U.S. Department of Homeland Security | Science and Technology Directorate

Getting to Know DHS's Component Partners and End Users

Homeland Security

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DHSSBIR

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Requirements Analysis Division

Outline

- How we identify RDT&E needs across DHS
- Who we are
- Delivering impactful solutions through SBIR

S&T and DHS Component IPTs

- Establishes Charters with DHS operational components and HQ offices to identify, collect, and prioritize individual R&D needs.
- Works directly with component customers throughout the R&D lifecycle, from need intake through development to solution delivery and transition.
- Ensures that S&T remains focused on customer needs, with an eye toward future technologies and capabilities.

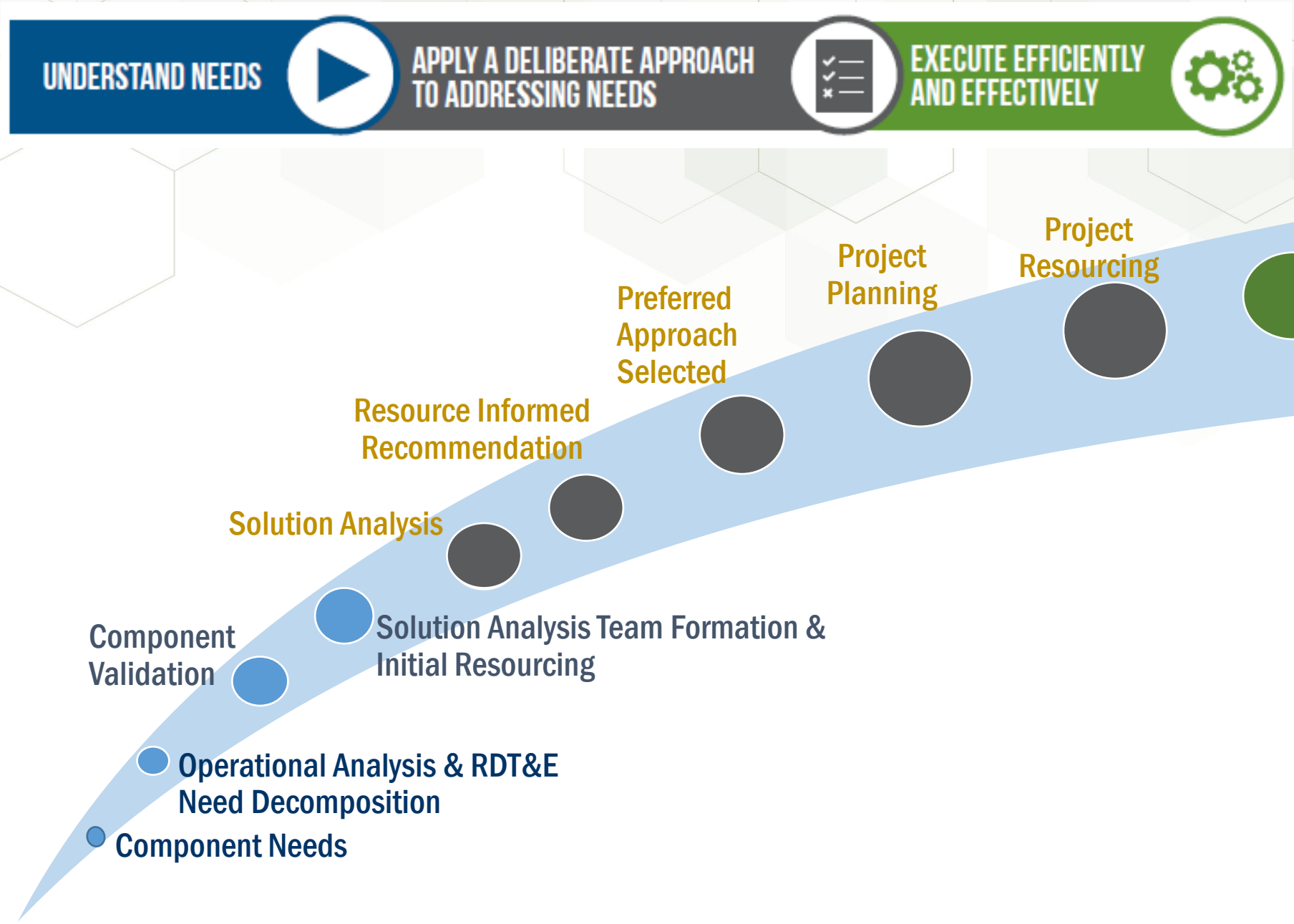
1. DHS HQ
2. CBP
3. CISA
4. CWMD
5. FEMA
6. FLETC
7. First Responders
8. ICE
9. TSA
10. USCG
11. USCIS
12. USSS

