Opportunities for the Private Sector

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Science and Technology
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Discussion Guide

- Overview of Department of Homeland Security
- Commercialization initiatives at DHS
- Capstone Integrated Product Teams (IPTs)
- Market Potential is Catalyst for Rapid New Product Development
- Getting on the Same Page
- SECURE Program
- Safety Act Protection
- Tech Clearing House
- SBIR Opportunities
- Getting Involved
- Summary

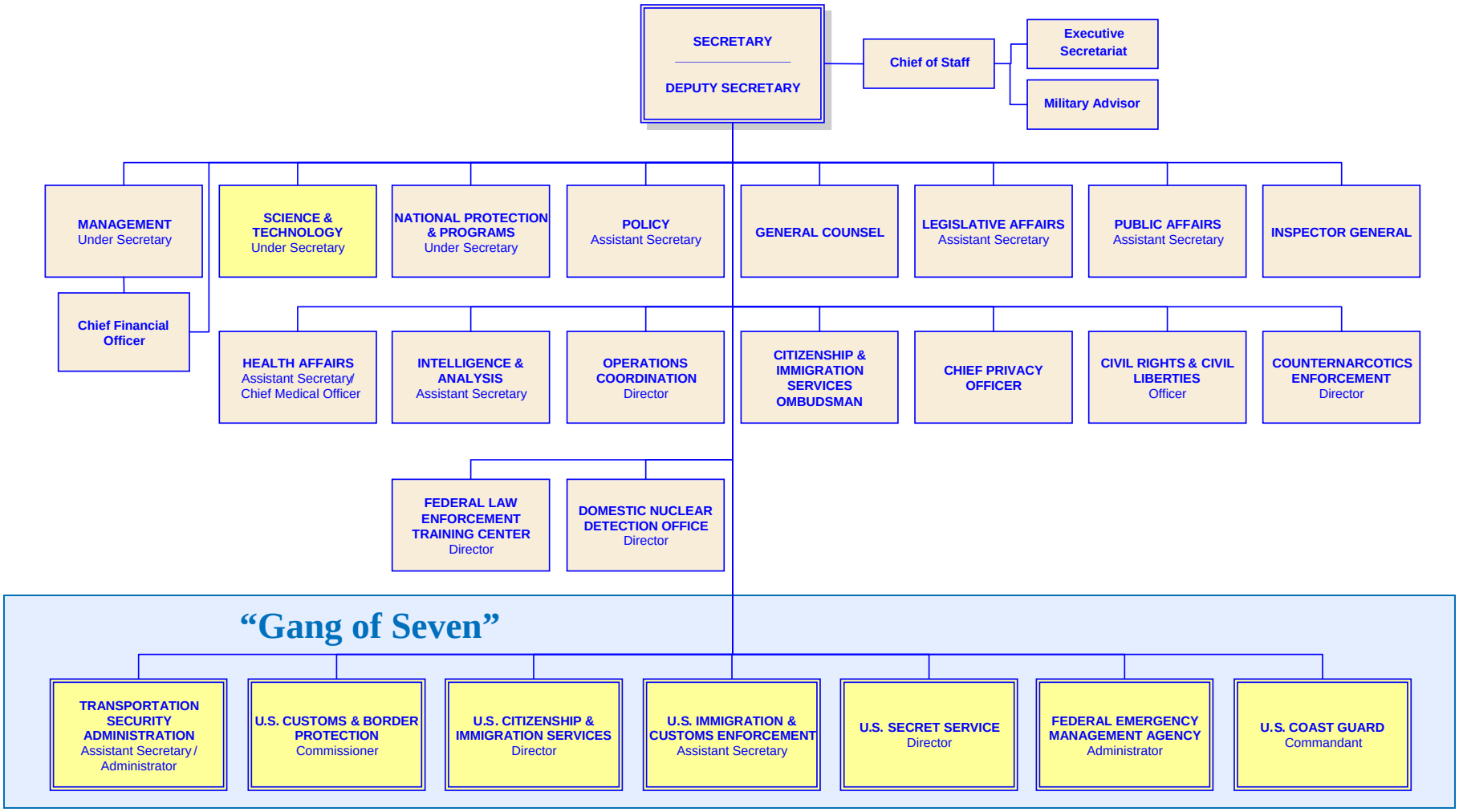
Homeland Security

Homeland Security Mission

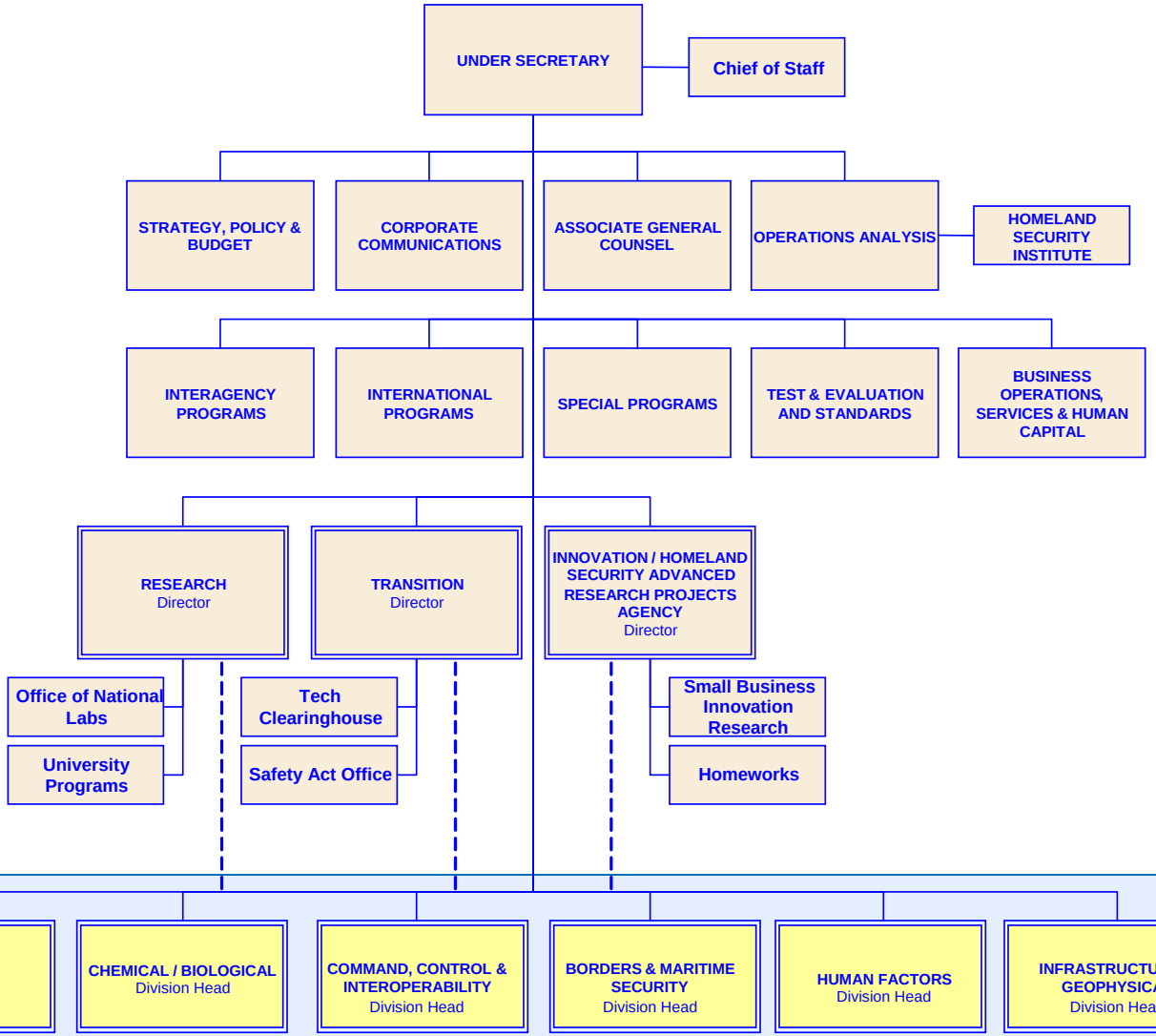
- Lead Unified National Effort to Secure America
- Prevent Terrorist Attacks Within the U.S.
- Respond to Threats and Hazards to the Nation
- Ensure Safe and Secure Borders
- Welcome Lawful Immigrants and Visitors
- Promote Free Flow of Commerce

Homeland Security

U.S. Department of Homeland Security



Office of the Under Secretary for Science and Technology



Divisions Drive S&T Interactions with Customers

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.

