

Opportunities for the Private Sector



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Science and Technology

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**Homeland
Security**

Discussion Guide

- Overview of Department of Homeland Security
- Reasons to Partner with DHS-S&T
- Integrated Product Teams: IPTs
- Market Potential is Catalyst for Rapid New Product Development
- SECURE Program
- Safety Act Protection
- Tech Clearing House
- SBIR Opportunities
- Getting Involved
- Summary



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Homeland Security Mission

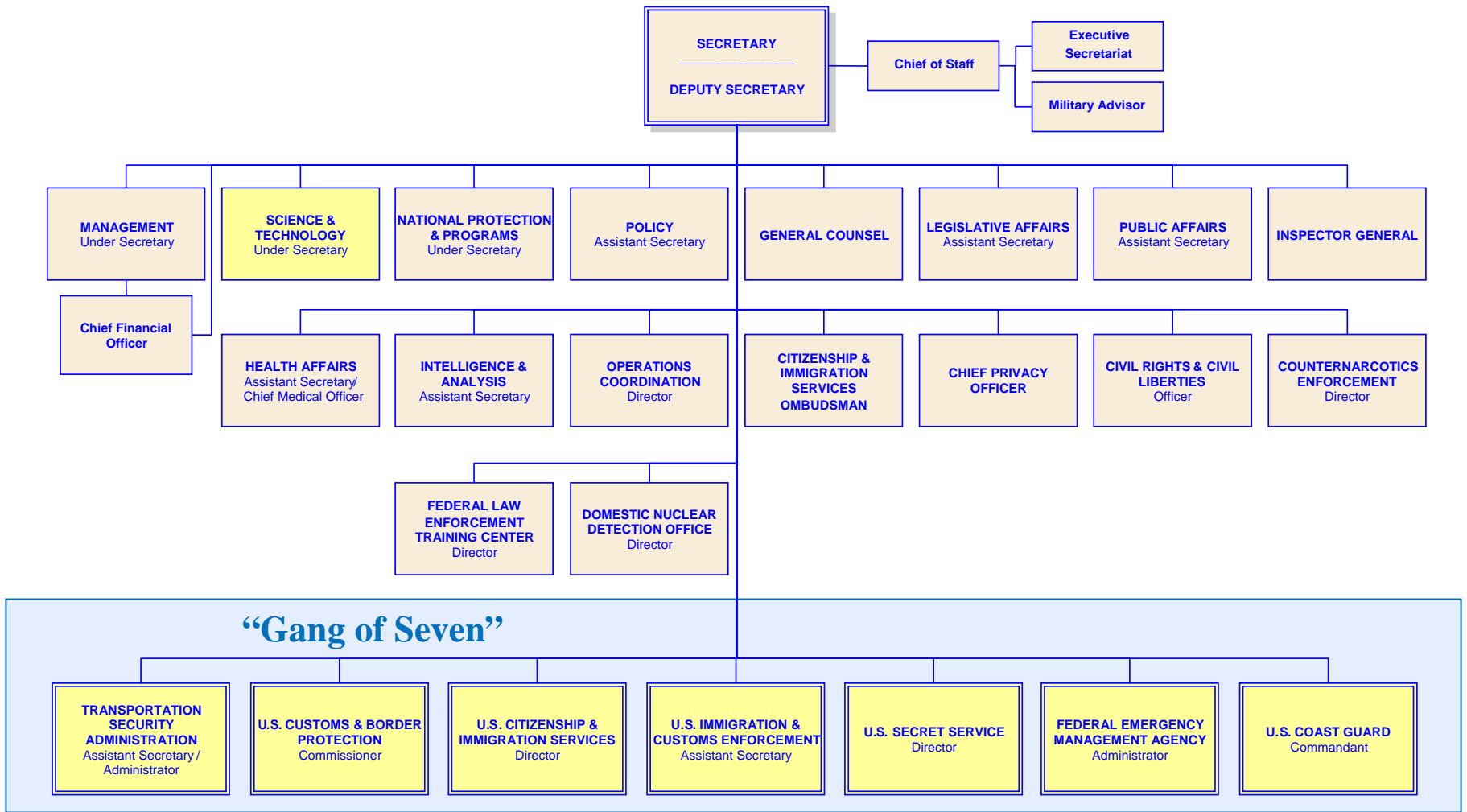


- Lead Unified National Effort to Secure America
- Prevent Terrorist Attacks Within the U.S.
- Respond to Threats and Hazards to the Nation
- Ensure Safe and Secure Borders
- Welcome Lawful Immigrants and Visitors
- Promote Free Flow of Commerce



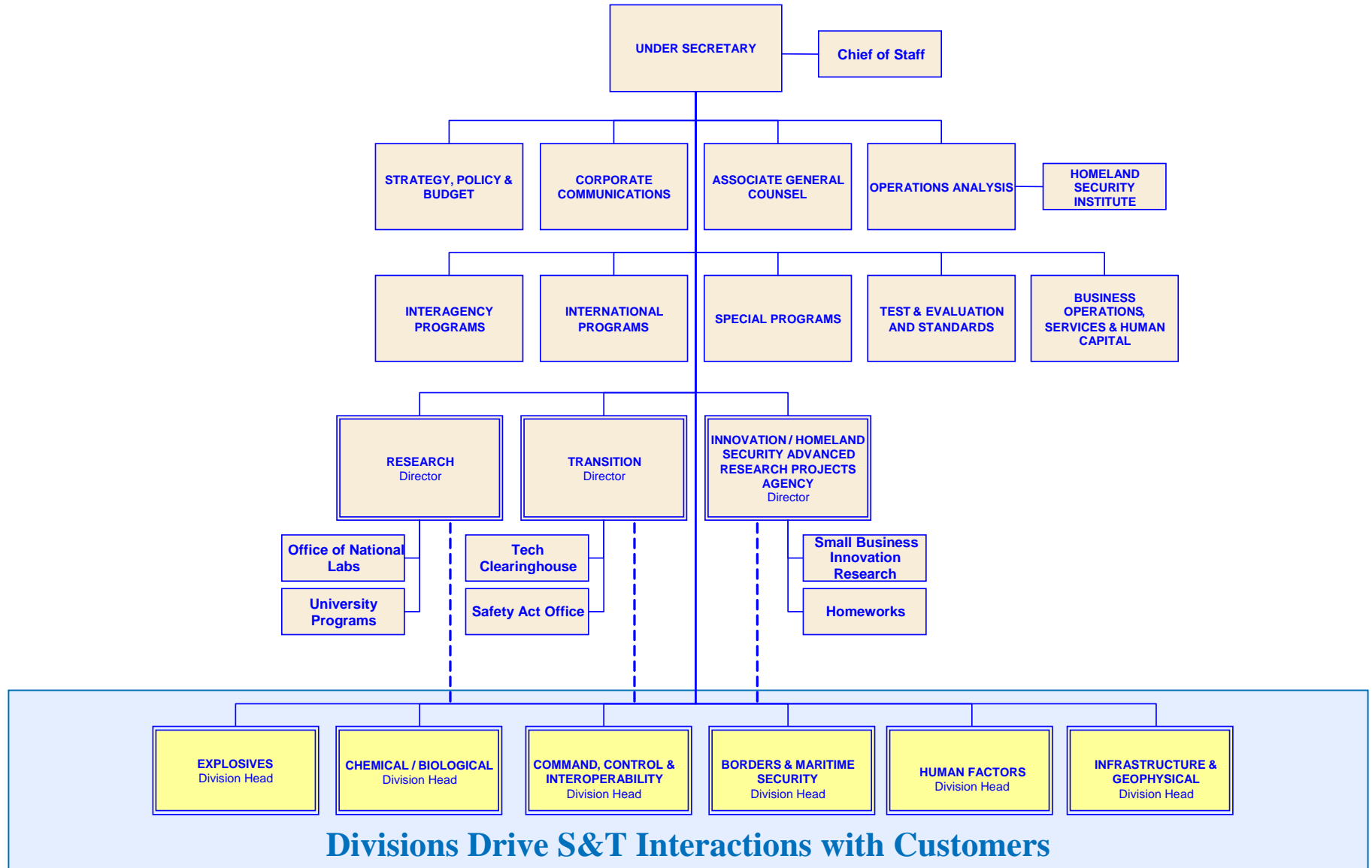
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U.S. Department of Homeland Security



Homeland Security

Office of the Under Secretary for Science and Technology



S&T Goals

Consistent with the Homeland Security Act of 2002

- **Accelerate the delivery of enhanced technological capabilities** to meet the requirements and fill capability gaps to support DHS agencies in accomplishing their mission.
- Establish a lean and agile world-class S&T management team to deliver the technological advantage necessary to ensure DHS Agency mission success and prevent technological surprise.
- Provide leadership, research and educational opportunities and resources to develop the necessary intellectual basis to enable a national S&T workforce to secure the homeland.