Our Process

Understand the needs and requirements of our customers

Apply a deliberate approach to addressing needs by defining solutions to pursue

Execute efficiently and effectively throughout planning, execution and delivery of solutions


UNDERSTAND NEEDS
APPLY A DELIBERATE APPROACH TO ADDRESSING NEEDS
EXECUTE EFFICIENTLY AND EFFECTIVELY
Component Needs
Operational Analysis & RDT&E Need Decomposition
Component Validation
Solution Analysis Team Formation & Initial Resourcing
Solution Analysis
Resource Informed Recommendation
Preferred Approach Selected
Project Planning
Project Resourcing
Project Execution
Transition

Portfolio Managers

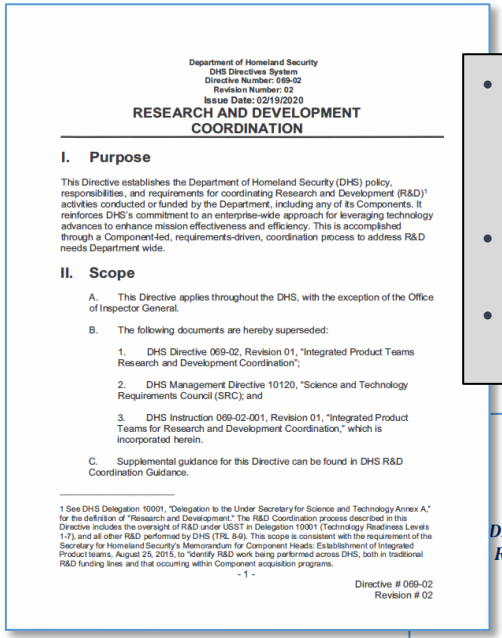
- In FY19, S&T established **Portfolio Managers** (PfMs) to lead component engagement and act as their champion within S&T

PfMs facilitate the IPT process with our Component partners, and leverage it to gather their RDT&E needs

PfMs champion Component equities throughout the R&D lifecycle, from need intake through development to solution delivery and transition

PfMs keep S&T focused on Component needs, with an eye toward future technologies and capabilities

Component focused Integrated Product Team (IPT)



Department of Homeland Security
DHS Directives System
Directive Number: 069-02
Revision Number: 02
Issue Date: 02/19/2020

RESEARCH AND DEVELOPMENT COORDINATION

I. Purpose

This Directive establishes the Department of Homeland Security (DHS) policy, responsibilities, and requirements for coordinating Research and Development (R&D)[1] activities conducted or funded by the Department, including any of its Components. It reinforces DHS's commitment to an enterprise-wide approach for leveraging technology advances to enhance mission effectiveness and efficiency. This is accomplished through a Component-led, requirements-driven, coordination process to address R&D needs Department wide.

II. Scope

A. This Directive applies throughout the DHS, with the exception of the Office of Inspector General.

B. The following documents are hereby superseded:

1. DHS Directive 069-02, Revision 01, "Integrated Product Teams Research and Development Coordination";

2. DHS Management Directive 10120, "Science and Technology Requirements Council (SRC); and

3. DHS Instruction 069-02-001, Revision 01, "Integrated Product Teams for Research and Development Coordination," which is incorporated herein.