Homeland Security

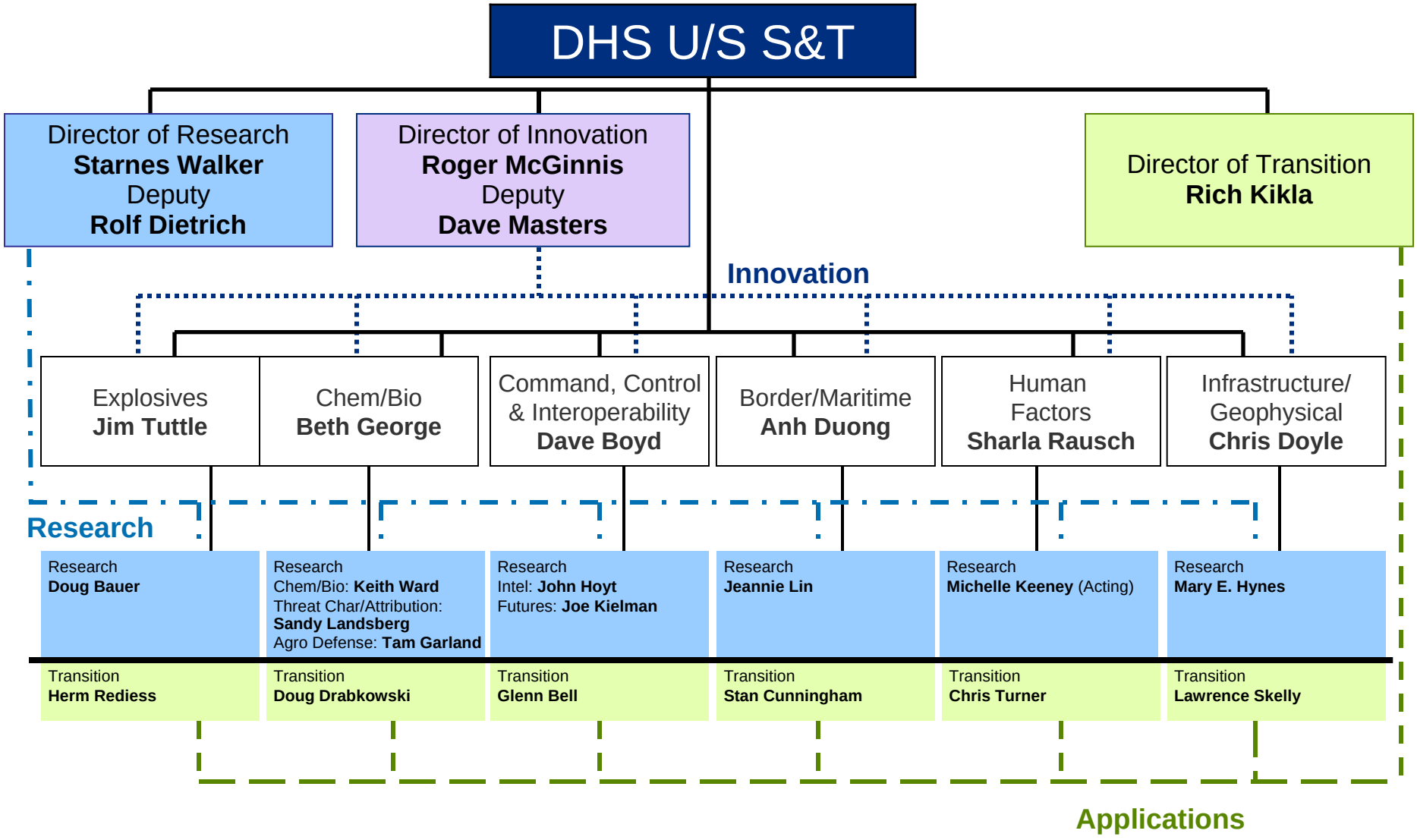
DHS S&T Investment Portfolio

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

Product Transition (0-3 yrs) • Focused on delivering near-term products/enhancements to acquisition • Customer IPT controlled • Cost, schedule, capability metrics	**Innovative Capabilities (1-5 yrs)** • High-risk/High payoff • "Game changer/Leap ahead" • Prototype, Test and Deploy • HSARPA
Basic Research (>8 yrs) • Enables future paradigm changes • University fundamental research • Gov't lab discovery and invention	**Other (0-8+ yrs)** • Test & Evaluation and Standards • Laboratory Operations & Construction • Required by Administration (HSPDs) • Congressional direction/law

Customer Focused, Output Oriented

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!

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

Source: Senior Executive Brief to Secretary Chertoff, Deputy Secretary Schneider and Leaders of G-7

A new model for Commercialization…

1. Development of 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

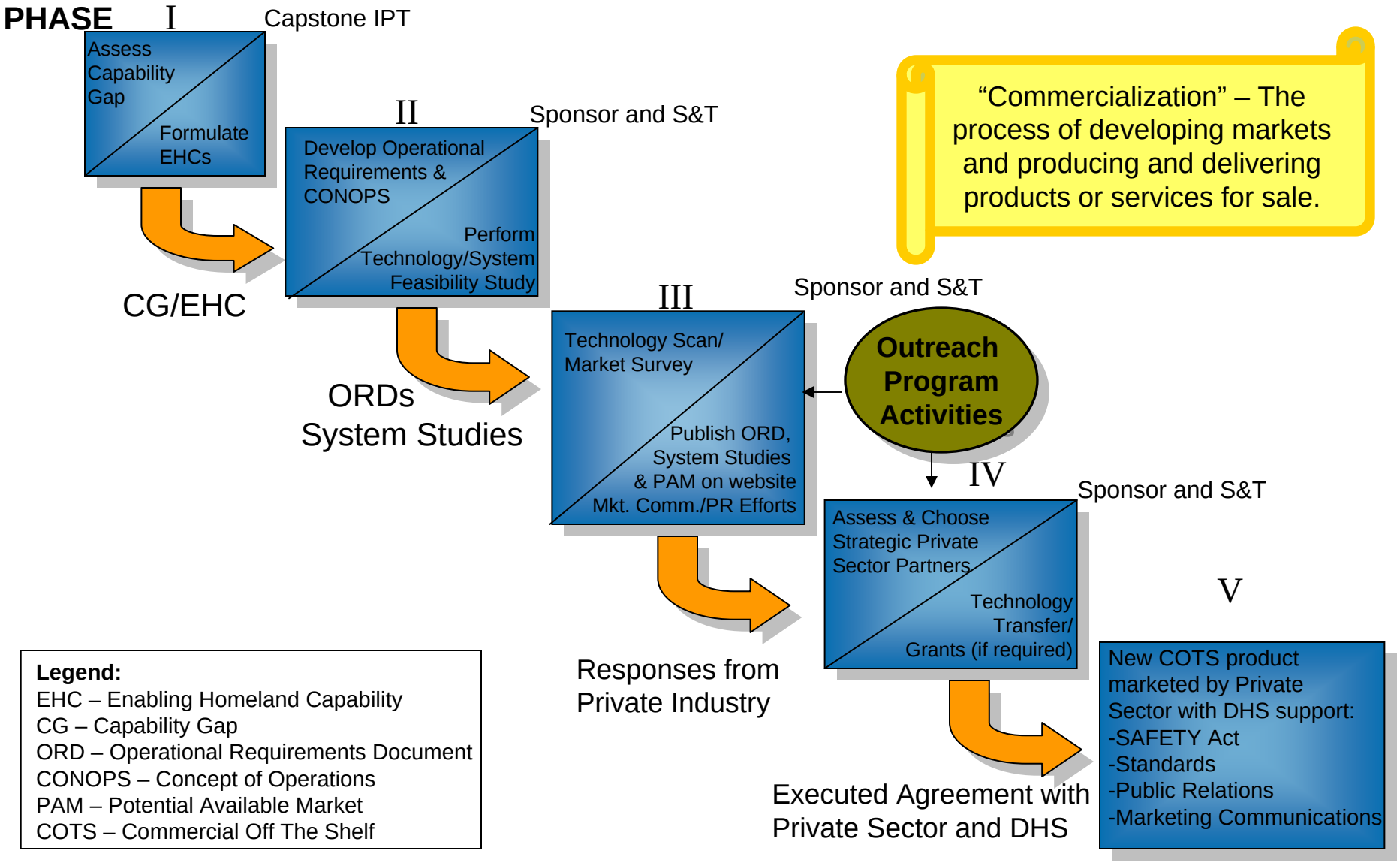
Differences from the Acquisition model:

- **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)**

Homeland Security

Source: Senior Executive Brief to Secretary Chertoff, Deputy Secretary Schneider and Leaders of G-7