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DHS S&T Investment Portfolio

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

Product Transition (0-3 yrs) <ul style="list-style-type: none">• Focused on delivering near-term products/enhancements to acquisition• Customer IPT controlled• Cost, schedule, capability metrics	Innovative Capabilities (1-5 yrs) <ul style="list-style-type: none">• High-risk/High payoff• “Game changer/Leap ahead”• Prototype, Test and Deploy• HSARPA
Basic Research (>8 yrs) <ul style="list-style-type: none">• Enables future paradigm changes• University fundamental research• Gov’t lab discovery and invention	Other (0-8+ yrs) <ul style="list-style-type: none">• Test & Evaluation and Standards• Laboratory Operations & Construction• Required by Administration (HSPDs)• Congressional direction/law

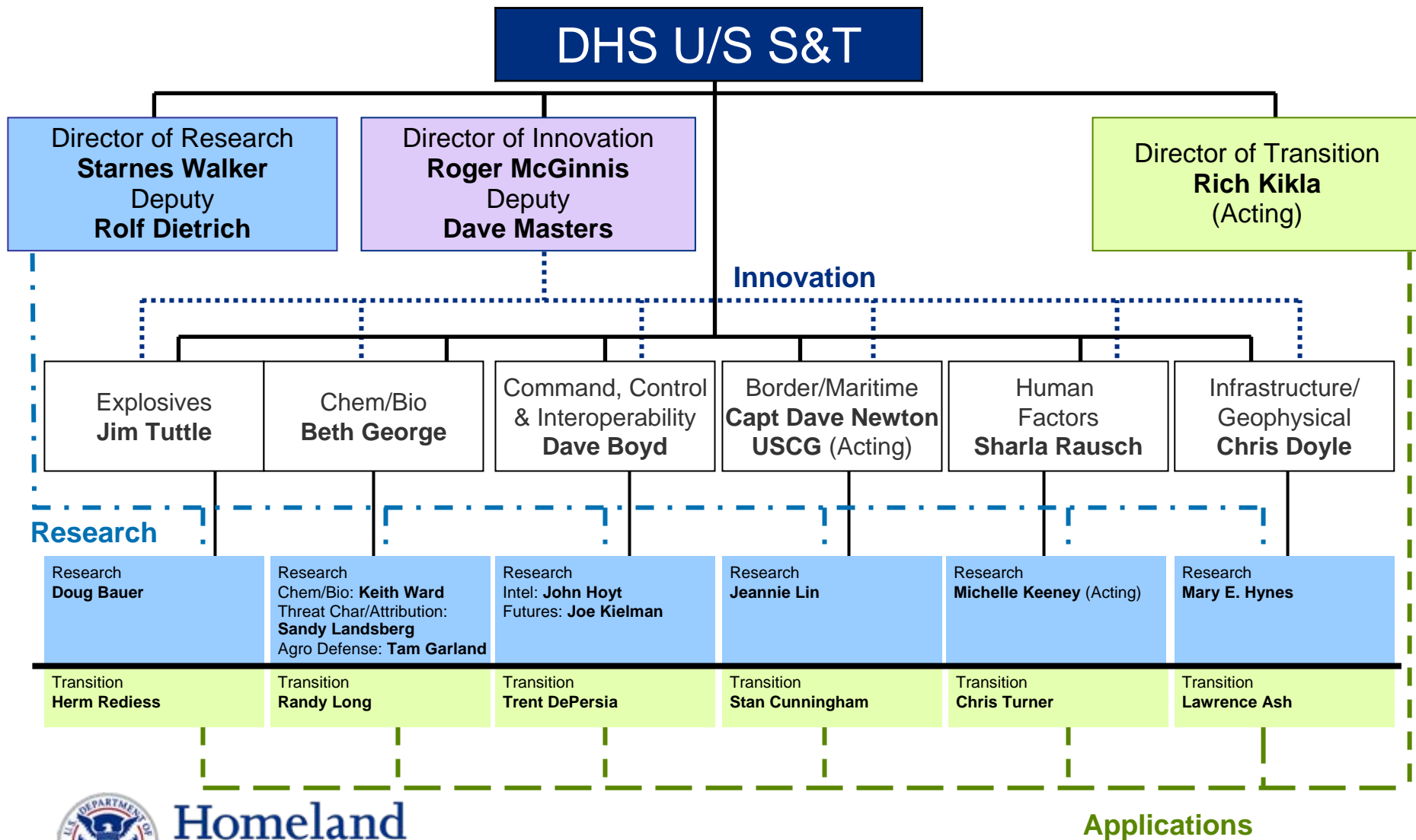
Customer Focused, Output Oriented



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S&T Organization



Three Step Approach:

Keep it Simple and Make it Easy

1

Develop Detailed Requirements
And Relay Conservative Market Potential

2

Establish Strategic Partnerships

- Business Case Information
- Open Competition
- Detailed Mutual Responsibilities

3

Deliver Products!



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Two Models for Product Realization

Big-A Acquisition

1. Requirements derived by Government
2. RFP and then cost-plus contract(s) with developer(s) (which incentivizes long intervals)
3. Focus on technical performance
4. Production price is secondary (often ignored)
5. Product price is cost-plus
6. Product reaches users via Government deployment

Performance is King

Relationship between end users and product developer is usually remote



Is there a
"Middle Ground"

Pure Commercialization

1. Requirements derived by Private Sector
2. Product development funded by the developer (which incentivizes short intervals)
3. Technical performance secondary (often reduced in favor of price)
4. Focus on price point
5. Product price is market-based
6. Product reaches users via marketing and sales channels

Performance/Price is King

Relationship between end users and product developer is crucial



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A new model for Commercialization...

1. Develop Operational Requirements Document (ORD)
2. Assess addressable market(s)
3. Publish ORD and market assessment on public DHS web portal, soliciting interest from potential partners
4. Execute no-cost agreement (CRADA-like) with multiple Private Sector entities, transferring technology (if necessary)
5. Develop supporting grants and standards as necessary
6. Assess T&E after product is developed
7. New Commercial off the Shelf (COTS) product marketed by Private Sector with DHS support

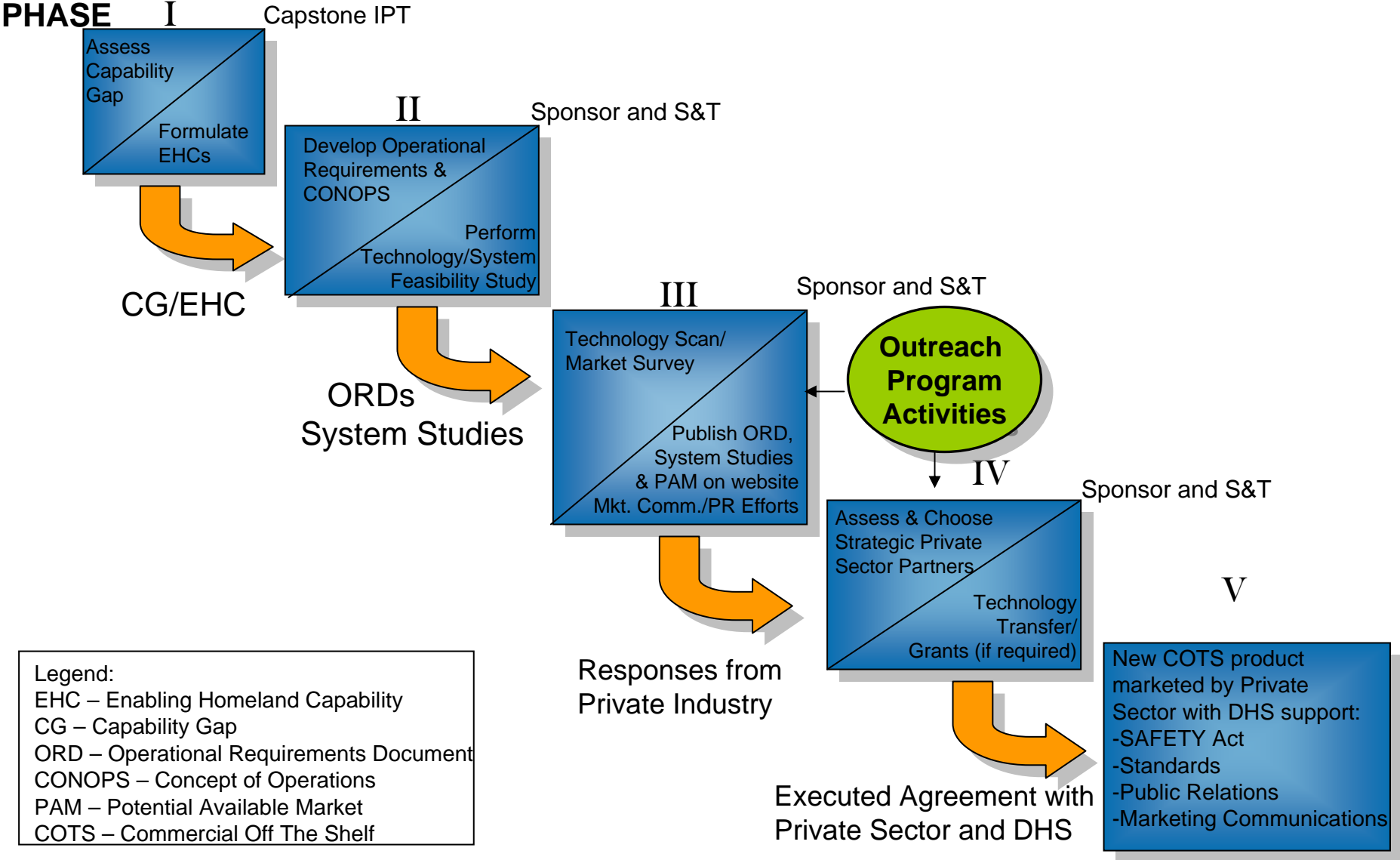
Differences from the Acquisition model:

- **Primary criteria for partner selection is market penetration, agility, and performance/price ratio**
- **Product development is not funded by DHS**
- **Government involvement is limited to inherently governmental functions (e.g., Grants and Standards)**