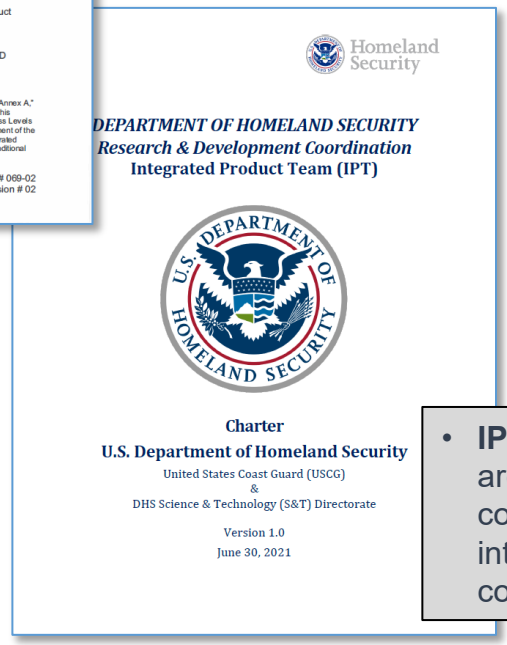
C. Supplemental guidance for this Directive can be found in DHS R&D Coordination Guidance.

1 See DHS Delegation 10001, "Delegation to the Under Secretary for Science and Technology Annex A," for the definition of "Research and Development." The R&D Coordination process described in this Directive includes the oversight of R&D under USST in Delegation 10001 (Technology Readiness Levels 1-7), and all other R&D performed by DHS (TRL 8-9). This scope is consistent with the requirement of the Secretary for Homeland Security's Memorandum for Component Heads: Establishment of Integrated Product teams, August 25, 2015, to "identify R&D work being performed across DHS, both in traditional R&D funding lines and that occurring within Component acquisition programs.

- 1 -

Directive # 069-02
Revision # 02

- **R&D Coordination** Establishes the DHS policy, responsibilities, and requirements for coordinating Research and Development (R&D) activities conducted or funded by the Department, including any of its Components.
- Enterprise-wide approach for leveraging technology advances to enhance mission effectiveness and efficiency
- Component-led, requirements-driven, coordination process to address R&D needs