Commercialization Process



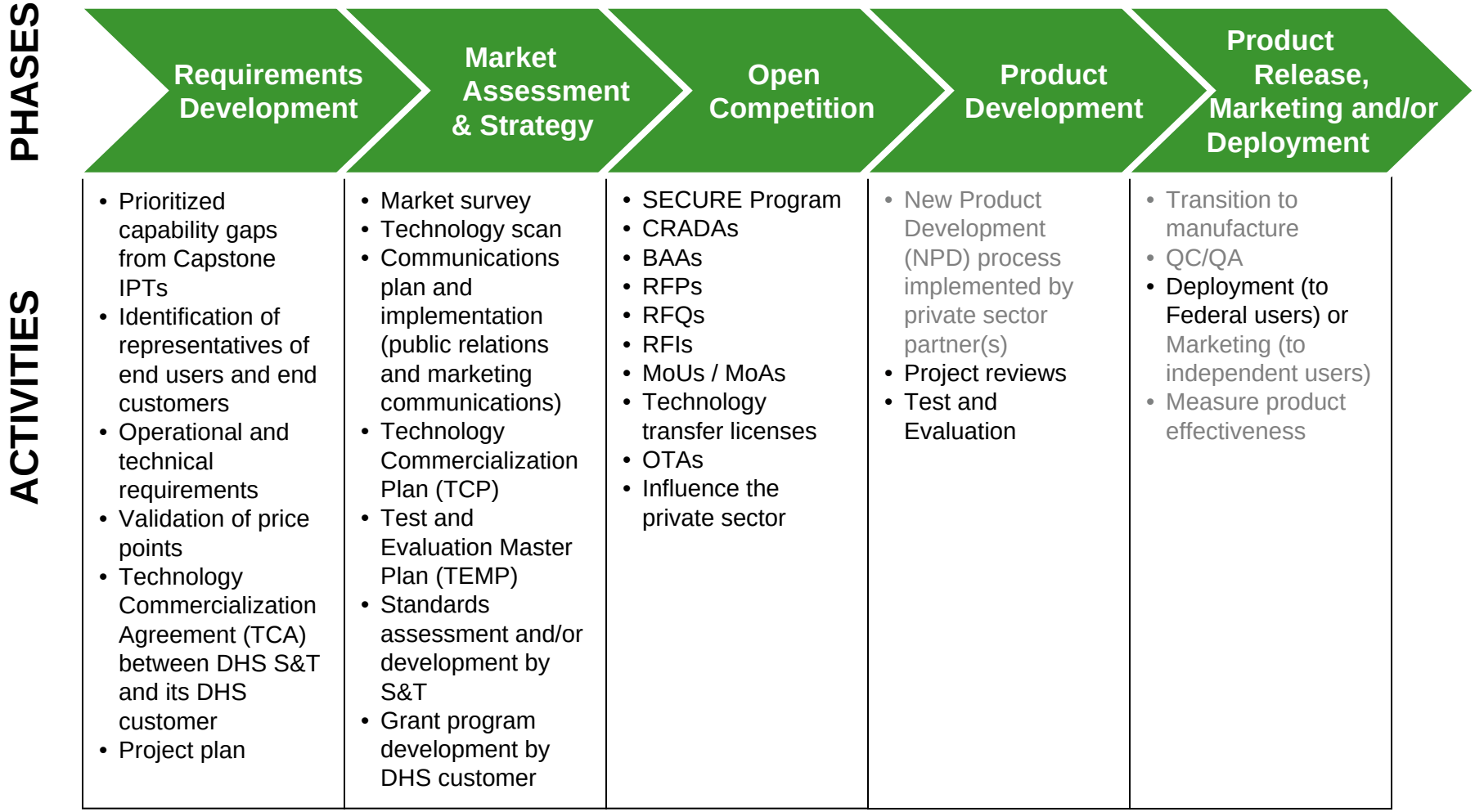
Legend:
EHC – Enabling Homeland Capability
CG – Capability Gap
ORD – Operational Requirements Document
CONOPS – Concept of Operations
PAM – Potential Available Market
COTS – Commercial Off The Shelf

Homeland Security

Source: Senior Executive Brief to Secretary Chertoff, Deputy Secretary Schneider and Leaders of G-7

Private Sector Outreach Process

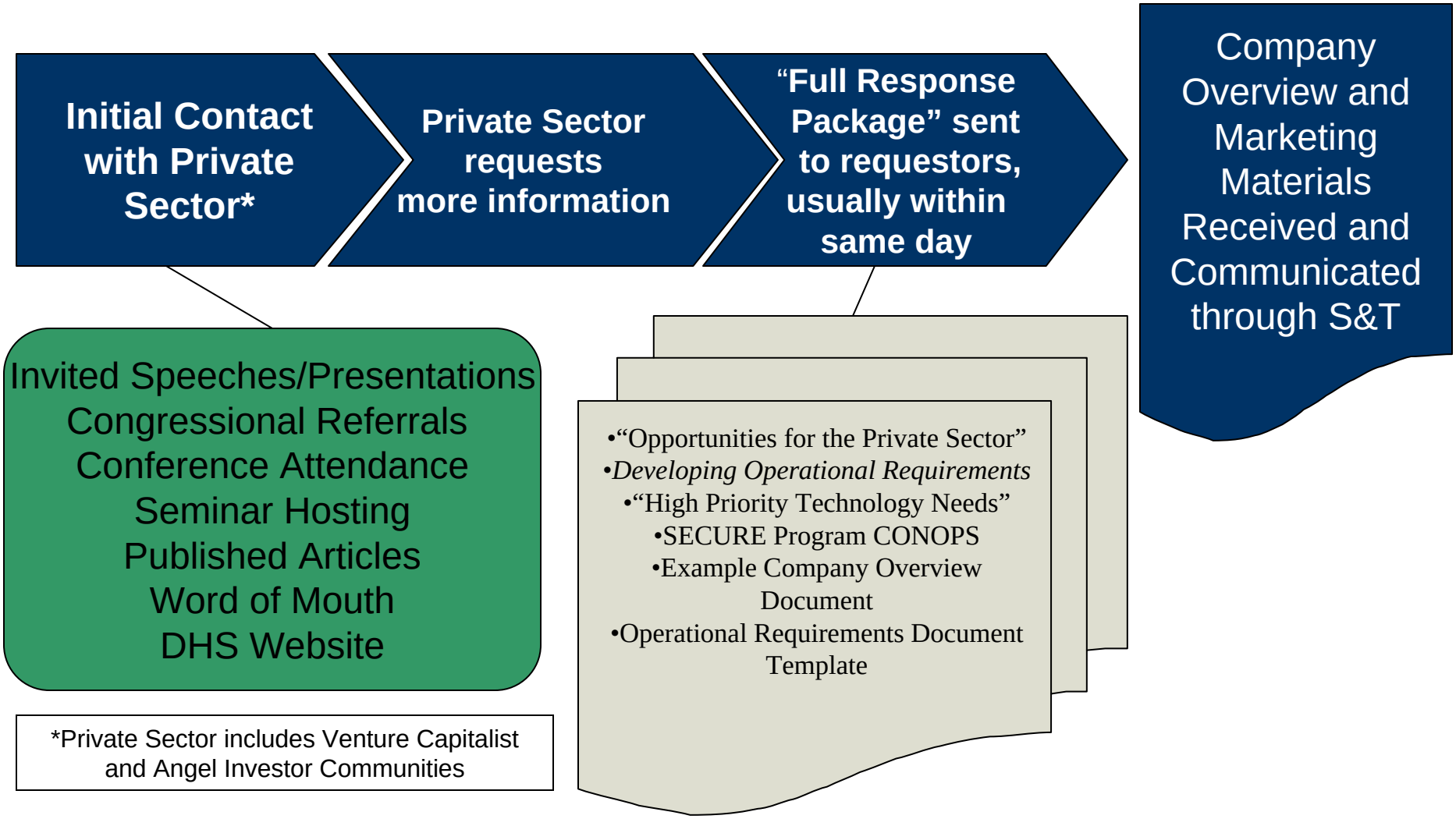
Requirements Development through Product Release



Legend: Black text = Government activities

Grey text = Private-sector activities

Contact with the Private Sector



*Private Sector includes Venture Capitalist and Angel Investor Communities

Homeland Security

10 Reasons to Partner with DHS Science & Technology

Reasons Color Legend:

Economics-based

Public Relations-based

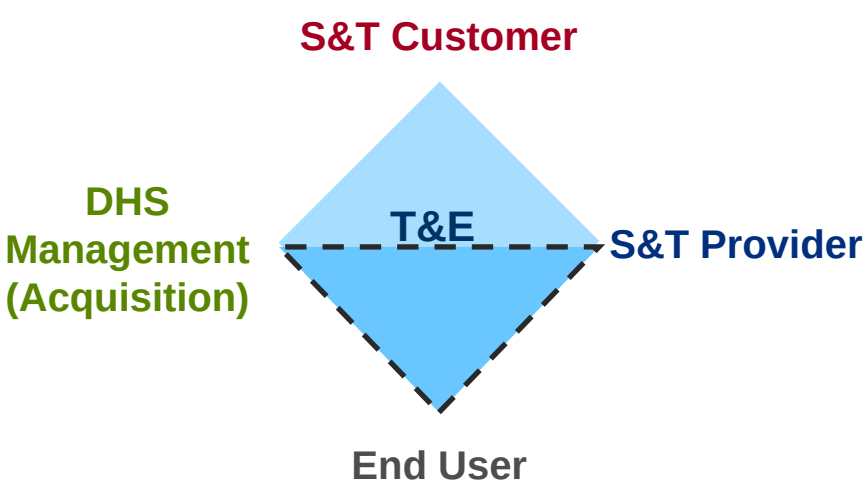
Business Development-based

Strategic Marketing-based

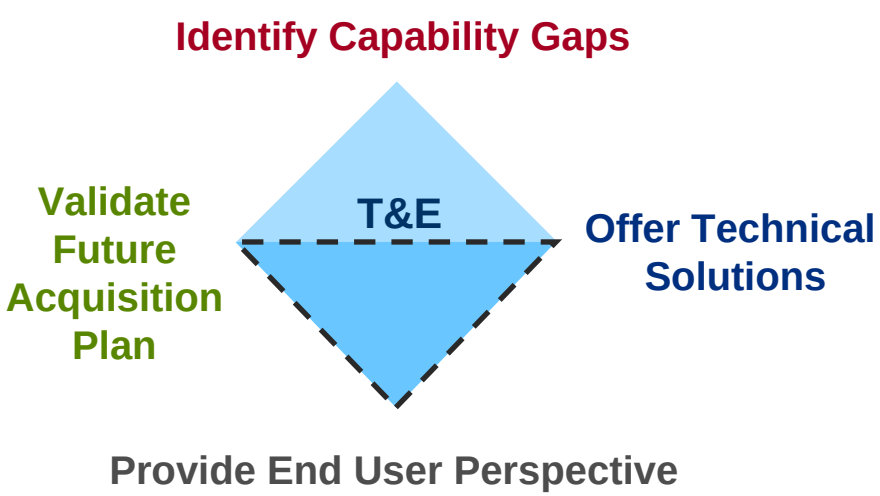
Technical Resources-based

1. Access to 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

S&T Transition Capstone IPTs Members and Function



- Industry Board of Directors Model
- Consensus-driven Process

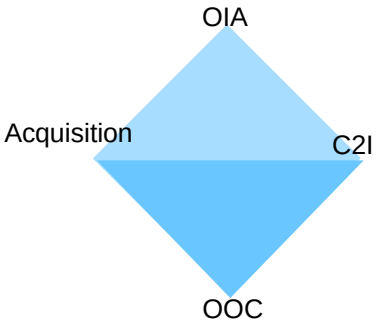


End Result :
Prioritized Investments in S&T

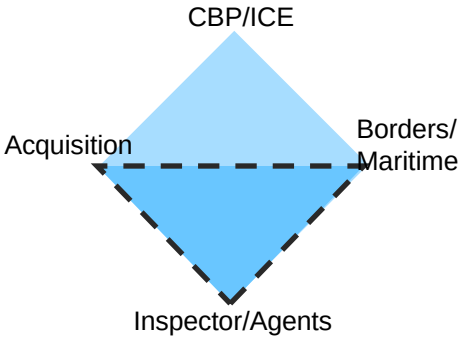
DHS Requirements/Capability Capstone IPTs

