as a best practice for integration within the IPT process, the directorate has not designated such personnel. S&T staff explained they did not designate project managers because of the restructuring of the IPT process. Without integrating this best practice into the process, the Department risks delaying R&D solutions to close identified gaps.

In summary, we acknowledge S&T's strides in establishing and managing the IPT process, which spans all the Department's mission areas. However, S&T's challenges in identifying all the Department's capability gaps, managing data on R&D activities, and ensuring the IPT process continued as intended have hindered department-wide coordination of R&D efforts. These challenges may prevent S&T from identifying duplicative R&D efforts, from providing the Secretary of Homeland Security and Congress with an accurate and complete profile of R&D initiatives, and from being able to justify funding needs for a wide range of missions.

Recommendations

Recommendation 1: We recommend the Under Secretary of Science and Technology develop, integrate, and disseminate policy and procedures to reinforce the directorate's authority and to fully communicate and institute controls to enforce Integrated Product Team requirements and best practices.

Recommendation 2: We recommend the Under Secretary of Science and Technology develop comprehensive policies and procedures for the Science and Technology Directorate to implement efficient tracking tools to ensure a comprehensive department-wide R&D profile.

Recommendation 3: We recommend the Under Secretary of Science and Technology develop and implement a monitoring process to ensure Integrated Product Teams and Integrated Product Teams Operations adhere to the Science and Technology Directorate's policies and procedures.



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Management Comments and OIG Analysis

S&T concurred with the recommendations. Appendix A contains a copy of S&T's management comments in their entirety. We also received technical comments and incorporated them in the report where appropriate. We consider the three recommendations resolved and open. A summary of S&T's responses and our analysis follows.

S&T Response to Recommendation 1: S&T concurred with the recommendation. S&T is revising DHS Directive 069-02, *Integrated Product Teams for Research and Development Coordination*, to clarify authorities, reinforce S&T responsibilities, and ensure component participation and compliance with policies and procedures. S&T is also revising policies and guidance regarding the coordination of DHS R&D through IPTs to provide updated details on IPT requirements and best practices. S&T estimates interim actions will be completed by October 31, 2019 with final actions completed by June 30, 2020.

OIG Analysis: We consider these actions responsive to the recommendation, which is resolved and open. We will close this recommendation when we receive documentation showing that S&T revised and disseminated the directive and revised policies and guidance for coordination and best practices.

S&T Response to Recommendation 2: S&T concurred with the recommendation. S&T is developing and implementing a tracking tool that will become the Directorate's authoritative database of department-wide capability gaps and associated R&D activities. S&T is also revising DHS Directive 069-02, *Integrated Product Teams for Research and Development Coordination*, to include requirements for data collection on all R&D projects across the Department. S&T estimates interim actions will be completed by October 31, 2019 with final actions completed by December 31, 2019.

OIG Analysis: We consider these actions responsive to the recommendation, which is resolved and open. We will close this recommendation when we receive documentation showing that S&T implemented a tracking tool for department-wide capability gaps and associated R&D activities, and developed policies and procedures to ensure a department-wide R&D profile.

S&T Response to Recommendation 3: S&T concurred with the recommendation. S&T is revising DHS Directive 069-02, *Integrated Product Teams for Research and Development Coordination*, to clarify authorities, reinforce S&T responsibilities, and ensure component participation and compliance with policies and procedures. S&T is also revising policies and



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guidance regarding the coordination of DHS R&D through IPTs to provide updated details on IPT requirements and best practices. S&T estimates interim actions will be completed by October 31, 2019 with final actions completed by June 30, 2020.

OIG Analysis: We consider these actions responsive to the recommendation, which is resolved and open. We will close this recommendation when we receive documentation showing that S&T developed and implemented a monitoring process to ensure IPTs and IPT Ops adhere to S&T policies and procedures.

Objective, Scope, and Methodology

The Department of Homeland Security (DHS) Office of Inspector General (OIG) was established by the *Homeland Security Act of 2002* (Public Law 107-296) by amendment to the *Inspector General Act of 1978*. The objective of our audit was to determine whether S&T's IPT process coordinated R&D efforts across the Department.

Our scope focused on S&T's oversight of the IPTs, the IPT governance structure, and policies and procedures for IPTs. To achieve our objective, we conducted interviews and analyzed criteria applicable to DHS' R&D program. We interviewed each of the six IPTs, three sub-IPTs, and an executive member of the Senior Research Committee. We also interviewed operational components within DHS that receive R&D funding, including the United States Secret Service and the United States Coast Guard, to understand the role each has in communicating R&D data with S&T.