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Commercialization Process



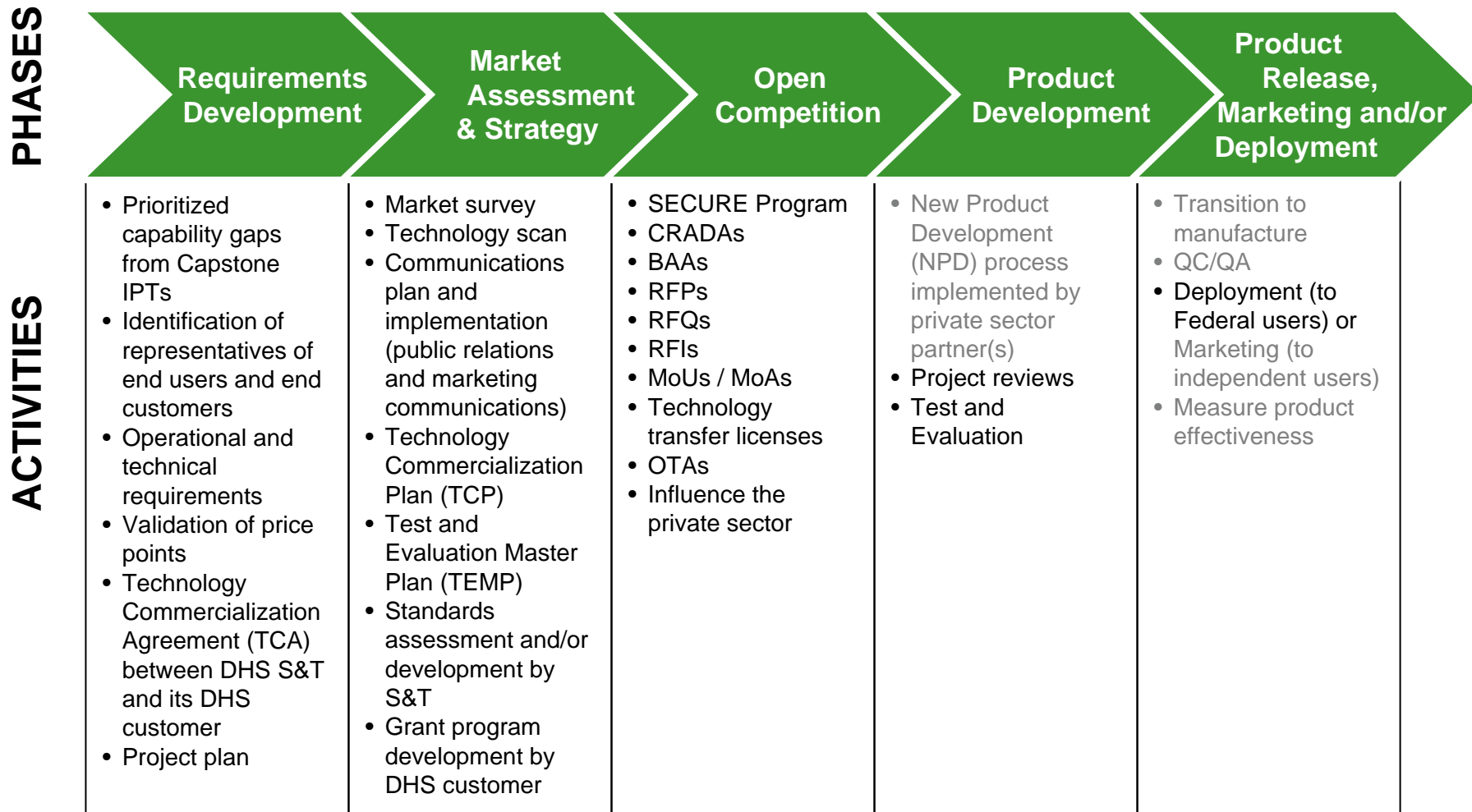
Legend:
 EHC – Enabling Homeland Capability
 CG – Capability Gap
 ORD – Operational Requirements Document
 CONOPS – Concept of Operations
 PAM – Potential Available Market
 COTS – Commercial Off The Shelf



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Private Sector Outreach Process

Requirements Development through Product Release



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Legend: Black text = Government activities
 Grey text = Private-sector activities

10 Reasons to Partner with DHS Science & Technology

Reasons Color Legend:

Economics-based

Public Relations-based

Business Development-based

Strategic Marketing-based

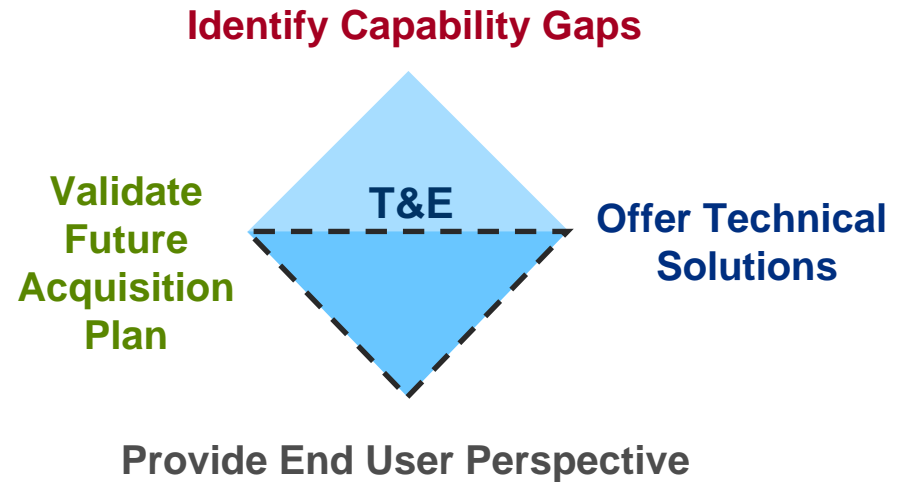
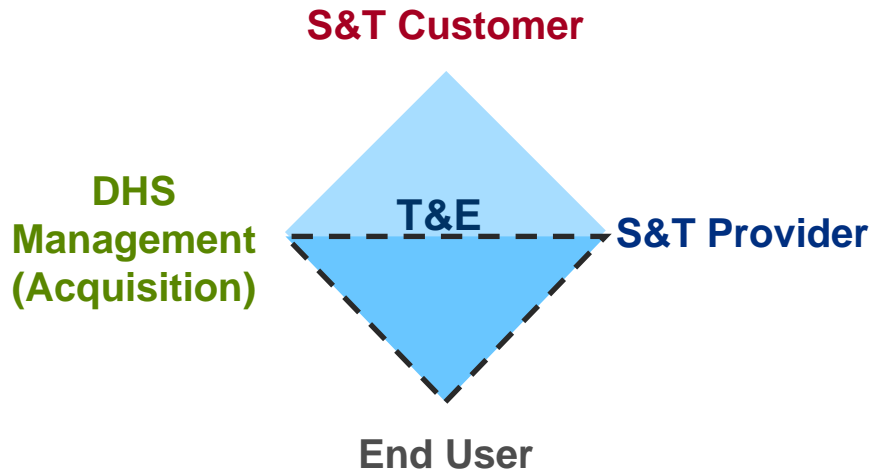
Technical Resources-based

1. Access the Sizeable DHS Market and Ancillary Markets
2. Leverage the Financial Strength/Stability of DHS and off-set R&D costs through participation in mutually beneficial cost-sharing Programs
3. Utilize the SAFETY Act to gain liability protection and access DHS' array of PR and Market Communications services
4. Effectively reach the First Responders Market through FEMA-sponsored grant programs, the AEL (Approved Equipment List), other sponsored equipment lists and fast-track programs
5. Team with Science & Technology Personnel to leverage a vast Network of Laboratory Facilities for Technology and Product Development
6. Gain access to Test and Evaluation (T&E) Facilities for Product Development and actively participate in the generation of Standards, T&E methods and Regulations used at the tribal, local, state, and federal levels
7. Meet and establish Partnerships with others in the University, Business, and National Lab Communities
8. Potentially generate Licensing revenue and capture potential Derivative Product revenue
9. Leverage SBIRs, HITS and HIPS to gain experience with homeland security applications
10. Make a Real Difference by Developing Products to Defend the Homeland for Generations to come as well as gain recognition as a Corporate Citizen contributing to the Security of our Homeland



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S&T Transition IPT Members and Function



- Industry Board of Directors Model
- Consensus-driven Process

End Result :
Prioritized Investments in S&T

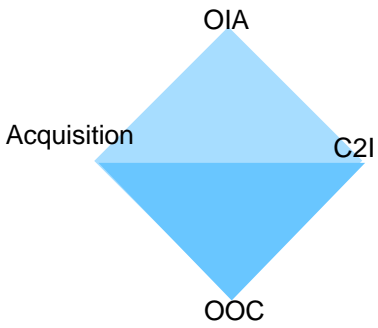


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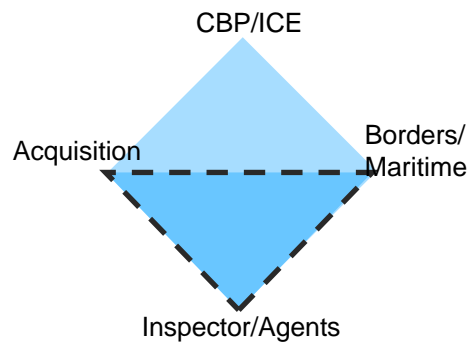
DHS Requirements/Capability Capstone IPTs

