Stakeholders Conference
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S&T Portfolio Director’s Panel

Mr. Robert Hooks, Director of Transition
Dr. Roger D. McGinnis, Sr., Director of Innovation/HSARPA
Dr. Starnes Walker, Director of Research

From Science and Technology… Security and Trust
# DHS S&T Investment Portfolio

## Balance of Risk, Cost, Impact, and Time to Delivery

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**Customer Focused, Output Oriented**
Complimentary Research Objectives

- Innovation
  - HIPS & HITS
- Transition
- Basic Research
DHS Requirements/Capability Capstone IPTs

DHS S&T Product – “Enabling Homeland Capabilities” (EHCs)

Information Sharing/Mgmt
- OIA
- Acquisition
- C2I
- OOC

Border Security
- CBP/ICE
- Acquisition
- Borders/Maritime
- Inspector/Agents

Chem/Bio Defense
- CMO/IP
- Acquisition
- Policy

Maritime Security
- USCG
- Acquisition
- Borders/Maritime
- Guardsmen

Cyber Security
- CS&T
- Acquisition
- Infrastructure/Geophysical/C2I
- Infrastructure Owners/Operators

Explosive Prevention
- TSA/USSS
- Acquisition
- Explosives
- Agents

Cargo Security
- CBP
- Acquisition
- Borders/Maritime
- Officers/Industry

People Screening
- SCO/CIS
- Acquisition
- Human Factors
- US VISIT/TSA

Infrastructure Protection
- IP
- Acquisition
- Infrastructure/Geophysical
- Infrastructure Owners/Operators

Incident Management
- FEMA/OEC
- Acquisition
- C2I
- First Responders
- Prep & Response
- FEMA
- Acquisition
- Infrastructure/Geophysical
- First Responders
- First Responders
Incident Management: Representative Technology Needs

• Integrated Modeling, Mapping and Simulation capability (IP/Geophysical Division)

• Personnel Monitoring (Emergency Responder Locator System) capability (IP/Geophysical Division)

• Personnel Monitoring (Physiological Monitoring of Firefighters) capability (IP/Geophysical Division)

• Incident Management Enterprise System (IP/Geophysical Division)

• Logistics management tool (IP/Geophysical Division)
Transition Approaches to Meet End-User Needs

- Operationally relevant
- Reasonable/low cost
- Fully tested

Capstone IPTs
Identify
Capability
Gaps/Mission
Needs

First Responders

DHS Component Acquisition

Field Agents

Provide Solutions
Validate Grants & Equip

First Responders

Private Sector

Widely Distributed Product
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Customer Focused, Output Oriented
“A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents die and a new generation grows up that is familiar with it.”

- Max Planck
HIPS and HITS

*Homeland Innovative Prototypical Solutions (HIPS)*, which are designed to deliver *prototype-level demonstrations* of game-changing technologies in two to five years. These projects are moderate to high risk, with high payoff.

*High Impact Technology Solutions (HITS)*, which are designed to provide *proof-of-concept* answers within one to three years that could result in high-payoff technology breakthroughs. These projects have considerable risk of failure, however they also offer the potential for significant gains in capability.
Multi-Sensor Hostile Intent Behavior Detection systems to increase the reliability of individuals recommended for secondary screening without violating privacy?
DHS SBIR Program

- Increases participation of innovative and creative small businesses in Federal research and development programs
- Challenges small businesses to bring innovative homeland security solutions to reality
- Focuses on near-term commercialization and delivery of operational prototypes
- Over 324 contracts awarded
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**Customer Focused, Output Oriented**
Why DHS S&T Basic Research?

• Develop fundamental scientific understanding or phenomenology

• Respond to future threats where current or near term technical solutions are not available.

• Quickly tap into areas of basic research that could be exploited for homeland security solutions.

• Cost Avoidance
DHS S&T Director of Research Responsibilities

• Planning, programming, budgeting, and oversight of the DHS S&T Basic Research Program

• Encourage multi-disciplinary, cross cutting initiatives between laboratories / universities / industry

• Establishes Basic Research Program metrics / assesses program performance

• Oversees programs and operation of the University Centers of Excellence, Scholars and Fellowship programs, and DHS S&T In House labs

• Provides guidance for DHS S&T initiatives at Historically Black Colleges / Universities / Minority Institutions / Tribal Colleges

• Advises the DHS S&T Under Secretary on Science and Technology programs and issues
Basic Research Portfolio

*Discovery and Invention to Enable Future Capabilities*

- Brings the capabilities, talent and resources of the Homeland Security Centers of Excellence, DOE National Laboratories and DHS Labs to bear to address the long-term R&D needs for DHS in sciences of enduring relevance.
- This type of focused, protracted research investment has potential to lead to paradigm shifts in the nation’s homeland security capabilities.
Managed Technology Progression

**Basic Research**
- Director of Research

**Applied Research**
- Director of Innovation

**Advanced Technology**
- Director of Transition

**Exploration of Fundamental Concepts (Enablers)**
- DHS Unique/Essential
  - Address primary DHS interest areas in S&T
  - Opportunity-based investment
  - High impacts/surprises
  - Develop/maintain core Homeland Security S&T competencies

**Demonstration & Delivery (Outputs)**
- Support to Acquisition (EHCs)
  - Program of Record Improvements
  - Heavily requirements-based
  - Generally evolutionary – Deliverable product to customer
- Leap-ahead First Responder Capability
  - Concept & need driven
  - Transformational
  - DHS Leadership priorities

*Enabling Homeland Capabilities” (EHCs)*
Examples of Basic Research Activities

- Modeling & Simulation tools to capture complex relationships between immigration and border security for strategic planning
- Assays methods for next-generation biothreat detectors

- Studies of radicalization development within individuals, groups, societies; roles of governments, civic organizations, and communities
- Carbon Materials for Blast Mitigation and Explosive Device Containment

- Information analysis and visualization tools for threat vulnerability, assessment, and response
- Fundamentals of deposition, removal and transport of explosive particles
New Initiative - Domestic CIED

- Standoff detection on persons
- System solution for detection in baggage
- Identify individuals with hostile intent
- Homemade or novel explosives
- Novel explosives characterization
- Detect VBIED / large threat mass

- Operational Protocols for training, techniques & tactics
- Blast mitigation in the transit environment
- Response: Assessment / Render Safe / Neutralize explosive threats
- Mitigation of standoff ballistic & guided projectiles in the transportation environment
- Canine explosive detection optimization
Exploring New Methods to Train Canines

*Thrust – To provide a deeper understanding of the potential contributions that trained canines can contribute in support of those on the front lines of homeland security.*

- Researching technologies and methods aimed at improving the performance of working dogs, increasing their results/yields, and extending their working life
- Currently being investigated by DHS S&T and our partners:
  - Best Practices for breeding and training programs
  - Genetic markers for identifying most successful breeds
  - Enhancing accuracy of canine behavioral filters to guide their placement in areas that are best suited to their traits.
www.hsarpabaa.com/
For information on S&T Broad Agency Announcements

Federal Business Opportunities