Introduction to Commercialization at U.S. Department of Homeland Security



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Discussion Guide

- Commercialization Office Overview
- Commercialization Activities at DHS
- SECURE[™] and FutureTECH[™] Public-Private Partnerships
- Highlights
- Summary



S&T Office of Commercialization

Mission:

To develop and execute programs and processes that identify, evaluate and commercialize technologies that result in widely-distributed products or services that meet the operational requirements of the Department of Homeland Security's operating components, first responders, critical infrastructure/key resources owners and operators and other stakeholders.

Why Commercialization?

The Private Sector is willing and able to use its own money, resources, expertise and experience to develop and produce fully developed products and services for DHS. The Private Sector wants/needs two things from DHS : 1. Detailed Operational Requirements; and 2. a Conservative Estimate of the Potential Available Markets.

Question:

Should DHS solely develop S&T (and products) through an Acquisition Process -- even though DHS' budget is far less than DoD's and DHS has something much more valuable than DoD to offer the Private Sector-- *substantial Potential Available Markets*?

Commercialization Office: Major Activities



Homeland Security

http://www.dhs.gov/xabout/structure/ gc 1234194479267.shtm

Capstone IPT Capability

Gaps

Big-A Acquisition

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

Performance is King

Relationship between users and product developer is usually remote

Hybrid Commercialization Process

Pure Commercialization

- 1. Requirements derived by Private Sector
- 2. Product development funded by the developer (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

DHS Hybrid Commercialization Process



"Commercialization" – The process of developing markets and producing and delivering products or services for sale.

Transition Approaches Capstone IPTs Identify Capability TRANSTIONPATH **Gaps/Mission Needs** DHS Component **Field Agents** Acquisition Provide Solutions Lalidate Granks & Equip Provide Solutions/ Enables Procurem Procurement First Widely Responder Distributed Homeland Private Product Security Sector

Market Potential Template



					First Re	espon	ders						
EMS	Fire Pol	ice Bo Disp	mb Po bosal Sec	ort urity	Public Health Me	dical	nsportati on	Emergency Management	Search & Rescue	Venue Security	Public works/ Utilities	School Security	Response Volunteers
Ambulance Corps _\$; _Units Basic life support - providers (i.e., EMTs) Advanced life support - (i.e. Paramedics) _\$; _Units Aero medical - evacuation _\$; _Units Ambulance Corps _\$; _Units	Retained fire departments _\$; _Units Volunteer firefighters _\$; _Units Military fire suppression crews _\$; _Units Incident investigation teams _\$; _Units Special technical fire teams (forest, chemical, etc.) _\$; _Units Fire Department HAZMAT teams _\$; _Units Wildland Firefighting _\$; _Units University Fire Fighters _\$; _Units	Local police departments _\$; _ Units Military police units _\$; _ Units Federal law enforcement agencies _\$; _ Units State police departments _\$; _ Units Riot control teams _\$; _ Units SWAT teams _\$; _ Units SWAT teams _\$; _ Units Diplomatic protection teams _\$; _ Units	Police bomb squads _\$; _ Units Federal bomb disposal teams Military explosive ordnance disposal teams _\$; _ Units	Port police \$; Units US Coast _Guard _\$; Units	Toxic/ corrosive – agents _\$; _ Units Biohazards _\$; _ Units Asphyxiate s _\$; _ Units Radioactiv e agents _\$; _ Units	Public/ University hospitals S; _ Units Private/For Profit hospitals _\$; _ Units Walk-In cl \$;Unit Private m \$;Unit	Transit _ police _\$; _ Units inics ts edical practice ts	Emergency Operations -Centers _\$; _Units 911 Call Centers _\$; _Units	Urban Search & Rescue _\$; _ Units Rural Search & Rescue _\$; _ Units Dive Team: _\$; _ Units	US Park Police _\$; _ Units _ Private S _\$; _ Uni	Public utility protection services _\$; _ Units ecurity its	Universi public safety teams _\$; _ Units	ιγ

Critical Infrastructure Key Resources (CIKR)