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

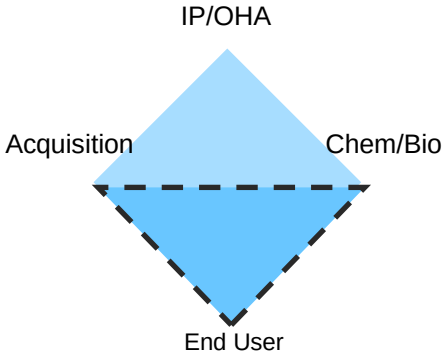
Information Sharing/Mgmt



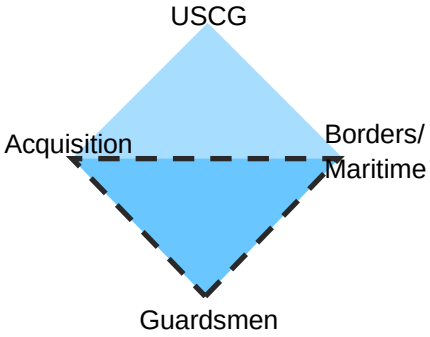
Border Security



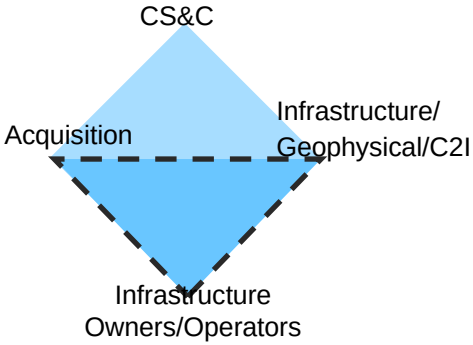
Chem/Bio



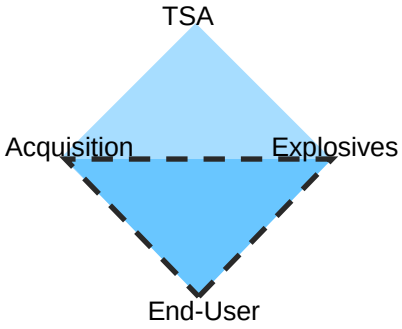
Maritime Security



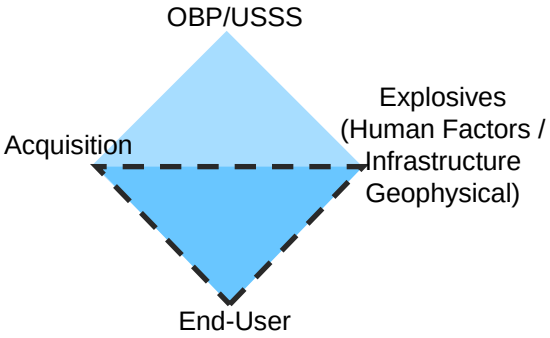
Cyber Security



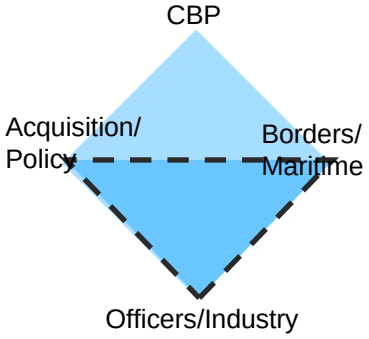
Transportation Security



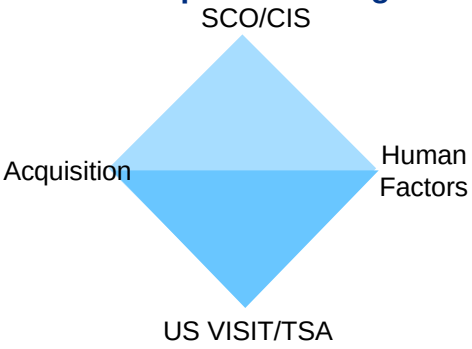
Counter IED



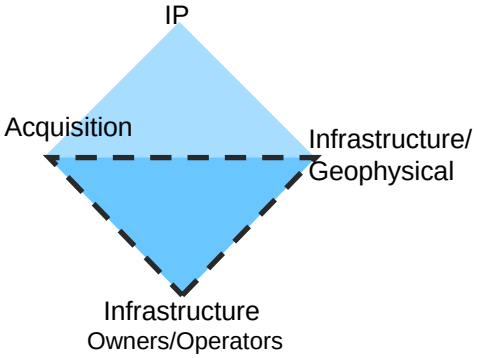
Cargo Security



People Screening

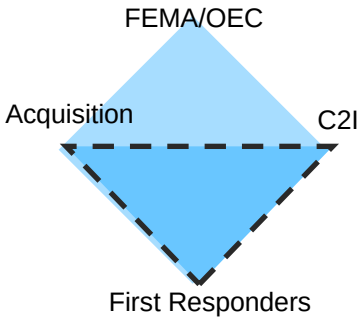


Infrastructure Protection

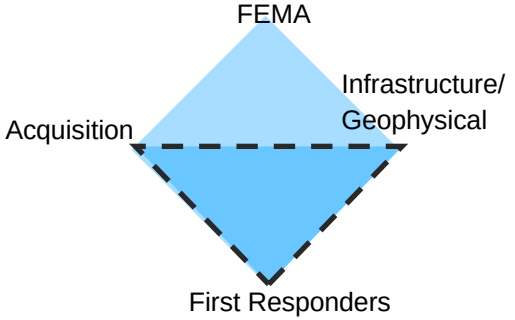


Incident Management

Interoperability

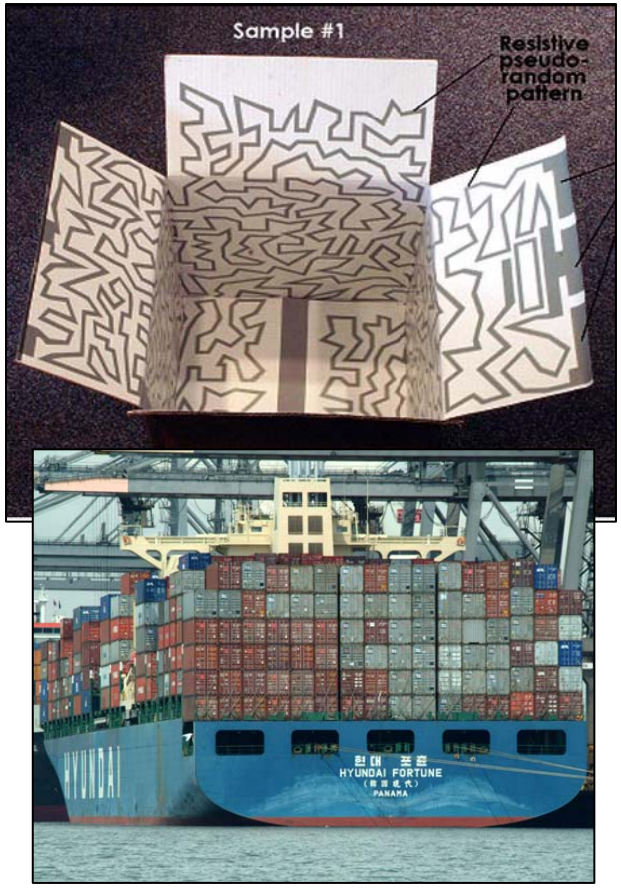


Prep & Response



Cargo Security

Representative Technology Needs

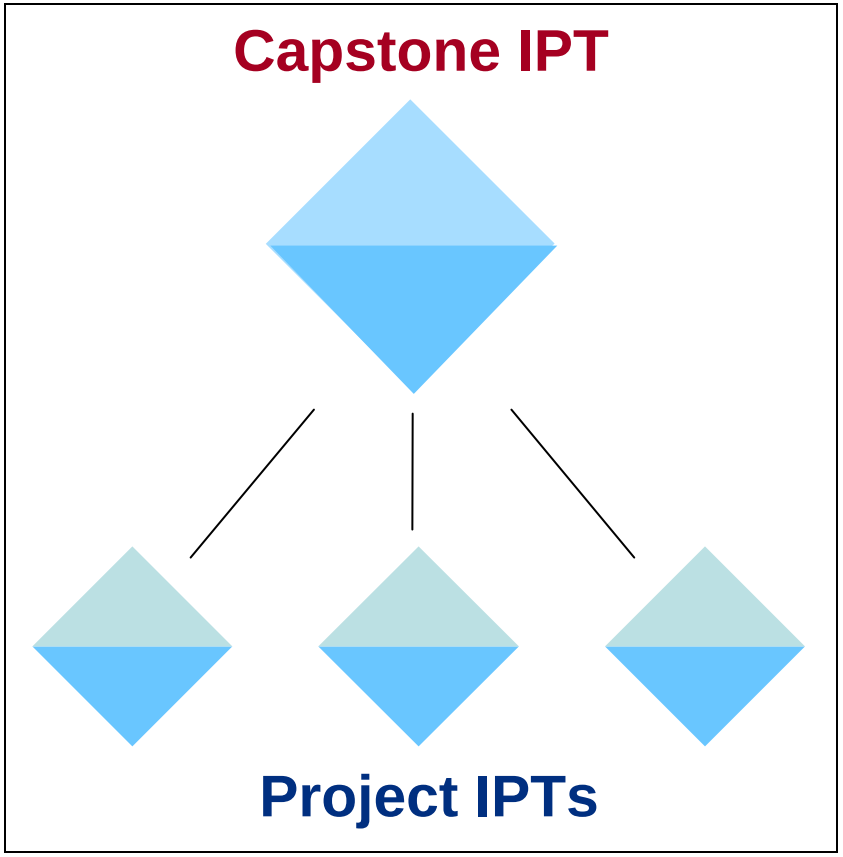


- Enhanced screening and examination by non-intrusive inspection
- Increased information fusion, anomaly detection, Automatic Target Recognition capability
- Detect and identify WMD materials and contraband
- Capability to screen 100% of air cargo
- Test the feasibility of seal security; detection of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