We reviewed applicable laws, policies, procedures, practices, directives, and charters to understand requirements and responsibilities for coordinating R&D through the IPT process. We obtained and reviewed S&T's database of DHS-wide capability gaps to determine whether it was accurate and complete. The provided repository contained identified gaps from FY 2015 to FY 2018. We performed data reliability tests on data provided by S&T and identified discrepancies with the data. We determined that the data were the best available at the time of our audit. Despite the identified discrepancies, the data were sufficient for the purposes of our audit.

We conducted this performance audit between May 2017 and December 2018 pursuant to the *Inspector General Act of 1978*, as amended, and according to generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based upon our



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audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based upon our audit objectives.

The Office of Audits major contributors to this report are Robert Greene, Director; Modupe Ogunduyile, Audit Manager; Karen Gardner, Audit Manager; Ebonyee Brincefield, Auditor-in-Charge; Ebony Lewis, Auditor-in-Charge; Jon (Rod) King, Auditor; Andre Marseille, Program Analyst; Michael Watson, Auditor; Jane DeMarines, Communications Analyst; and Christina S bong, Referencer.



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Appendix A
S&T Comments to the Draft Report

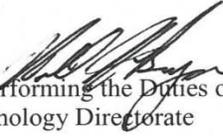
U.S. Department of Homeland Security
Washington, DC 20528



**Homeland
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September 3, 2019

MEMORANDUM FOR: Dr. Joseph Cuffari
Inspector General

FROM: William N. Bryan, 
Senior Official Performing the Duties of the Under Secretary
Science and Technology Directorate

SUBJECT: Management Response to Draft Report: "S&T Is Not
Effectively Coordinating Research and Development Efforts
across DHS" (Project No. 17-080-AUD-S&T)

Thank you for the opportunity to review and comment on this draft report. The Science and Technology Directorate (S&T) appreciates the work of the Office of Inspector General (OIG) in planning and conducting its review and issuing this report.

S&T is pleased to note OIG's acknowledgment of the strides made in establishing and managing the Integrated Product Team (IPT) process across all the Department's mission areas to better coordinate the Department's research and development (R&D) efforts and help focus future investments DHS-wide. S&T remains committed to delivering effective and collaborative insight, methods, and solutions for the critical needs of the Homeland Security Enterprise to ensure our Nation's safety, security, and resilience.

The draft report contained three recommendations with which S&T concurs. Attached find our detailed response to each recommendation. Technical comments were previously provided under separate cover.

Again, thank you for the opportunity to review and comment on this draft report. Please feel free to contact me if you have any questions. We look forward to working with you again in the future.

Attachment



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Attachment: Management Response to Recommendations Contained in Project No. 17-080-AUD-S&T

OIG recommended that the Under Secretary for Science and Technology:

Recommendation 1: Develop, integrate, and disseminate policy and procedures to reinforce the Directorate's authority and to fully communicate and institute controls to enforce IPT requirements and best practices.

Response: Concur. S&T's Office of Science & Engineering (OSE) is revising DHS Directive 069-02, "Integrated Product Teams for Research and Development Coordination" to clarify authorities and reinforce S&T responsibilities and ensure better Component participation and compliance with policies and procedures. S&T will submit a proposed revised directive to the DHS Management Directorate by October 31, 2019 to begin the Headquarters review and clearance process. OSE is also in the process of revising S&T's policies and guidance regarding the coordination of DHS R&D through IPTs to provide updated details on IPT requirements and best practices. Estimated Completion Date (ECD): June 30, 2020.

Recommendation 2: Develop comprehensive policies and procedures for the Science and Technology Directorate to implement efficient tracking tools and ensure a comprehensive department-wide R&D profile.

Response: Concur. S&T's OSE is developing and implementing a tracking tool that will become the directorate's authoritative database of Department-wide capability gaps and associated R&D activities. OSE is also revising DHS Directive 069-02, "Integrated Product Teams for Research and Development Coordination" to include requirements for data collection on all R&D projects across the Department to ensure alignment with data elements collected through the Common Appropriations Structure used for the DHS budget submission. S&T will submit a proposed revised directive to the DHS Management Directorate by October 31, 2019 to begin the Headquarters review and clearance process. ECD: December 31, 2019.

Recommendation 3: Develop and implement a monitoring process to ensure Integrated Product Teams and Integrated Product Teams Operations adhere to the Science and Technology Directorate's policies and procedures.

Response: Concur. S&T's OSE is revising DHS Directive 069-02, "IPTs for R&D Coordination" to clarify authorities and reinforce S&T responsibilities for ensuring Component participation and compliance with policies and procedures. S&T will submit a proposed revised directive to the DHS Management Directorate by October 31, 2019 to begin the Headquarters review and clearance process. OSE is also in the process of

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revising S&T's policies and guidance regarding the coordination of DHS R&D through IPTs to provide updated details on IPT requirements and best practices. The revisions will include procedure for monitoring the process and ensuring compliance. ECD: June 30, 2020.



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Appendix B
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