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

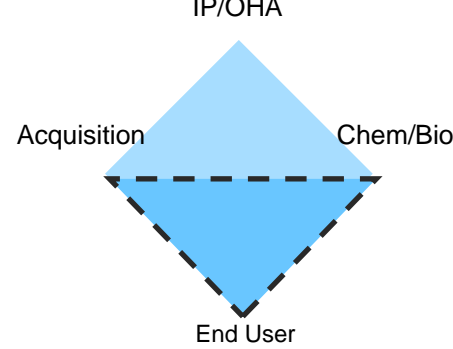
Information Sharing/Mgmt



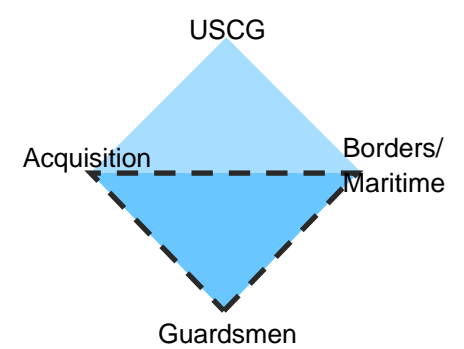
Border Security



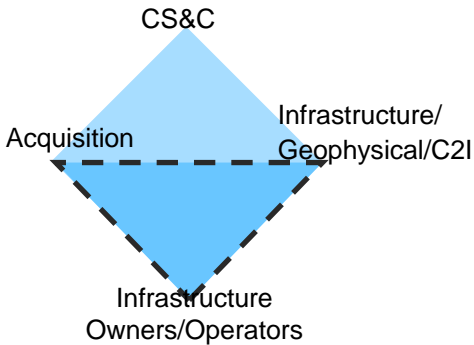
Chem/Bio



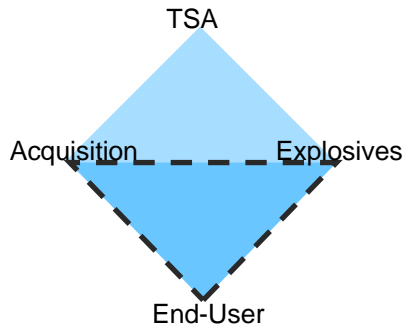
Maritime Security



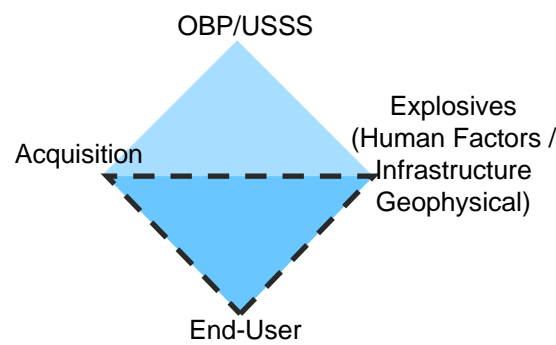
Cyber Security



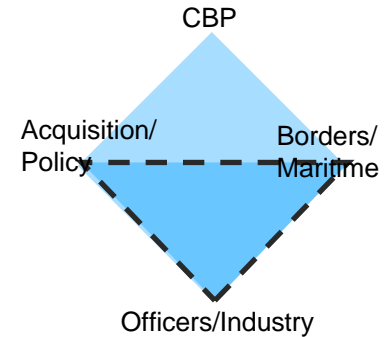
Transportation Security



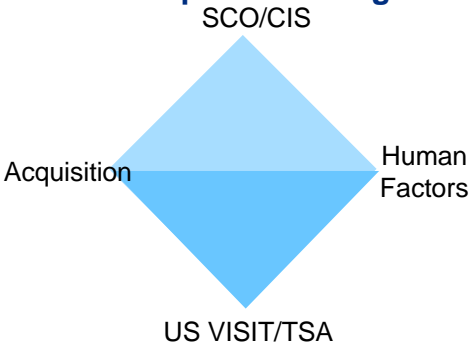
Counter IED



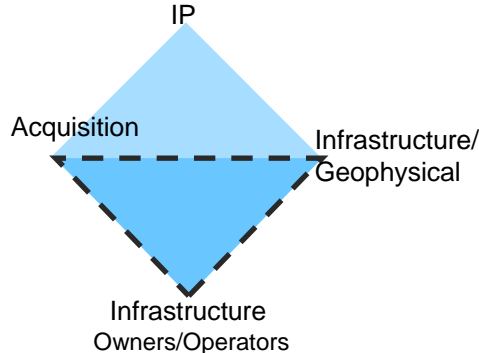
Cargo Security



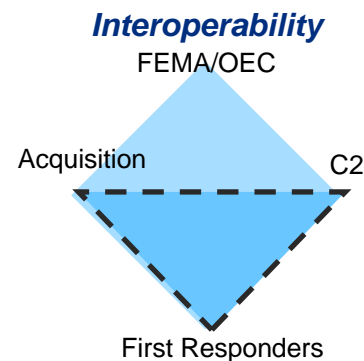
People Screening



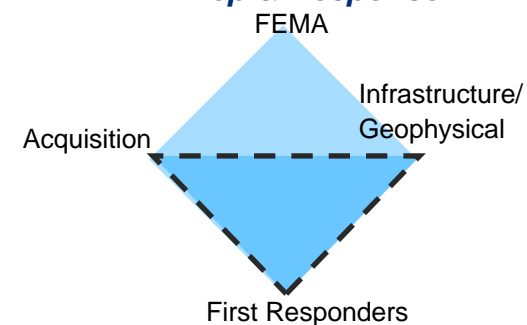
Infrastructure Protection



Incident Management

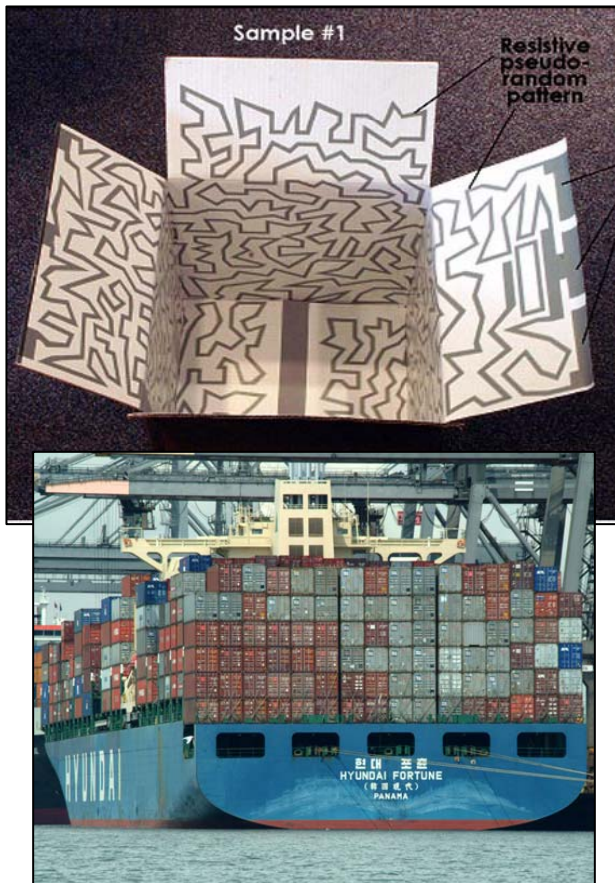


Prep & Response



Cargo Security

Representative Technology Needs



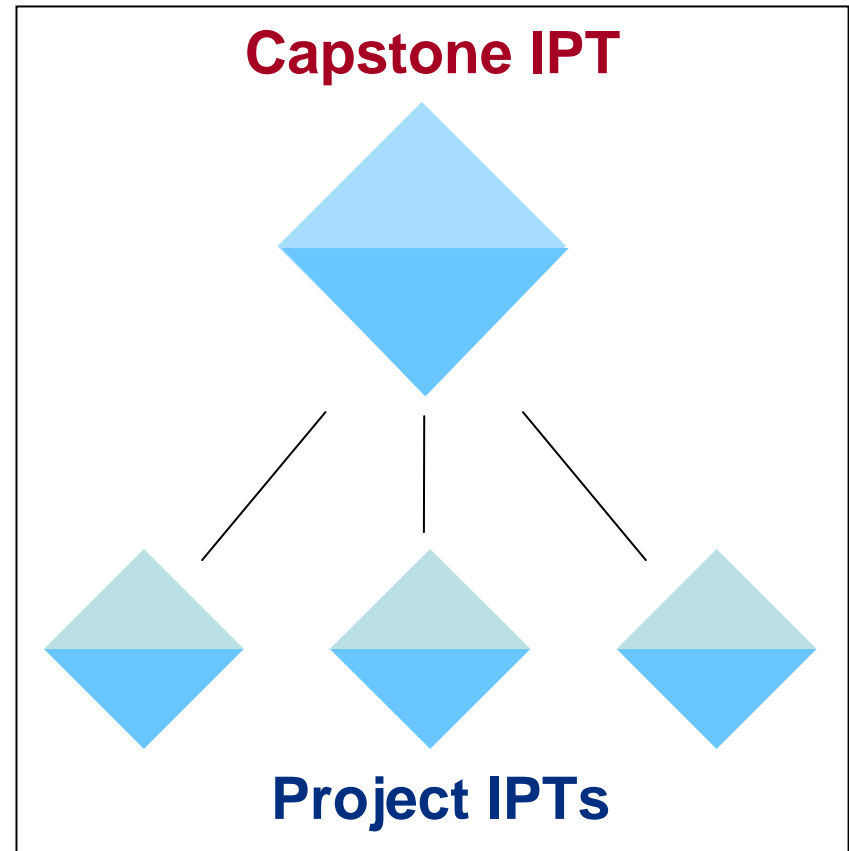
- Enhanced screening and examination by non-intrusive inspection
- Increased information fusion, anomaly detection, Automatic Target Recognition capability
- Detect and identify WMD materials and contraband
- Capability to screen 100% of air cargo
- Test the feasibility of seal security; detection of intrusion
- Track domestic high-threat cargo
- Harden air cargo conveyances and containers
- Positive ID of cargo and detection of intrusion or unauthorized access



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Establishment of Project IPTs: Detailed Specifications/Requirements

- Members:
 - S&T Program Manager(s)
 - Operating Component's Program Manager(s)
 - End-User
 - Supplier/Provider
- Meet at Least Monthly
- Report to Capstone IPT Quarterly



Requirements Hierarchy (TSA example)

The Component develops operational requirements consistent with organizational missions.

High Level
(qualitative)

DHS Mission – Strategic Goals (“**Prevent terrorist attacks**”)
TSA Mission (“**Protect traveling public**”)
Mission Need/Capability Gap (“**Reduce threats to traveling public**”)
Operational Requirement (“**Capability to detect firearms**”)

Operational
Requirements

Performance Requirement (“**Metal detection & classification**”)
Functional Specification (“**Detect metal > 50 gm**”)
Design Specification (“**MTBF > 2000 hours**”)
Material Specification (“**Use type FR-4 epoxy resin**”)

Technical
Requirements

Low Level
(quantitative)