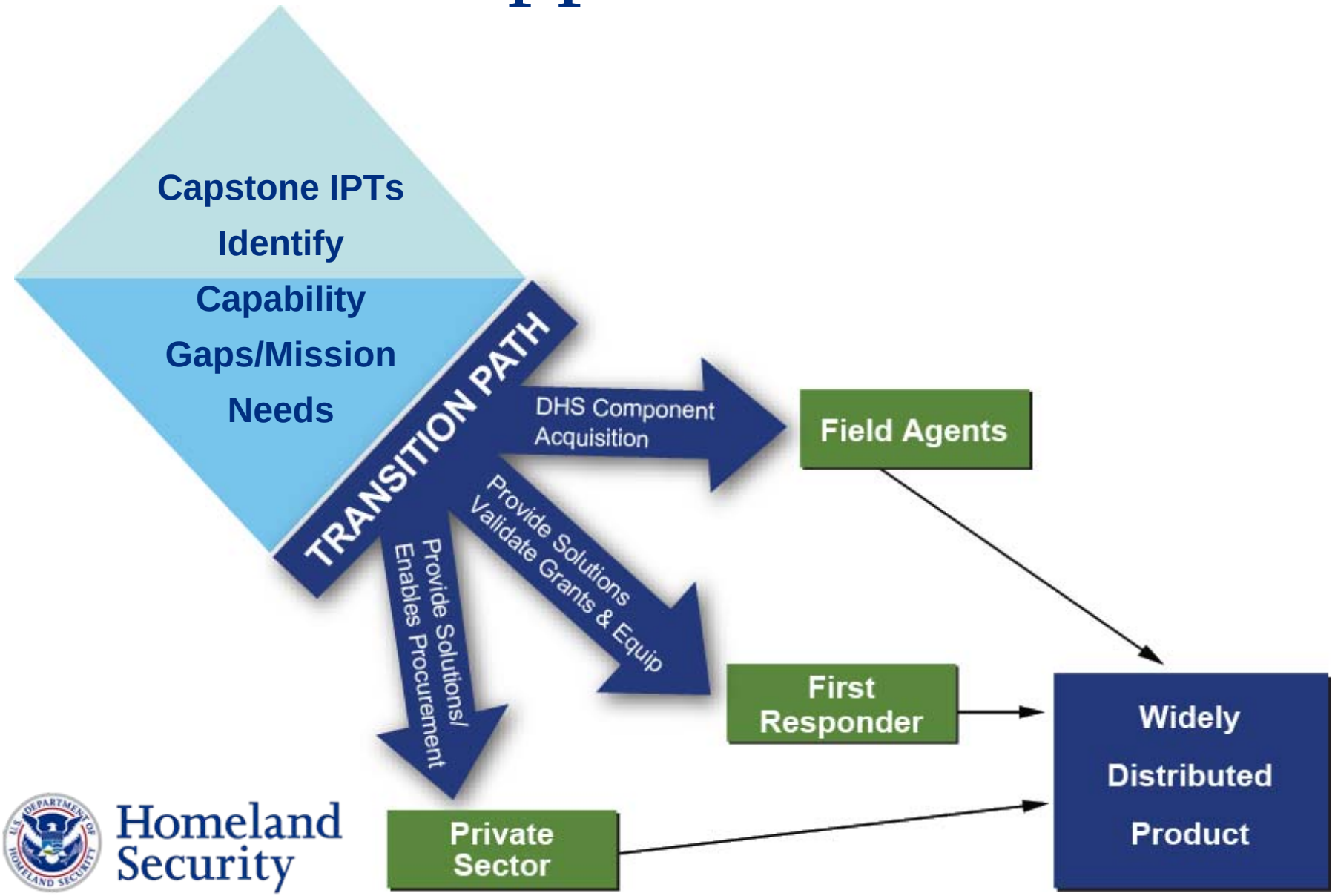
Source: S&T High Priority Technology Needs, May 2007

Establishment of Project IPTs: Detailed Specifications/Requirements

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



Transition Approaches



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")

Performance Requirement ("Metal detection & classification")

Functional Specification ("Detect metal > 50 gm")

Design Specification ("MTBF > 2000 hours")

Material Specification ("Use type FR-4 epoxy resin")

Operational Requirements

Technical Requirements

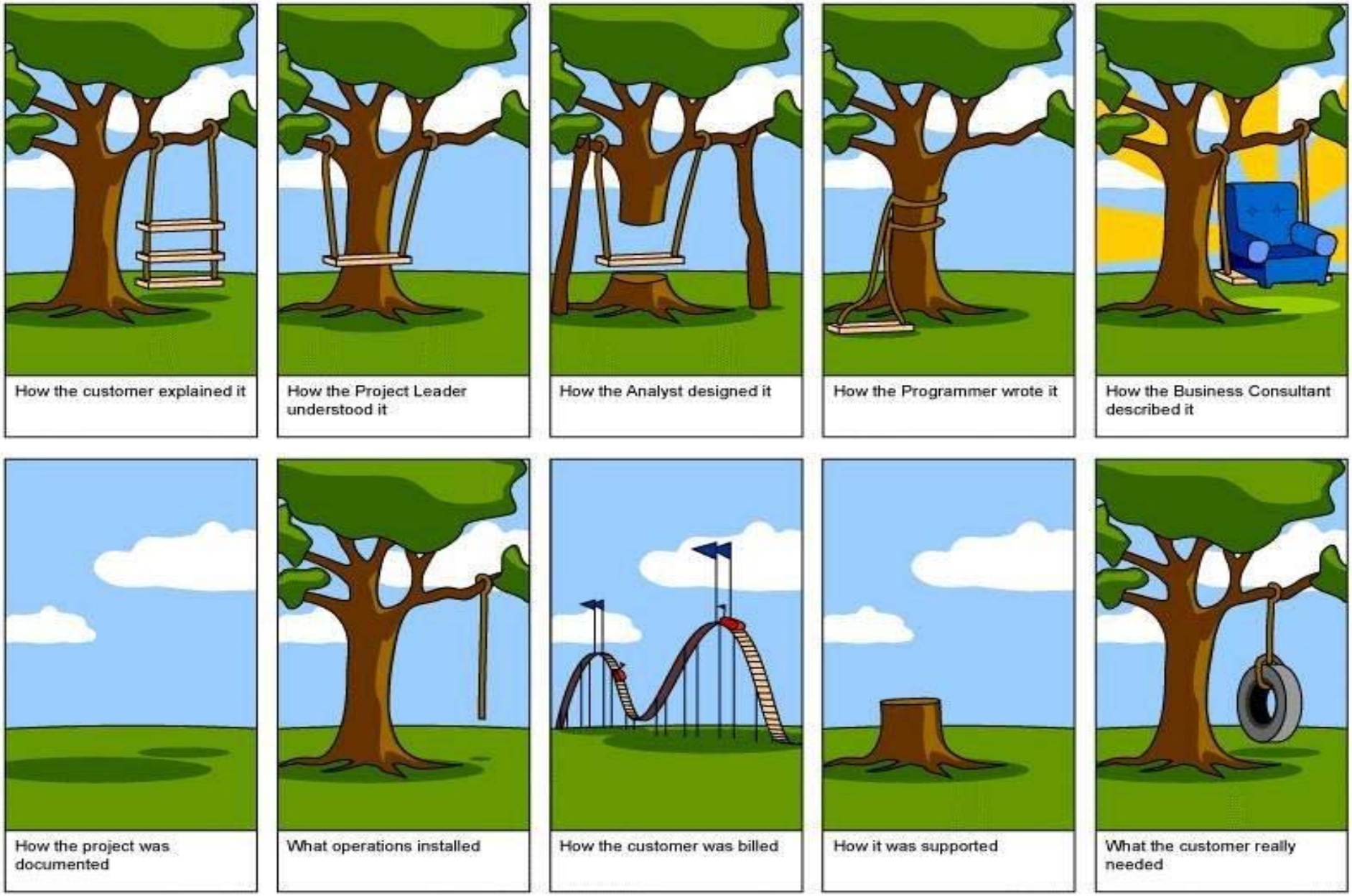
Low Level (quantitative)

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

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

Source: Senior Executive Brief to Secretary Chertoff, Deputy Secretary Schneider and Leaders of G-7

Does this look familiar?!