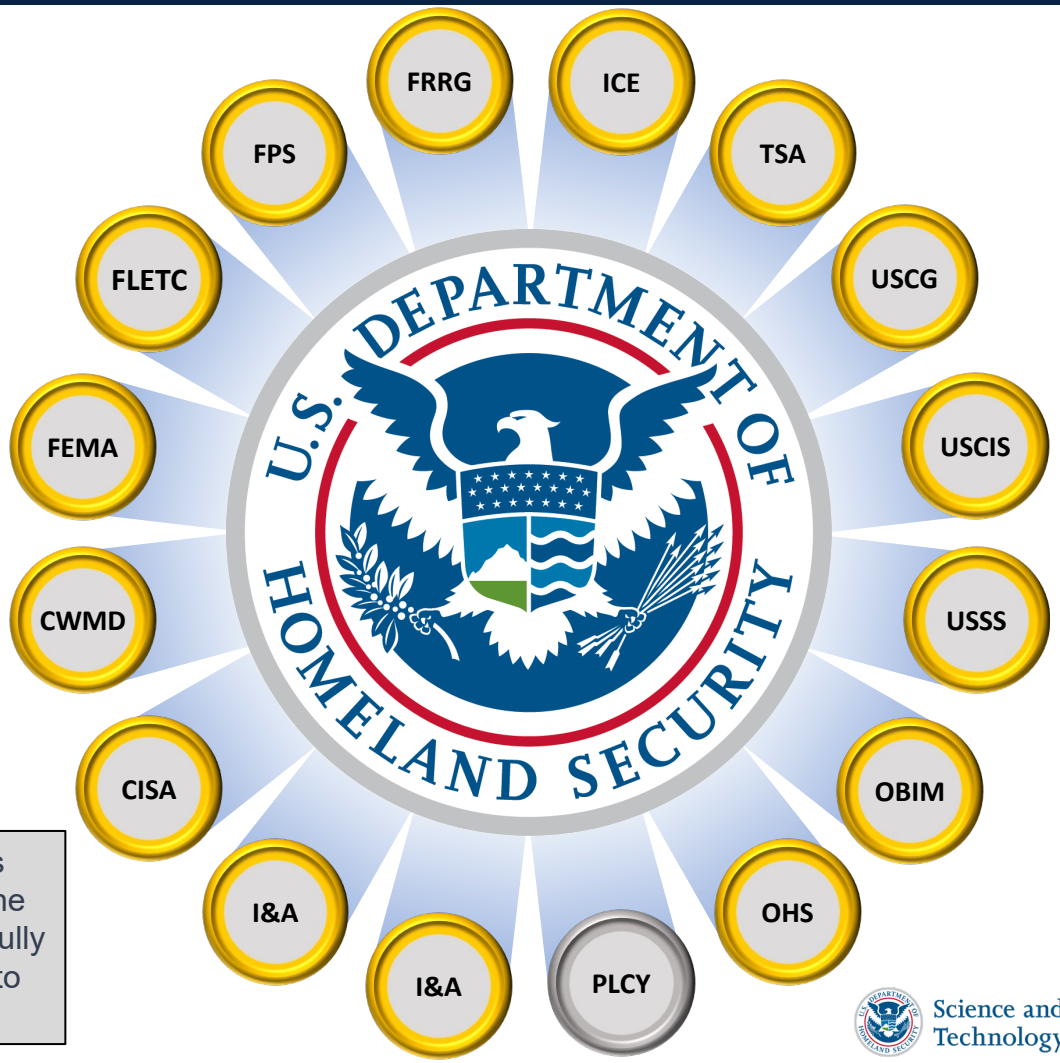
Homeland Security

DEPARTMENT OF HOMELAND SECURITY
Research & Development Coordination
Integrated Product Team (IPT)

Charter
U.S. Department of Homeland Security
United States Coast Guard (USCG)
&
DHS Science & Technology (S&T) Directorate

Version 1.0
June 30, 2021

- **IPT Charters** with Component partners are 3-year agreements that formalize the commitment to create a collaborative, fully integrated, multi-disciplinary capability to coordinate R&D.



Science and Technology

[INNOVATION: S&T IN ACTION]