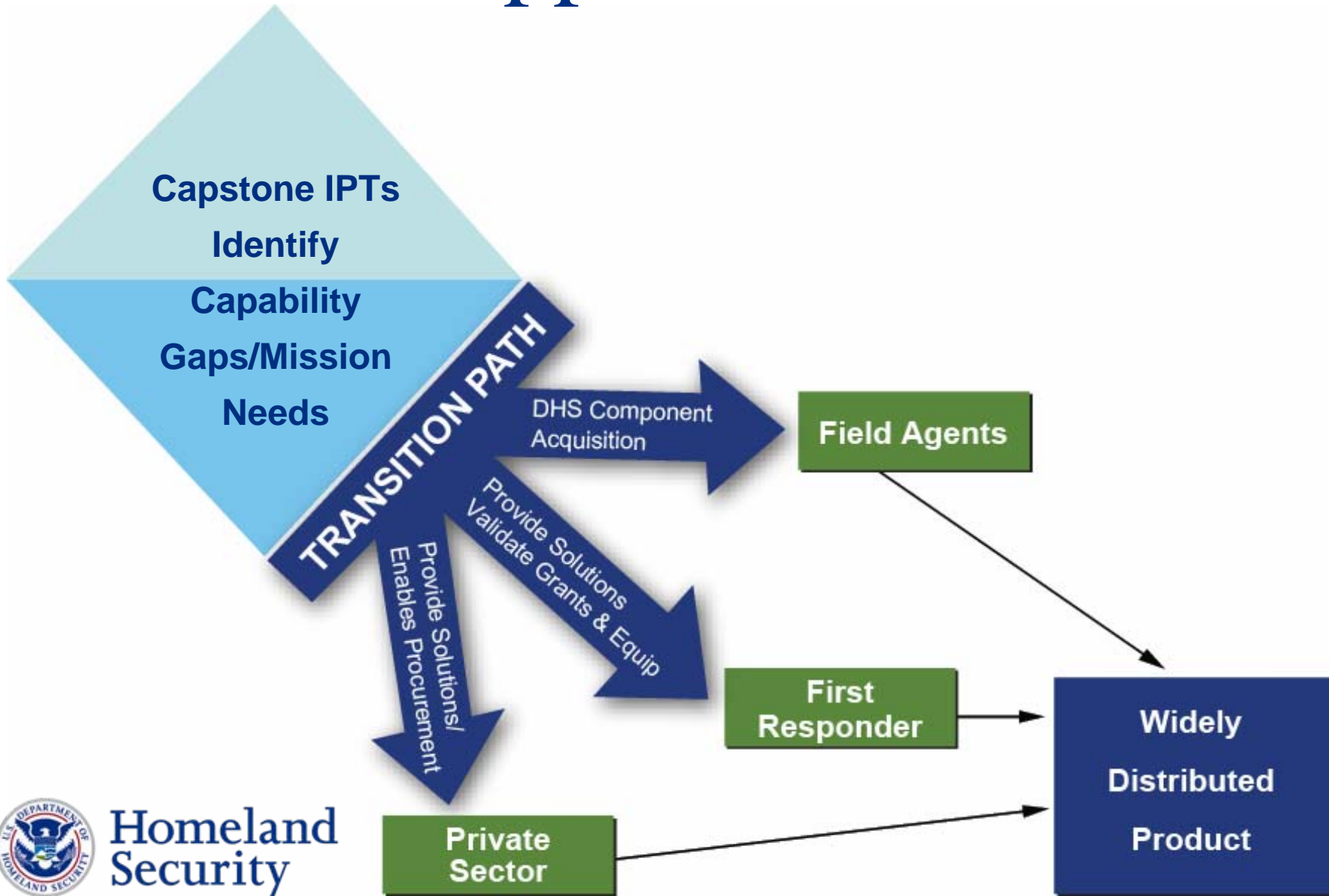
The Program Manager and Acquisition /
Engineering community develop technical
requirements and specifications.

Each lower-level requirement must be traceable to a
higher-level requirement.



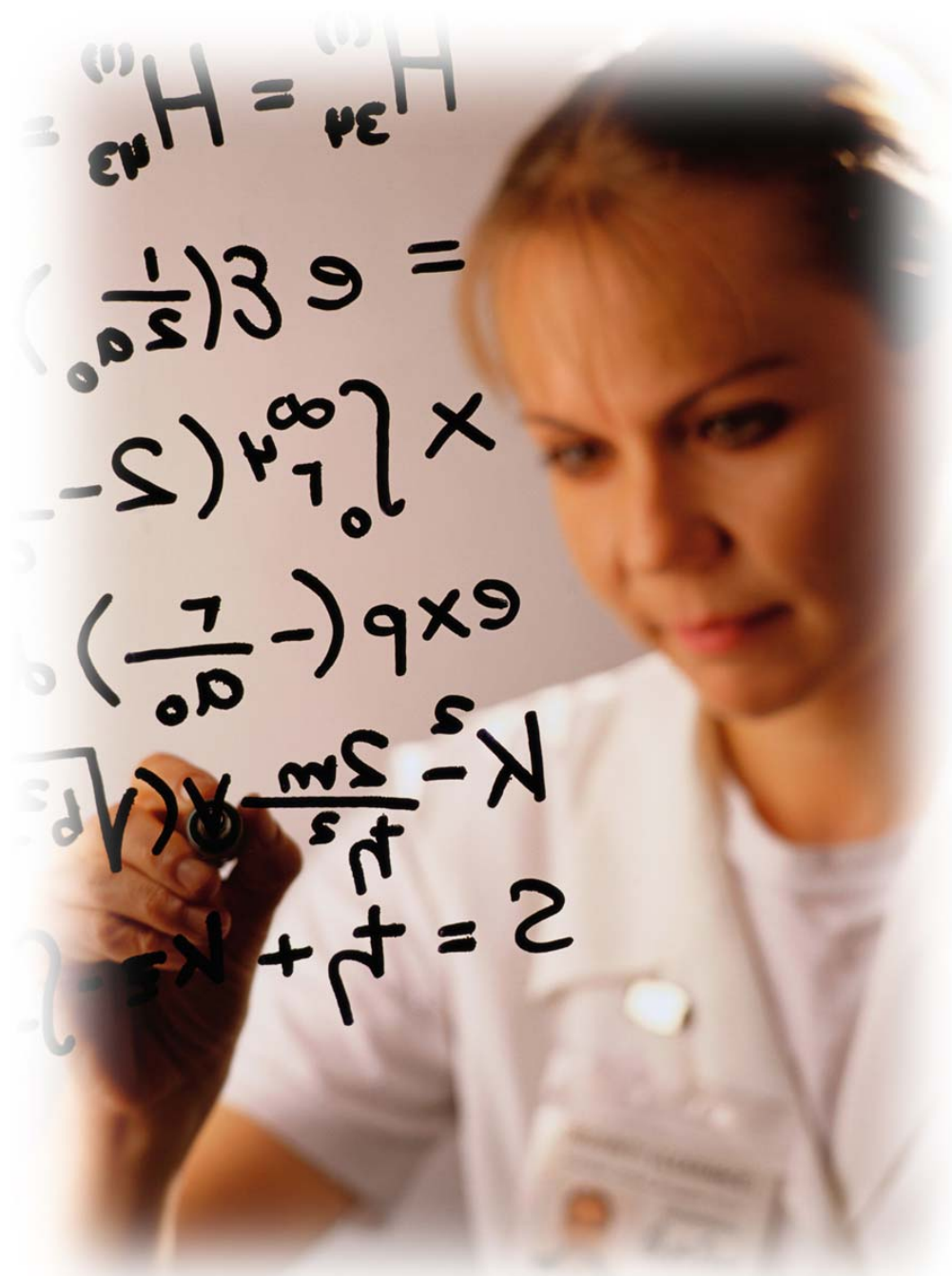
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Transition Approaches



Getting on the “Same Page”

- Historical Perspective
- Language is Key
- Communication is Paramount

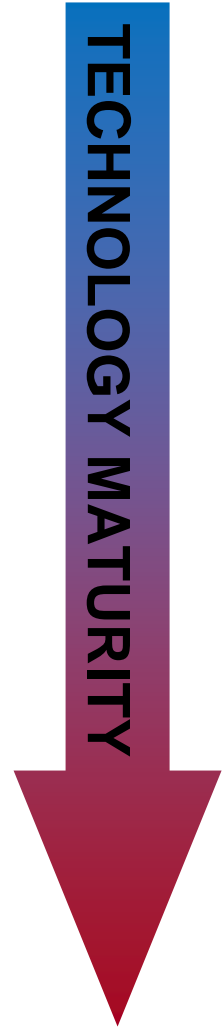


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Technology Readiness Levels (TRLs): Overview

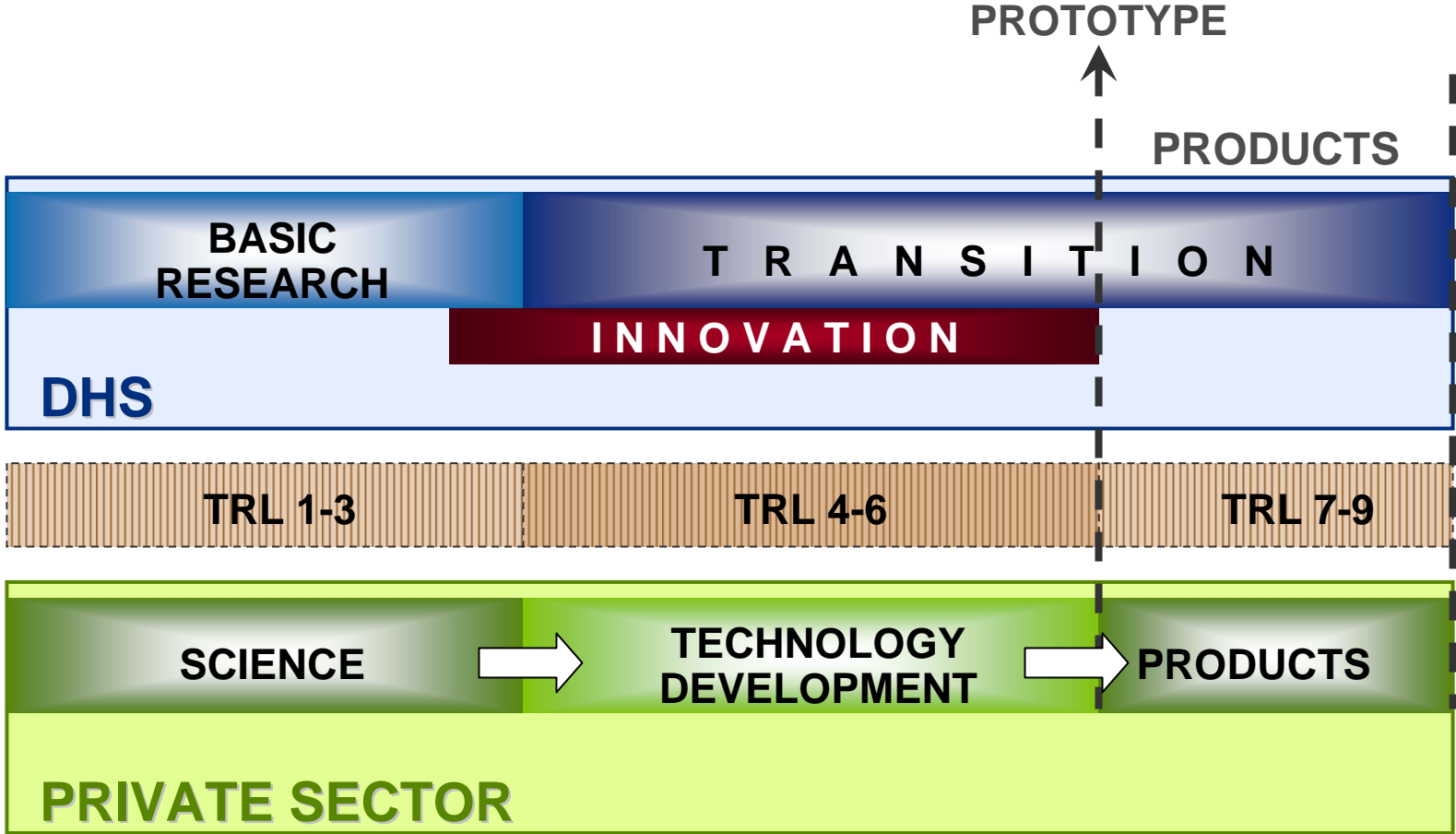
TRLs are NASA-generated and Used Extensively by DoD