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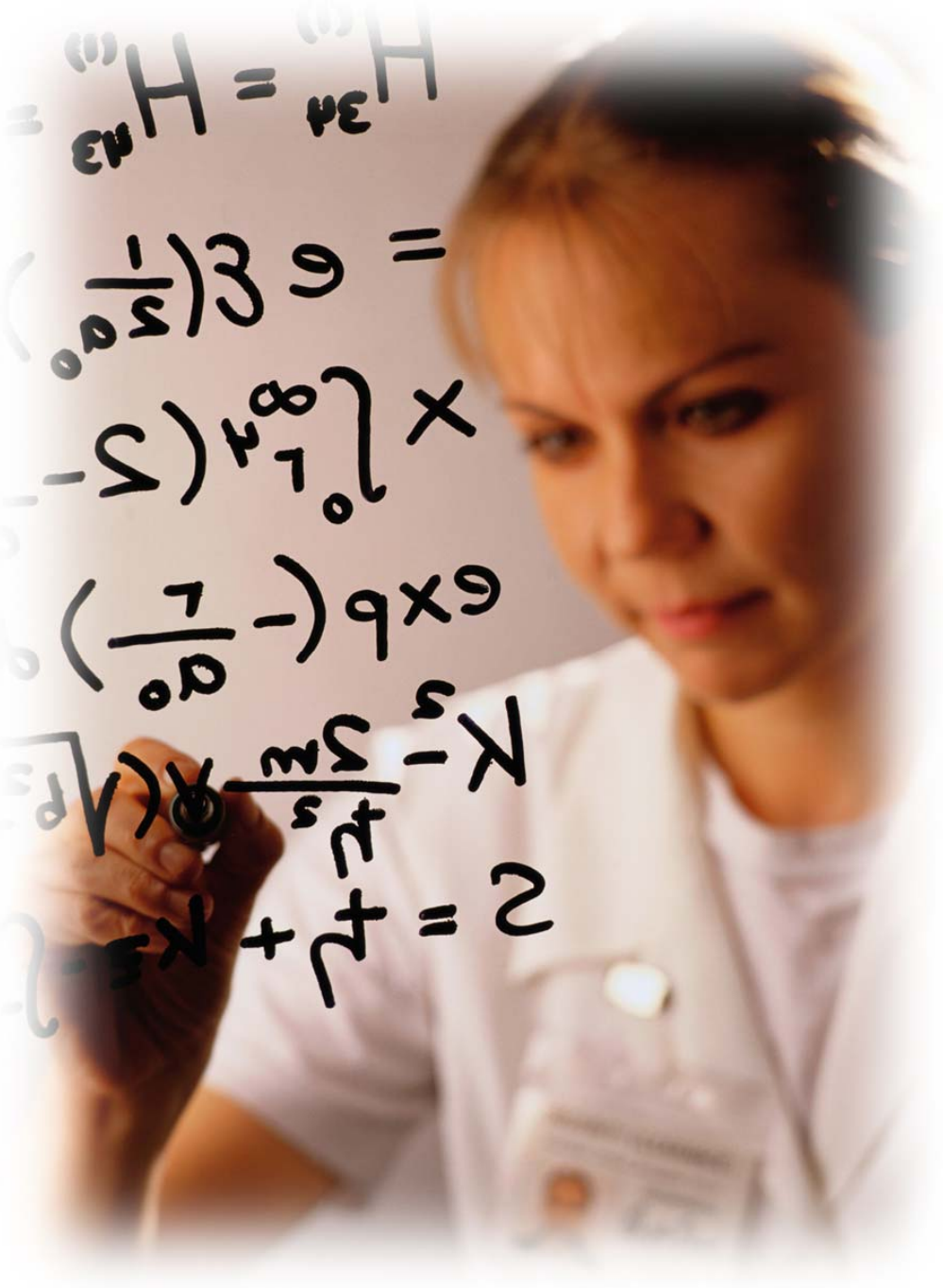
Getting on the "Same Page"

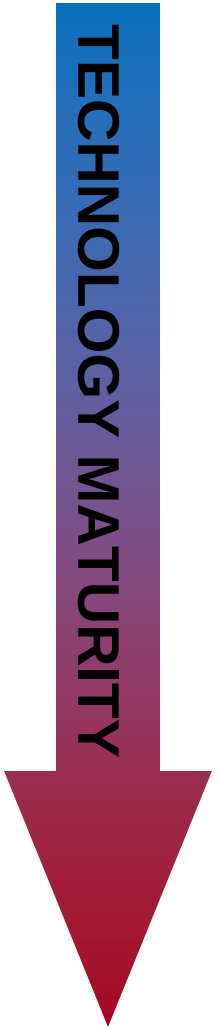
- Historical Perspective
- Language is Key
- Communication is Paramount



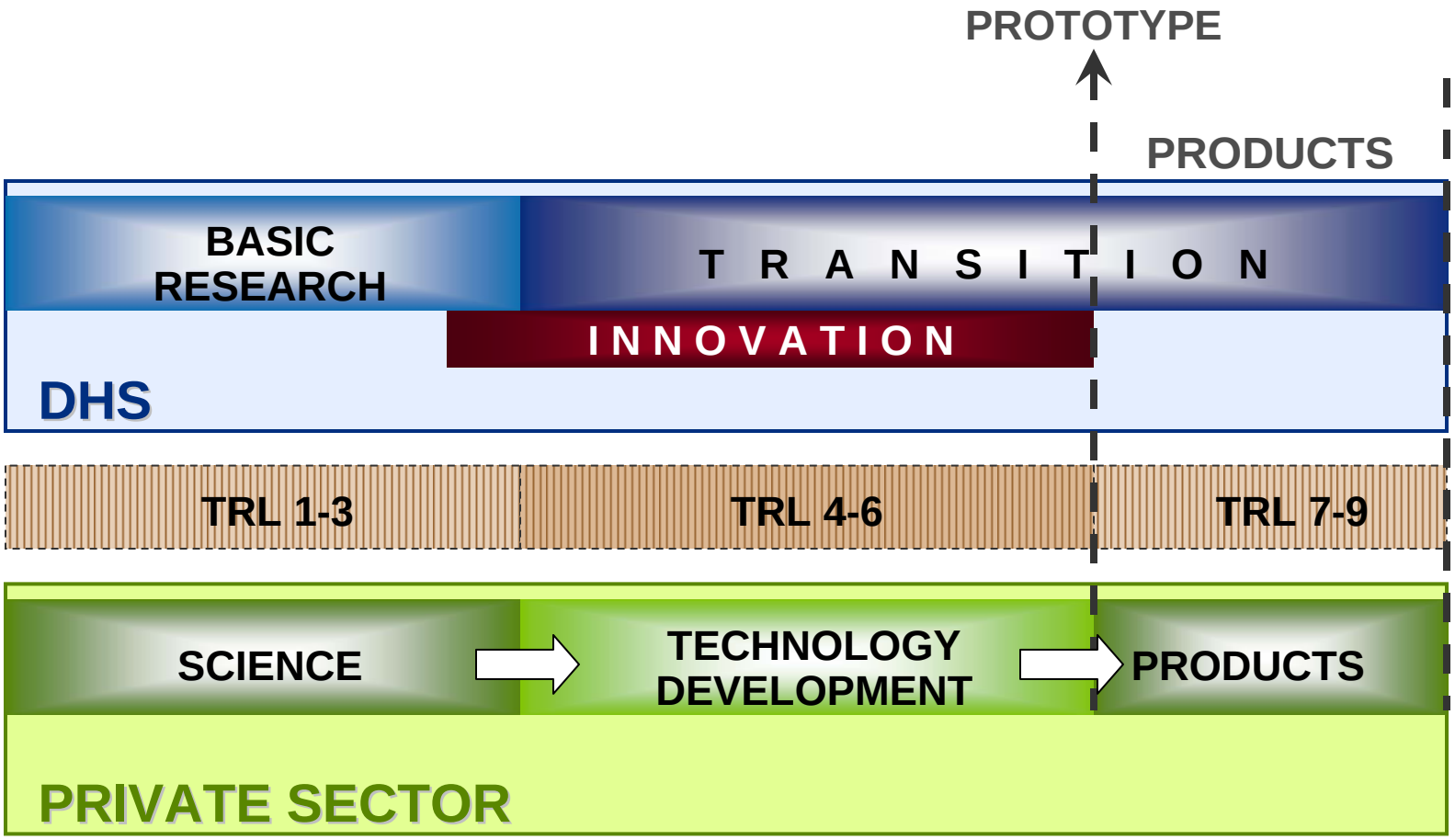
Technology Readiness Levels (TRLs): Overview