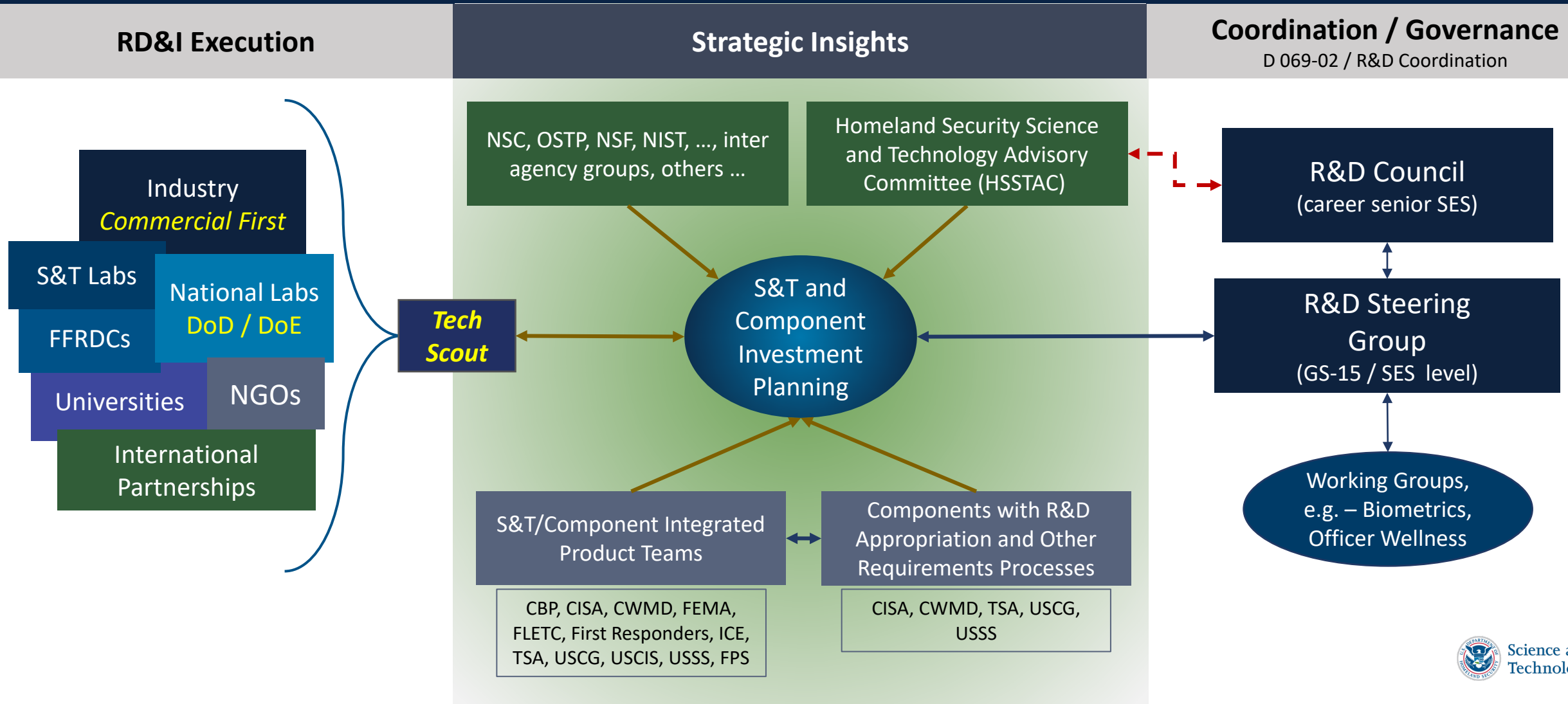
Empowering Responders

S&T takes a responders-first approach to developing technology, equipment, guidance and reports for those on the frontline of community safety and security.

- Develops and field tests life-saving tools for the frontline
- Provides resources that help the responder community connect with DHS and invest wisely
- Convenes active and retired first responders to identify emerging needs, weigh in on new tech, and help shape operational solutions

Science and Technology

Integration and Coordination to Create Symbiotic Relationships for R&D



Science and Technology

Strategic Priority Research Areas (SPRAs) and the FY25.1 SBIR Pre-Solicitation Topics

- DHS operators desire **key capabilities** to address strategic challenges.
- **Cross-cutting innovation and R&D investments** can build these common capabilities and meet multiple strategic outcomes → **Strategic Priority Research Areas** (SPRAs)

Strategic Priority Research Areas	*DHS Mission Alignment*					
	1	2	3	4	5	6
Advanced Sensing	✓	✓	✓	✓	✓	
Artificial Intelligence and Autonomous Systems	✓	✓	✓	✓	✓	✓
Biotechnology	✓	✓	✓	✓	✓	
Climate Change	✓	✓	✓	✓	✓	
Communications and Networking	✓	✓	✓	✓	✓	✓
Cybersecurity	✓	✓	✓	✓	✓	✓
Data Integration, Analytics, Modeling and Simulation	✓	✓	✓	✓	✓	✓
Digital Identity and Trust	✓	✓	✓	✓	✓	✓

FY25.1 SBIR Pre-solicitation Research Topic
DHS251-001 Fentanyl Attribution Forensics/Source Profiling
DHS251-002 Enabling Data Analysis, Situational Awareness and Cyber Security for NG911 Public Safety Answering Points (PSAP)
DHS251-003 On-Person Screening Stream of Commerce Analysis Tool
DHS251-004 Securing Video Communications to Prevent Digital Injection Attacks
DHS251-005 Wired Interconnection Cable/Adapter from Mobile Device to Biometric Collection

IRD Strategic Plan:
https://www.dhs.gov/science-and-technology/publication/dhs-ird-strategic-plan-fy24-30