Basic principles observed and reported	1	Basic
Technology concept and/or application formulated	2	
Analytical and experimental critical function and/or characteristic	3	
Component and/or breadboard validation in laboratory environment	4	Applied
Component and/or breadboard validation in relevant environment	5	
System/subsystem model or prototype demonstration in a relevant environment	6	Advanced
System prototype demonstration in a operational environment	7	
Actual system completed and 'flight qualified' through test and demonstration	8	
Actual system 'flight proven' through successful mission operations	9	

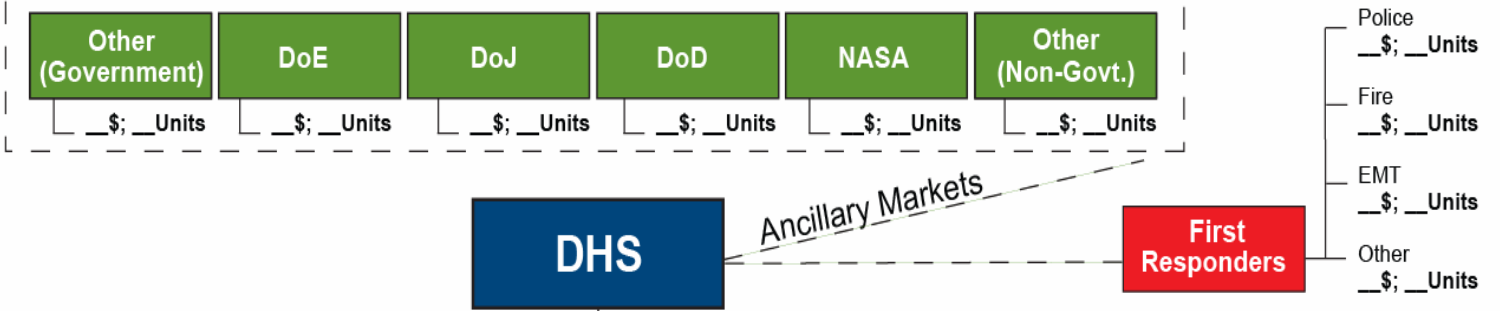


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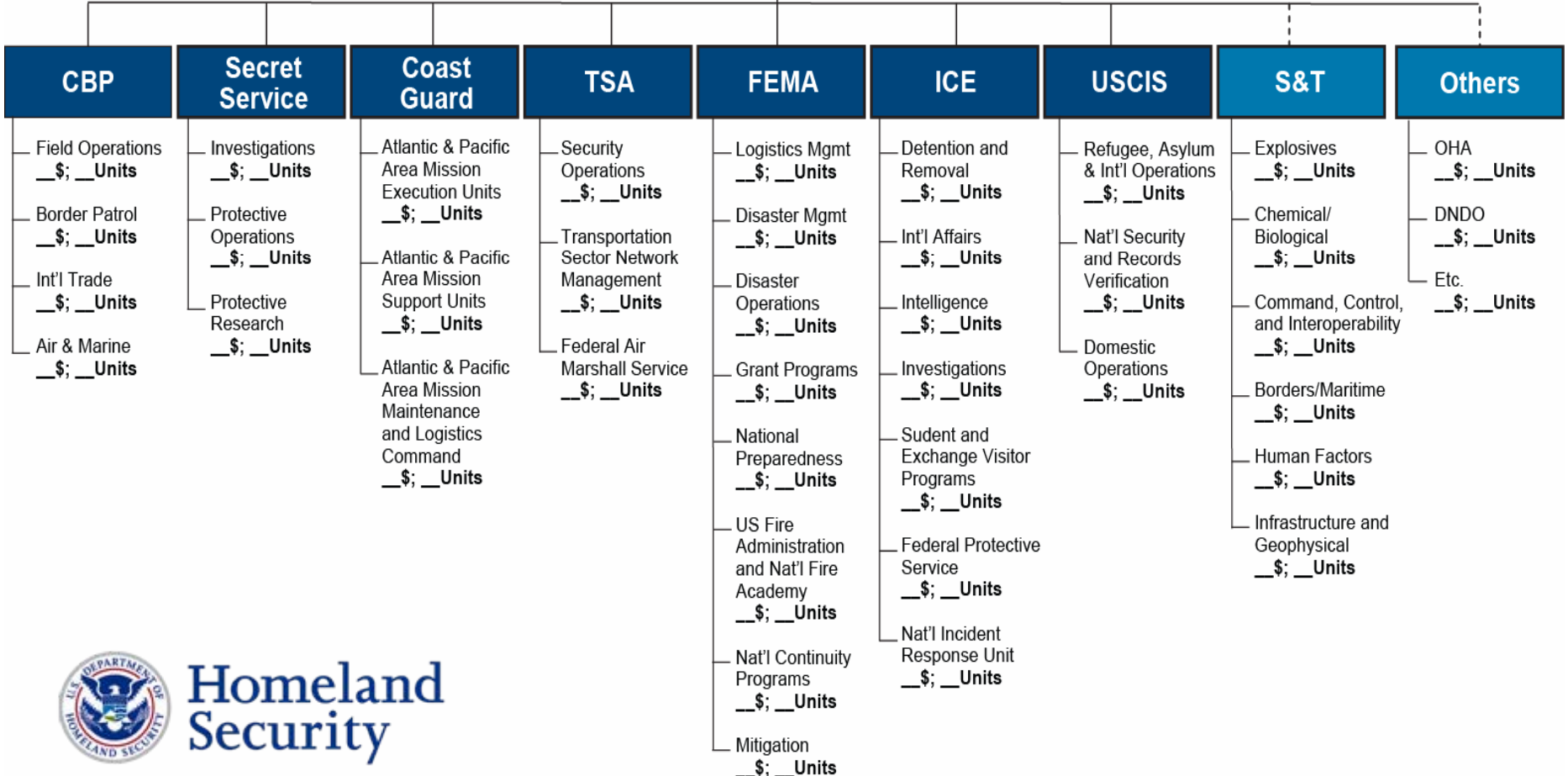
TRL Correlation: DHS and Private Sector



Market Potential Template



DHS



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Conservative Estimate: Number of First Responders in the US

- Homeland Security Presidential Directive 8
- Steve Golubic (FEMA)