TRLs are NASA-generated and Used Extensively by DoD

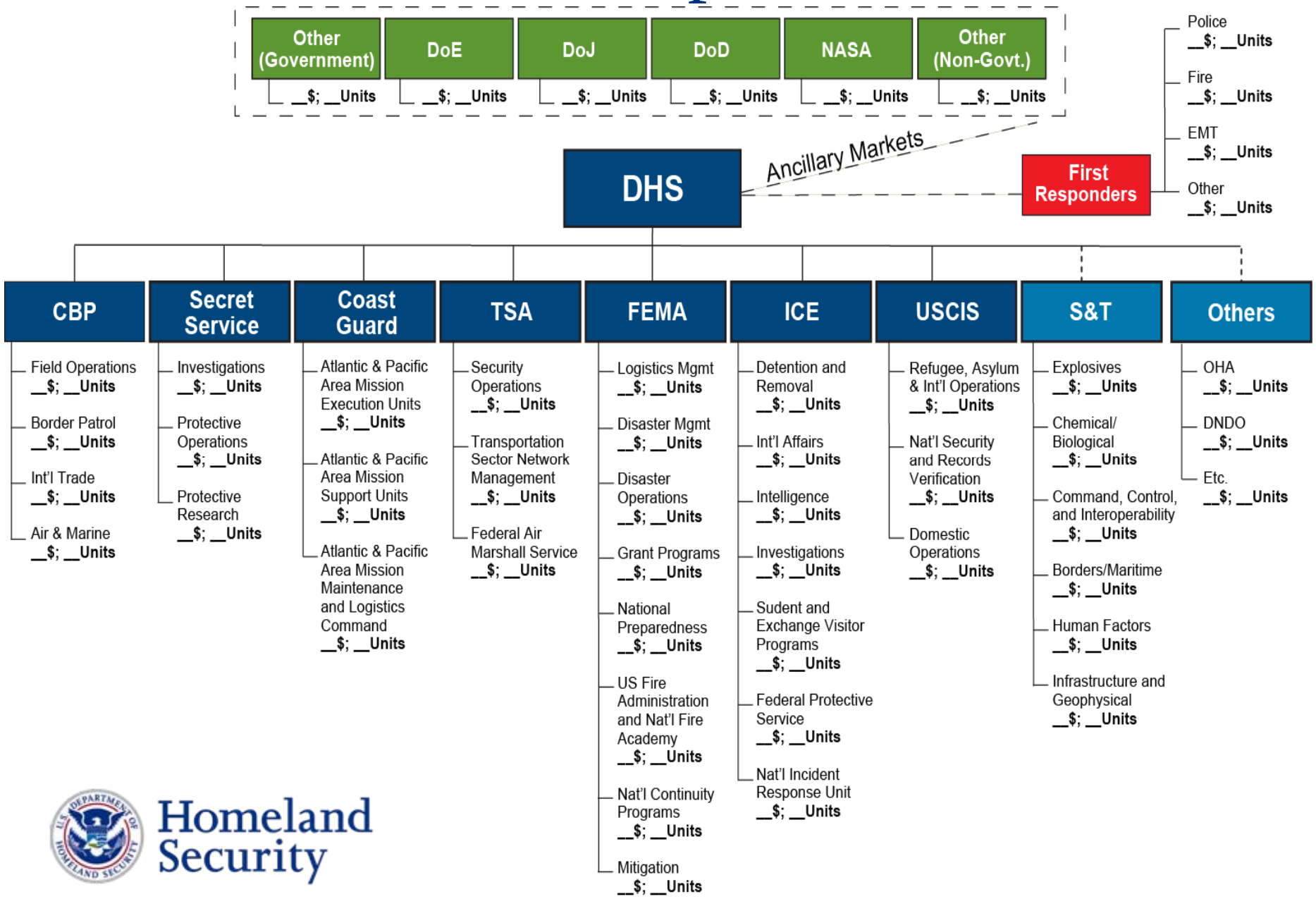
Basic principles observed and reported	1	Basic
Technology concept and/or application formulated	2	
Analytical and experimental critical function and/or characteristic	3	
Component and/or breadboard validation in laboratory environment	4	Applied
Component and/or breadboard validation in relevant environment	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	



TRL Correlation: DHS and Private Sector



Market Potential Template

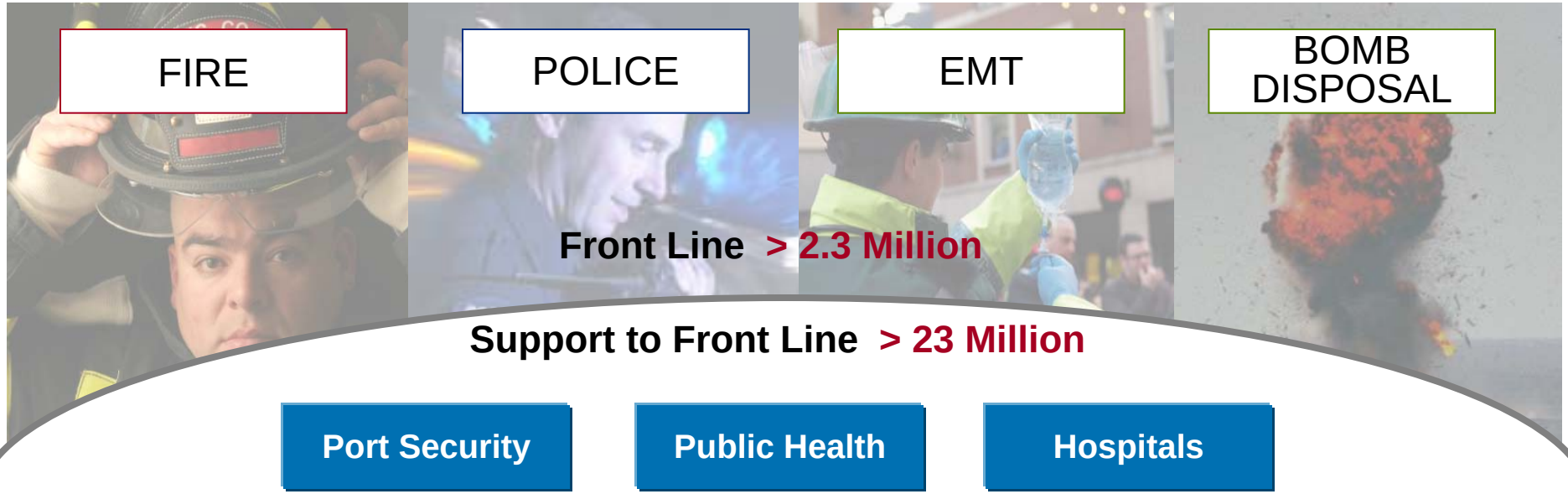


Homeland Security

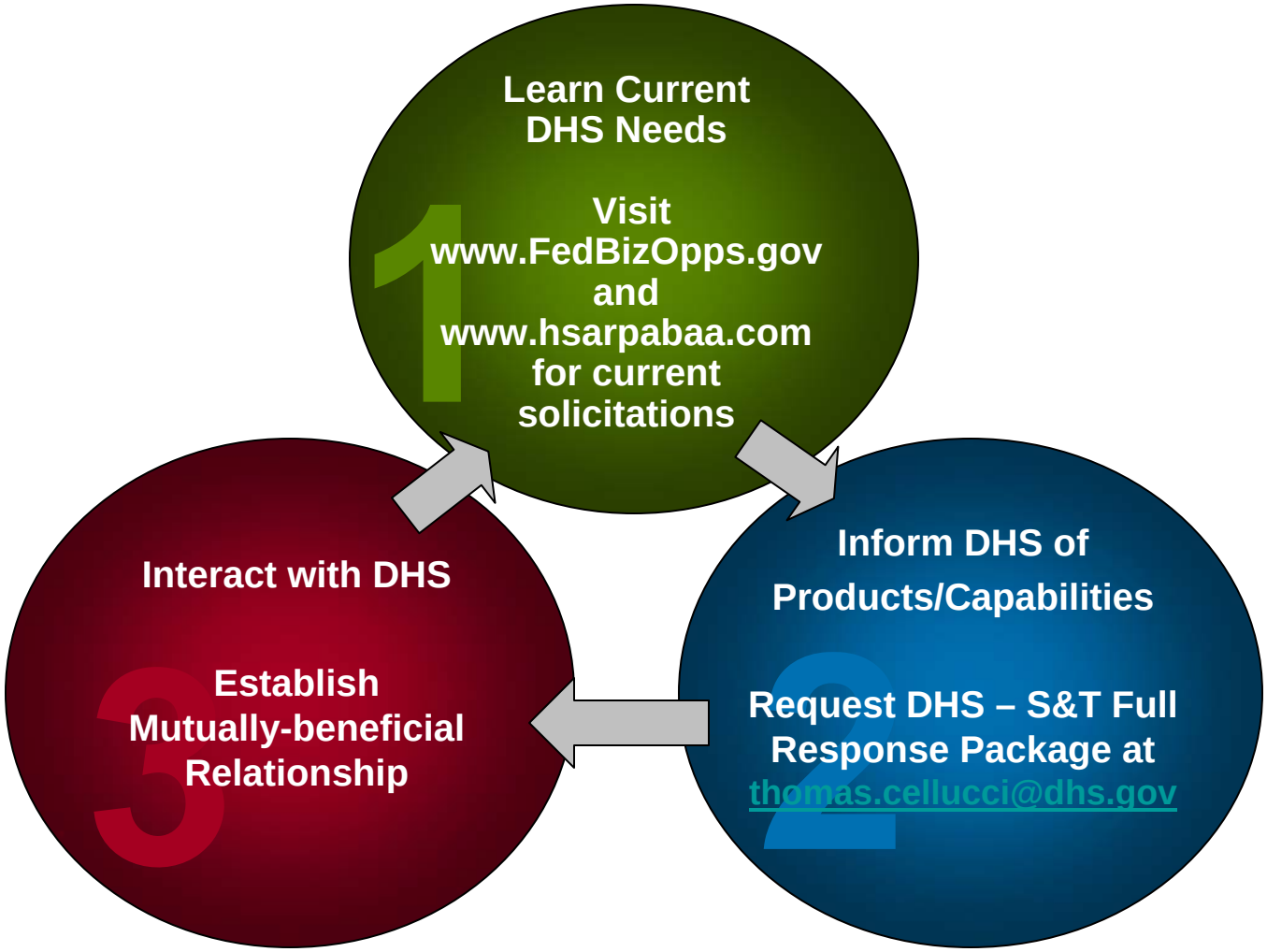
Conservative Estimate: Number of First Responders in the US

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

Total: > 25.3 Million Individuals



Call to Action: Mutual Benefits Create "Win-Win-Win" Relationships



SECURE Program

"Mutually-Beneficial Goals Achieved Through Rigorous Process"

Goals	Process
System **E**fficacy through **C**ommercialization	Alignment to DHS Detailed Requirements
	Private Sector Product Development
Utilization	Product Launch, Sales and Marketing
Relevance	Customer-Focused Capstone IPT Process
Evaluation	Third-party Test & Evaluation with DHS Validation

Homeland Security

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.