Homeland Security

Delivering impactful solutions through SBIR

Recent Success Stories

- Identifying Vulnerabilities in Mobile Threat Detection Technologies - In response to the DHS SBIR Automated & Scalable Analysis of Mobile & internet of things (IoT) Device Firmware (H-SB018.1-008) solicitation topic, mobile-security firm Quokka, Inc. (formerly Kryptowire), of McLean, Virginia, developed SAFARI: Scalable Analysis of Firmware for Android and IOS. SAFARI makes it possible to identify firmware vulnerabilities at a large scale by automatically testing the security of mobile and IoT firmware and applications to the highest of government and industry software assurance standards. Quokka, Inc. is dedicated to continuing research and development to update and advance technology to meet national security needs.

- Authenticating Calls in Real Time to Combat Spoofing - In response to the DHS SBIR Do Not Spoof Services for Modern Telephony (H-SB017.1-003) solicitation topic, SecureLogix of San Antonio, Texas, developed a call authentication service to stop Caller ID Spoofing by auto-authenticating calls in real time. Today, their solution is a commercially successful product with industry customers, including Verizon and AT&T.

- Protecting Emergency Systems from Cybersecurity Attacks - In response to the DHS SBIR Enhanced Distributed Denial of Service Defense (H-SB015.1-003) solicitation topic, SecureLogix of San Antonio, Texas, developed Call Secure, a managed service that provides security protection to mitigate TDoS attacks by authenticating calls and helping to defeat fraudulent call spoofing, shifting the advantage from TDoS attackers to network administrators.

- Protecting Networks with Cyber Threat Intelligence Enforcement - In response to the DHS SBIR Large-Scale Network Survivability, Rapid Recovery, and Reconstitution (H-SB010.2-003) solicitation topic, Centripetal of Reston, Virginia, developed a disruptive solution to augment the CTI cycle with machine intelligence to improve efficiency and reduce operating costs of cybersecurity analysis.

- Sensor Processing for Screening at Speed - May 2023 - In response to the DHS SBIR Sensor Processing for Screening at Speed (DHS SBIR-2018.OATS-18.OATS-004-0001-II) solicitation topic, Accipiter Systems, Inc. of Wexford, PA, developed a solution that eliminates multiple levels of translation between compute and storage devices.

Delivering impactful solutions through SBIR

Past Success Stories

- Real-Time Authentication to Counter Caller ID Spoofing – June 2020 - In response to the DHS SBIR Do Not Spoof Services for Modern Telephony (H-SB017.1-003) solicitation topic, Illuma Labs of Plano, Texas, developed an audio authentication technology that secures voice communications by verifying the identities of inbound callers in real-time.

- Hazardous Gases and Particulate Matter Detector – June 2020 - In response to the DHS SBIR Field Detection and Analysis for Fire Gases and Particulates (H-SB014.2-006) solicitation topic, N5 Sensors, of Rockville, Maryland, developed an ultra-small, low-cost hazardous gas and particulate matter detector using novel chip-scale chemical sensor technology that can be used by firefighters.

- Code Ray: Software Assurance Risk Management Framework for Hybrid Analysis Mapping - In response to the DHS SBIR Hybrid Analysis Mapping (H-SB013.1-002) solicitation topic, Applied Visions of Northport, New York, developed Code Ray, a software assurance risk management technology that improves the speed, accuracy and confidence in detection of vulnerabilities and source code weaknesses.

- Portable Imager for Stand-off Detection of Person-Borne Bulk Military and Homemade Explosives - In response to the DHS SBIR Safe Standoff Detection of Bulk Explosives on a Person (H-SB012.1-003) solicitation topic, Polestar Technologies, Inc. of Needham Heights, Massachusetts, developed a portable system for stand-off detection of concealed explosives to detect and identify different types of explosives.

- Lost Person Locator for First Responders - In response to the DHS SBIR Lost Person Locator for First Responders (H-SB013.2-003) solicitation topic, dbS Productions of Charlottesville, Virginia, developed an innovative and life-saving software application that enables first responders to easily see a heat map showing the area of probability for the missing person.