Total: ~25.3 Million Individuals



FIRE



POLICE



EMT



BOMB
DISPOSAL

Front Line ~2.3 Million

Support to Front Line ~23 Million

Port Security

Public Health

Hospitals

Transportation

Emergency
Management

Clinics

Venue Security

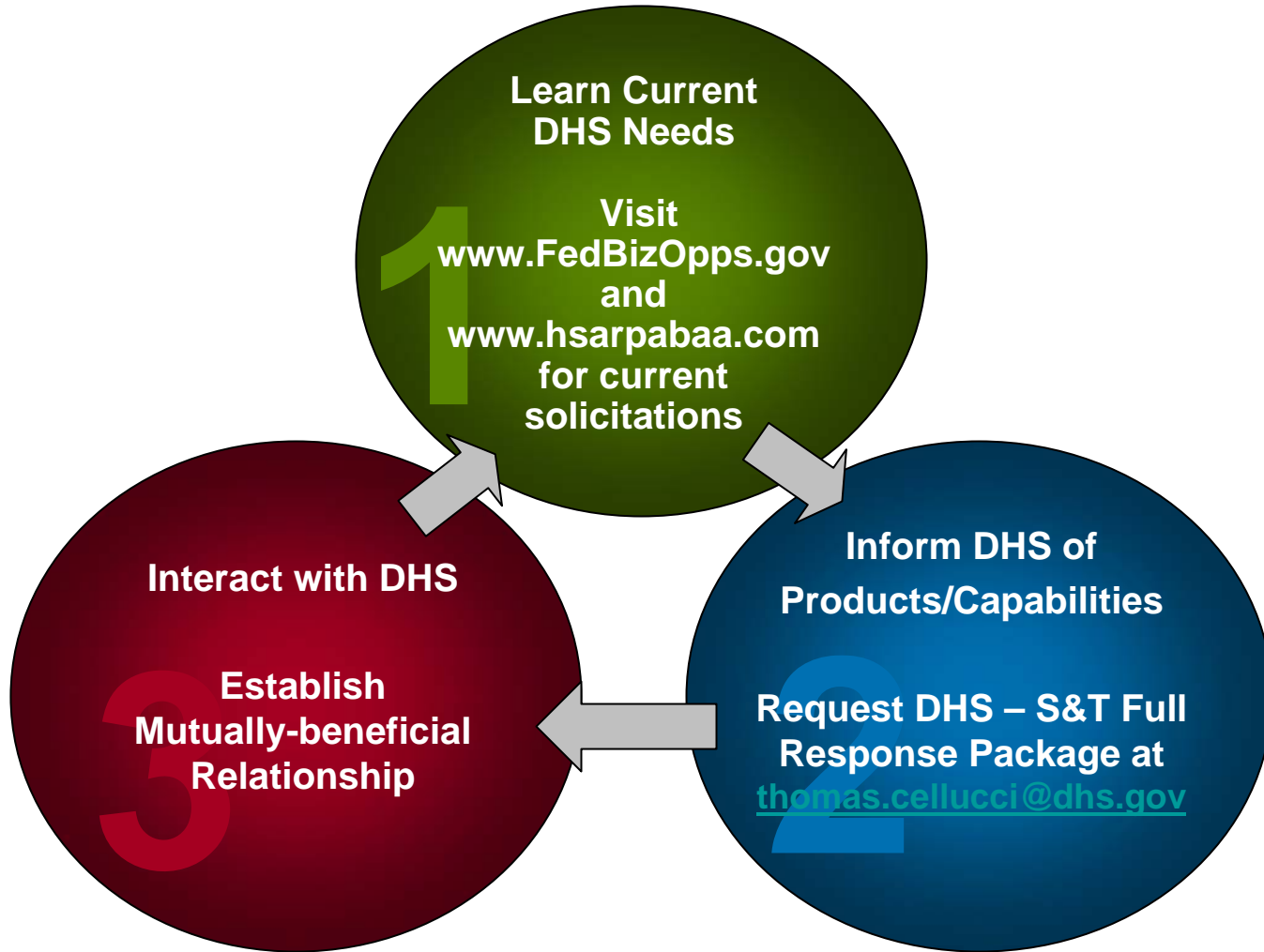
Public
Works/Utility

School Security

Response
Volunteers

Call to Action: Mutual Benefits

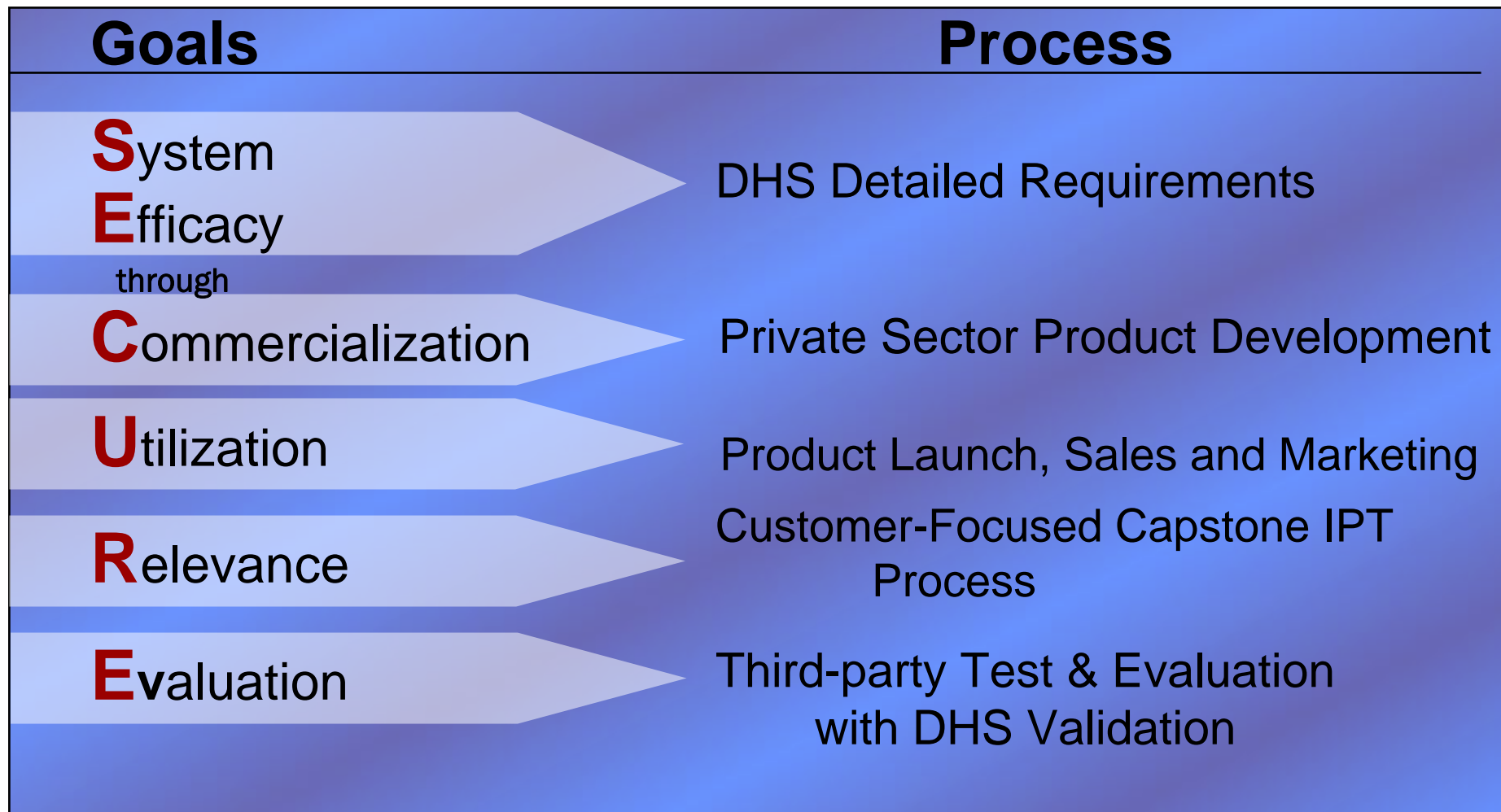
Create “Win-Win-Win” Relationships



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SECURE Program

“Mutually-Beneficial Goals Achieved Through Rigorous Process”



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SECURE Program

Concept of Operations



- Application – Seeking products/technologies aligned with posted DHS requirements
- Selection – Products/Technologies TRL-5 or above, scored on internal DHS metrics
- Agreement – One-page CRADA-like document. Outlines milestones and exit criteria
- Publication of Results – Independent Third-Party T&E conducted on TRL-9 product/service. Results verified by DHS, posted on DHS web-portal

Benefits:

- ✓ Successful products/technologies share in the imprimatur of DHS
- ✓ DHS Operating Components and First Responders make informed decisions on products/technologies aligned to their stated requirements
- ✓ DHS spends less on acquisition programs → Taxpayers win.



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SECURE Program

Benefit Analysis “Win-Win-Win”

Taxpayers	Private Sector	Public Sector
1. Citizens are better protected by DHS personnel using mission critical products	1. Save significant time and money on market and business development activities	1. Improved understanding and communication of needs
2. Tax savings realized through Private Sector investment in DHS	2. Firms can genuinely contribute to the security of the Nation	2. Cost-effective and rapid product development process saves resources
3. Positive economic growth for American economy	3. Successful products share in the “imprimatur of DHS”; providing assurance that products really work	3. Monies can be allocated to perform greater number of essential tasks
4. Possible product “spin-offs” can aid other commercial markets	4. Significant business opportunities with sizeable DHS and DHS ancillary markets	4. End users receive products aligned to specific needs
5. Customers ultimately benefit from COTS produced within the Free Market System – more cost effective and efficient product development	5. Commercialization opportunities for small, medium and large business	5. End users can make informed purchasing decisions with tight budgets



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Homeland Security

Home Information Sharing & Analysis Prevention & Protection Preparedness & Response **Research** Commerce & Trade Travel Security & Identification

Activities & Programs About the Department Open

Research

Activities & Programs

- Research
- Activities & Programs**
- Committees & Working Groups
- Grants
- Laboratories & Research Facilities
- Partnerships
- Events

Activities & Programs

[Homeland Security Centers of Excellence](#) – Brings together leading experts and researchers to conduct multidisciplinary research and education for homeland security solutions.

[Homeland Security Institute](#) – The Department's first government "think tank" or Federally Funded Research and Development Center

[SAFETY Act](#) – Provides liability protections that make it feasible for sellers of qualified antiterrorism technologies to introduce homeland security solutions to the marketplace.

[SECURE Program](#) – Department's innovative business initiative that enables collaboration of public and private entities to develop products and services rapidly to protect the Homeland to the benefit of the taxpayers, private sector and DHS.

[Tech Solutions](#) – Provides information, resources, and technology solutions that address mission capability gaps identified by the emergency response community.

[University Programs](#) – Encourages academic research and development in areas critical to homeland security.

SECURE Program

National Threat Advisory:
ELEVATED



Significant Risk Of Terrorist Attacks

The threat level in the airline sector is **High** or Orange. Read more.

Federal Business Opportunities

Sites where the Office of Procurement Operations (OPO) posts opportunities for perspective suppliers to offer solutions to DHS – S&T's needs:

- www.FedBizOpps.gov
- www.HSARPAbaa.com
- www.SBIR.dhs.gov
- www.Grants.gov

take advantage of...

- **Vendor Notification Service:** Sign up to receive procurement announcements and solicitations/BAA amendment releases, and general procurement announcements.
<http://www.fedbizopps.gov>
- **S&T's HSARPA website:** Register to join the HSARPA mailing list to receive various meeting and solicitation announcements. Link to Representative High Priority Technology Areas, where DHS areas of interest can be found.
<http://www.hsarpabaa.com>
- **Truly Innovative and Unique Solution:** Refer to Part 15.6 of the Federal Acquisition Regulation (FAR) which provides specific criteria that must be met before a unsolicited proposal can be submitted to Kathy Ferrell.
http://www.acquisition.gov/far/current/html/Subpart%2015_6.html

Contact Information:

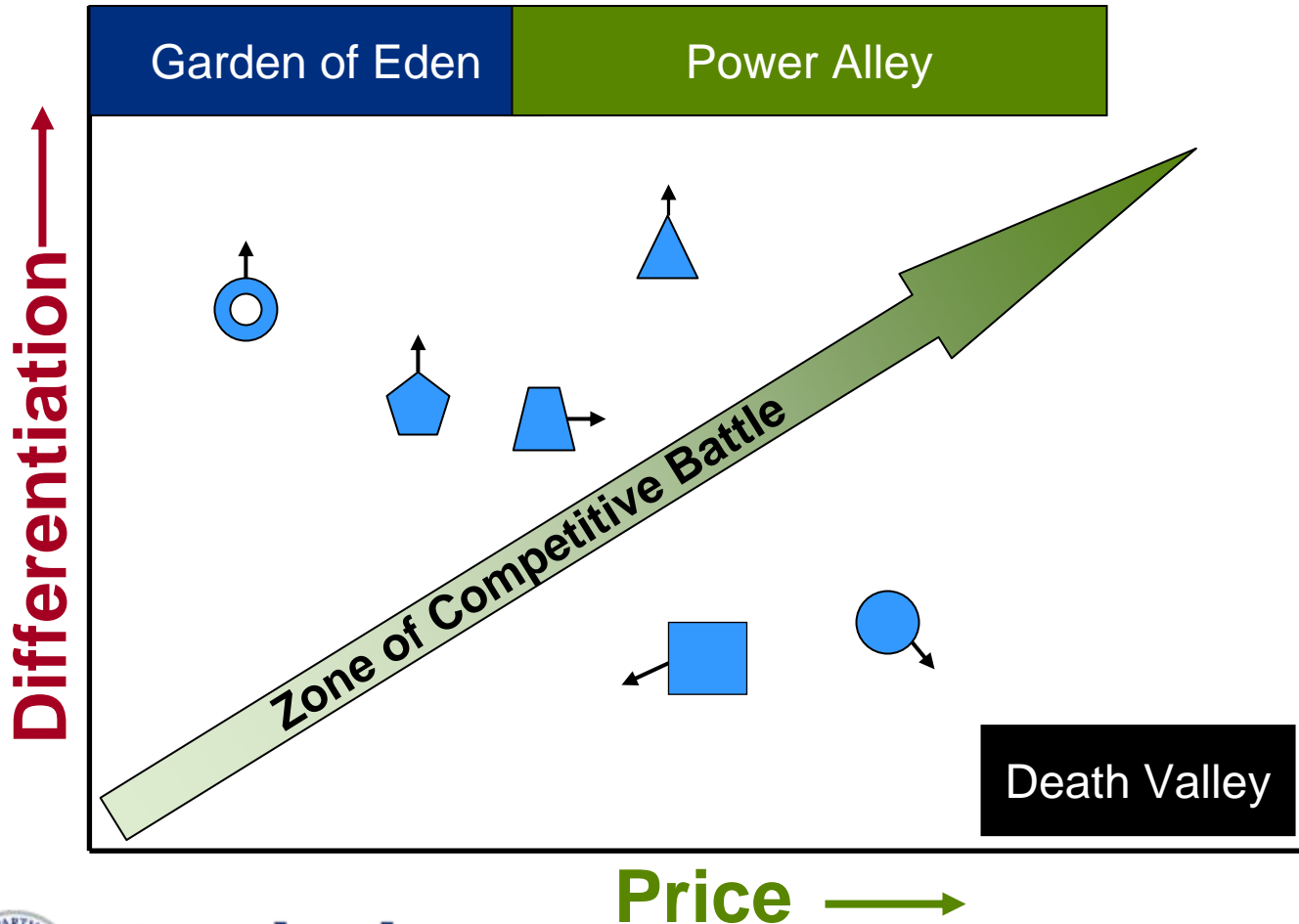
Kathy Ferrell
Department of Homeland Security
Office of the Chief Procurement Officer
245 Murray Dr., Bldg. 410
Washington, DC 20528
unsolicited.proposal@dhs.gov
202-447-5576