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


DHS | Open for Business - Opportunities - Microsoft Internet Explorer
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Information Technology Acquisitions (EAGLE, FirstSource)
Forecast of Contract Opportunities
DHS Advance Acquisition Planning: Forecast of Contract Opportunities - Includes projections of all anticipated contract actions greater than $100,000
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Science and Technology Opportunities
Homeland Security Advanced Research Projects Agency (HSARPA)
HSARPA Small Business Innovation Research (SBIR) Program
Domestic Nuclear Detection Office (DNDO) Business Opportunities
SAFECOM Program
The Support Anti-terrorism by Fostering Effective Technologies Act (SAFETY Act) of 2002
Centers of Excellence
System Efficacy through Commercialization, Utilization, Relevance and Evaluation (SECURE) Program
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The threat level in the airline sector is High or Orange. Read more.
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Internet

Federal Business Opportunities

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

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

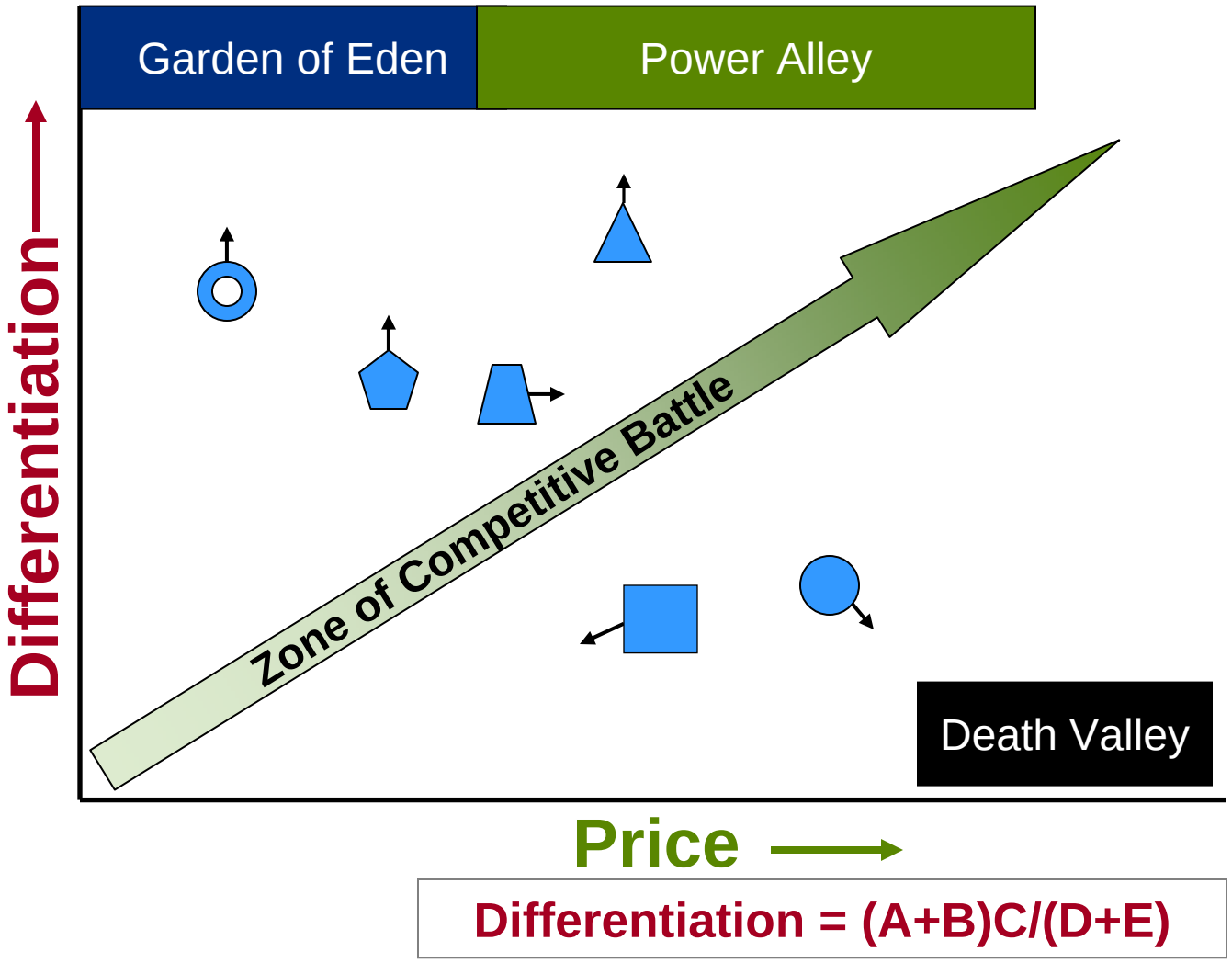
take advantage of...

- **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

Show Us the Difference…

Hall's Competitive Model



As a function of:

- Market
- Application
- Technology

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

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

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 • only for identified test event(s) and for limited duration (=3yrs)	Liability cap • for any and all deployments in 5-8 year term	Government Contractor Defense (GCD) • for any and all deployments in 5-8 years term
Examples	• EDS not yet TSL Certified • Novel incident pattern matching service	• Radiological detector with laboratory success Opt-out screeners, only similar projects completed	• 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)

Department of Homeland Security - Science & Technology Directorate - SBIR Program - Microsoft Internet Explorer

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The DHS S&T SBIR FY08.2 solicitation closed on July 8, 2008.

Department of Homeland Security
Science and Technology Directorate (S & T Directorate)
Small Business Innovation Research (SBIR) Program

The DHS S&T SBIR Program was initiated in 2004. For the DHS S&T SBIR Program, two solicitations are issued per year. Generally, they will be issued in November and May.

Solicitation topics are developed by Program Managers in each of the Science and Technology (S&T) Divisions, and from time to time, by the Offices of Innovation and Basic Research. The annual solicitations consist of topics that are relevant to the Chemical and Biological, Borders and Maritime Security, Human Factors, Explosives, Infrastructure and Geophysical, and Command, Control and Interoperability Divisions.

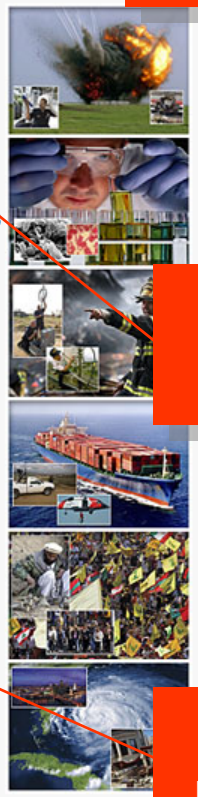
Similar to the R&D programs of the S&T Directorate, the SBIR topics generally address the needs of the seven DHS Operational Units, i.e., U.S. Coast Guard, U.S. Transportation Security Administration, U.S. Customs and Border Protection, Federal Emergency Management Agency, U.S. Citizenship and Immigration Services, U.S. Immigration and Customs Enforcement, and U.S. Secret Service, as well as First Responders.

For the Phase II SBIR effort, the DHS S&T SBIR Program has a Cost Match feature for SBIR projects that attract matching cash from an outside investor. The purpose is to focus SBIR funding on those projects that are most likely to be developed into viable new products that DHS and others will buy and that will thereby make a major contribution to homeland security and/or economic capabilities. Click here for more information about the Cost Match feature.

The DHS S&T SBIR Program has several processes in place to accelerate the Phase I and Phase II award process to further satisfy operational requirements and commercial application.

- Phase I awards are typically made within 90 days of selection.
- Invited Phase II projects will be reviewed and awards will be made incrementally, as quickly as possible under the Jump Start feature, to maintain the momentum of the Phase I effort. The Phase II proposal invitation process expeditiously identifies those Phase I awardees deserving of Phase II awards.

To learn more about the SBIR Program, please visit http://www.sba.gov/SBIR/indexsbir-sttr.html.



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Safety Act

Other Funding 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

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

TechSolutions Investments

Seatbelt Safety for Emergency Vehicles

Next Generation Breathing Apparatus

Fire Ground Compass

Under Consideration

Vehicle Mounted Chem/Bio Sensor Detection

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
Anh Duong	S&T-BordersMaritime@dhs.gov
Sharla Rausch	S&T-HumanFactors@dhs.gov
Chris Doyle	S&T-InfrastructureGeophysical@dhs.gov
Rich Kikla	S&T-Transition@dhs.gov
Starnes Walker	S&T-Research@dhs.gov
Roger McGinnis	S&T-Innovation@dhs.gov

Summary

Detailed Requirements

Sizeable Market Potential

Delivered Products – PERIOD!

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

Questions/Comments:

Thomas A. Cellucci, Ph.D., MBA

thomas.cellucci@dhs.gov

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.

Homeland Security