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Show Us the Difference...

Hall's Competitive Model



As a function of:

- Market
- Application
- Technology



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$$\text{Differentiation} = (A+B)C/(D+E)$$



More Opportunities with DHS Science and Technology

SAFETY Act

Support Anti-Terrorism by Fostering Effective Technologies Act of 2002

- Enables the development and deployment of qualified anti-terrorism technologies
- Provides important legal liability protections for manufacturers and sellers of effective technologies
- Removes barriers to industry investments in new and unique technologies
- Creates market incentives for industry to invest in measures to enhance our homeland security
- The SAFETY Act liability protections apply to a vast range of technologies, including:
 - Products
 - Services
 - Software and other forms of intellectual property (IP)

- Examples of eligible technologies:
- Threat and vulnerability assessment services
 - Detection Systems
 - Blast Mitigation Materials
 - Screening Services
 - Sensors and Sensor Integration
 - Vaccines
 - Metal Detectors
 - Decision Support Software
 - Security Services
 - Data Mining Software

Protecting You, Protecting U.S.



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Criteria as stated in the SAFETY Act

- ✓ Is it an Anti-Terrorism Technology?
- ✓ Is it effective and available?
- ✓ Does it possess large potential third party liability risk exposure?
- ✓ Does Seller need SAFETY Act?
- ✓ Does it perform as intended?
- ✓ Does it conform to Seller's specifications?
- ✓ Is it safe for use as intended?

Addition SAFETY Act information...

Online: www.safetyact.gov Email: helpdesk@safetyact.gov

Toll-Free: 1-866-788-9318



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Award Criteria

	Developmental Testing and Evaluation (DT&E)	Designation	Certification
Effectiveness Evaluation Conclusion	Needs more proof, has potential	Demonstrated effectiveness, i.e. Developmental testing (with confidence of repeatability)	Consistently proven effectiveness, i.e. operational performance (with high confidence of enduring effectiveness)
Protection	Liability cap <ul style="list-style-type: none"> • only for identified test event(s) and for limited duration (=3yrs) 	Liability cap <ul style="list-style-type: none"> • for any and all deployments in 5-8 year term 	Government Contractor Defense (GCD) <ul style="list-style-type: none"> • for any and all deployments in 5-8 years term
Examples	<ul style="list-style-type: none"> • EDS not yet TSL Certified • Novel incident pattern matching service 	<ul style="list-style-type: none"> • Radiological detector with <u>laboratory</u> success Opt-out screeners, only similar projects completed 	<ul style="list-style-type: none"> • EDS TSL Certified • Well-documented infrastructure protection service with history of excellent performance and meeting DoE standards

EDS=Explosive Detection System TSL=Transportation Security Laboratory (TSA)



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<http://www.sbir.dhs.gov>

Address <http://www.dhssbir.com/>

- SBIR Home
- What's New
- Solicitation Deadlines
- SBIR Solicitations
- Awards
- Proposal/Award Administration
- Proposal Review
- Reviewer Opportunities
- Collaboration Opportunities
- SBIR Contact Information
- FAQ
- Links/Forms
- Topic Recommendations
- Presentations
- Privacy Policy



Homeland Security Advanced Research Projects Agency

SBIR PR

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[DHS SBIR expects to release its 6.2 SBIR Solicitation in August 2006](#)

[DHS announces its 6.1 SBIR/STTR award selections.....](#)

Homeland Security Advanced Research Projects Agency SBIR/STTR Program

Vision: Make America Safer

The top priority for everything HSARPA does is to enhance the safety and security of America's people, institutions and way of life.

SBIR Program:

The Department of Homeland Security (DHS), Homeland Security Advanced Research Projects Agency (HSARPA) launched the Small Business Innovation Research (SBIR) program, in December 2003. Our goal is to increase the participation of innovative and creative small businesses in Federal Research/Research and Development (R/R&D) programs and challenge industry to bring innovative homeland security solutions to reality.

All Federal agencies with an annual extramural R&D budget exceeding \$100M are required to participate in the SBIR Program. Each fiscal year, not less than 2.5 percent of the annual extramural budget, is reserved for awards to small businesses for R/R&D through a three phase process.



Other Funding Opportunities

Collaboration Opportunities

Topic Recommendations

Tech Clearinghouse Mission

To rapidly disseminate technical information concerning existing and desired products and services to/between Federal, State, Local, and Tribal Government and the Private Sector in order to encourage technological innovation and facilitate the mission of the Department of Homeland Security.

- Establishes Central Federal Technology Clearinghouse
- Issues Announcements for Innovative Solutions
- Establishes S&T Technical Assessment Team
- Provides guidance for the evaluation, purchase, and implementation of homeland security enhancing technologies
- Provides users with information to develop or deploy technologies that would enhance homeland security
- Enables technology transfer

Improved Knowledge Sound Acquisition Decisions



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TechSolutions

The mission of TechSolutions is to rapidly address technology gaps identified by Federal, State, Local, and Tribal first responders

- Field prototypical solutions in 12 months
- Cost should be commensurate with proposal but less than \$1M per project
- Solution should meet 80% of identified requirements
- Provide a mechanism for Emergency Responders to relay their capability gaps
 - Capability gaps are gathered using a web site (www.dhs.gov/techsolutions)
- Gaps are addressed using existing technology, spiral development, and rapid prototyping
- Emergency Responders partner with DHS from start to finish

Rapid Technology Development

Target: Solutions Fielded within 1 year, at <\$1M



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TechSolutions Investments

Seatbelt Safety for
Emergency Vehicles



Next Generation
Breathing Apparatus



Fire Ground Compass



Under Consideration

Vehicle Mounted Chem/Bio
Sensor Detection



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Getting Involved: S&T Contacts

Division	Email
Jim Tuttle	S&T-Explosives@dhs.gov
Beth George	S&T-ChemBio@dhs.gov
David Boyd	S&T-C2I@dhs.gov
Dave Newton	S&T-BordersMaritime@dhs.gov
Sharla Rausch	S&T-HumanFactors@dhs.gov
Chris Doyle	S&T-InfrastructureGeophysical@dhs.gov
Rich Kikla (Acting)	S&T-Transition@dhs.gov
Starnes Walker	S&T-Research@dhs.gov
Roger McGinnis	S&T-Innovation@dhs.gov



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Summary

Detailed Requirements

Sizeable Market Potential

Delivered Products – PERIOD!

How Can You Afford NOT to Partner with DHS S&T?

Questions/Comments:

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U.S. Department of Homeland Security: Science and Technology Directorate's Chief Commercialization Officer

Thomas A. Cellucci, PhD, MBA was recently appointed Chief Commercialization Officer for the Department of Homeland Security's Science and Technology (S&T) Directorate . The Chief Commercialization Officer (CCO) is responsible for initiatives that identify, evaluate and commercialize technology for the specific goal of rapidly developing and deploying products and services that meet the specific operational requirements of the Department of Homeland Security's Operating Components and its end users. The CCO also develops and drives the implementation of DHS-S&T's outreach with the private sector to establish and foster mutually-beneficial working relationships to facilitate cost-effective and efficient product/service development efforts.



Cellucci is an accomplished serial entrepreneur, seasoned senior executive and Board member possessing extensive corporate and VC experience across a number of worldwide industries. Profitably growing high technology firms at the start-up, mid-range and large corporate level has been his trademark. In 1999, he founded a highly successful management consulting firm--Cellucci Associates, Inc. -- that raises capital and provides strategic business services to top-tier global high technology firms. He serves on both public and private Boards and has authored or co-authored over 120 articles on Nanotechnology, Laser physics, Photonics, Environmental disturbance control, MEMS test and measurement, Mistake-proofing enterprise software, and Sales & Marketing. He has also held the rank of Lecturer or Professor at institutions like Princeton University, University of Pennsylvania and Camden Community College. Cellucci also co-authored ANSI Standard Z136.5 "The Safe Use of Lasers in Educational Institutions".

As a result of his consistent achievement in the commercialization of emerging technologies, Cellucci has received numerous awards and citations from industry, government and business.

Cellucci earned a PhD in Physical Chemistry from the University of Pennsylvania, an MBA from Rutgers University and a BS in Chemistry from Fordham University. He has also attended and lectured at executive programs at the Harvard Business School, MIT Sloan School, Kellogg School and others. Dr. Cellucci is regarded as an authority in rapid time-to-market new product development and is a frequent public speaker.



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