Agriculture and Food	Defense Industrial Base	Energy	Public Health and Healthcare	National Monuments and Icons	Banking and Finance	Water	Chemical	Commercial facilities	Emergency Services F	Materials, Reactors and	Telecommunic ations	Critical Manufacturing	Postal and Shipping Services	Transportation	Information Technology
Food Retail 	Industrial Base Defense Contractors _\$;_Units Industry analysts _\$;_Units Think tanks/researc h institutions _\$;_Units University partnership programs _\$;_Units National laboratories _\$;_Units	Coal mining operations _\$; _Units Coal power plants _\$; _Units Coal equipment manufacturers _\$; _Units Hydroelectric _\$; _Units Dam operations _\$; _Units _\$; _Units _Siar power _\$; _Units Public utilities companies _\$; _Units Oil companies _\$; _Units	Ind HealthCare Public/Univers ity hospitals _\$; _Units Private/For Profit hospitals _\$; _Units Clinics _\$; _Units Private medical practices _\$; _Units Medical laboratories _\$; _Units Health insurance _\$; _Units Health insurance _\$; _Units Medical providers _\$; _Units Medical equipment manufacturers _\$; _Units Biotechnology manufacturers _\$; _Units Medical equipment manufacturers _\$; _Units Medical equipment manufacturers _\$; _Units Medical equipment manufacturers _\$; _Units Medical equipment equipment eq	Guided tour -services _\$; _Units Travel -services _\$; _Units Lodging/Hotel _\$; _Units Guest services/ -tourist hospitality \$cuving services \$; _Units People moving services \$; _Units Private security _\$; _Units	Inance Credit lending Institutions _\$; _Units Commercial Danking _\$; _Units Consumer banking _\$; _Units Consumer banking _\$; _Units Building societies/ Private banks _\$; _Units Building societies/ Private banks _\$; _Units Global financial soriceties/ Private banks _\$; _Units Global financial societies/ Private banks _\$; _Units Community development inst _\$; _Units Community banks _\$; _Units Community banks _\$; _Units Community banks _\$; _Units Cavings and Loans _\$; _Units Insurance companies _\$; _Units Insurance companies _\$; _Units Reinsurance companies _\$; _Units Stock brokerages _\$; _Units Capital market banks _\$; _Units Custody services _\$; _Units Angel investment _\$; _Units	Public utilities _\$; _ Units Desalinization plants _\$; _ Units Equipment manufacturers _\$; _ Units Pipe and water control device manufacturers _\$; _ Units itutions	Inorganic chemical production 	Acclifice Hotels \$;Units Shopping centers _\$;Units Stadiums and sport arenas _\$;Units Schools \$;Units Commercial office buildings _\$;Units Zoos and Aquariums _\$;Units Zoos and Aquariums _\$;Units Amusement parks _\$;Units	Services Fire Departments S; Units Law enforcement agencies S; Units Search and rescue teams S; Units Ambulance companies inits Ambulance technical rescue teams CherUnits technical rescue teams CherUnits Biood/Organ transplant S; Units Biood/Organ transplant supply AmateUradio emergency comms S; Units Emergency Social Services S; Units Emergency Fivulits Disaster relief S; Units Disaster relief S; Units Disaster relief S; Units Famine relief Leams S; Units Famine relief Famine re	<pre>keaceOrs and Electric utilities \$;Units Reactor and associated materials _\$;Units University and educational institutions _\$;Units Control systems _\$;Units Nuclear safety -systems _\$;Units Waste disposal services _\$;Units Uranium processors _\$;Units Protective garment manufacturers _\$;Units</pre>	ations Telephone/Ce Iular services _\$;_Units Satellite data transmission _\$;_Units Broadcasting entities _\$;_Units Broadcast equipment manufacturing _\$;_Units Internet equipment manufacturing _\$;_Units Internet equipment manufacturing _\$;_Units High speed data transmission _\$;_Units High speed _\$;_Units High speed _\$;_Units High speed _\$;_Units High speed _\$;_Units High speed _\$;_Units High speed _\$;_Units Internet _\$;_Units Internet _\$;_Units Internet _\$;_Units Internet _\$;_Units Internet _\$;_Units Internet _\$;_Units Internet _\$;_Units Internet _\$;_Units	Manulacluring Iron and Steel mills S: Units Aluminum production and processing Sintentolls metal production and processing S: Units Engine, Turbine and Power transmission _\$; Units Electrical Equipment manufacturing _\$; Units Motor Vehicle manufacturing _\$; Units Aerospace product & parts manufacturing _\$; Units Airospace product & parts manufacturing _\$; Units Airospace product & parts Transportation equipment _\$; Units	Savices United States Postal Service \$; Units Container shipping \$; Units Container shipping \$; Units Marine shipping \$; Units Trucking industry \$; Units Airborne shipping \$; Units Distribution \$ervices \$; Units	AMTRAK S; Units Commuter rai services S; Units Intracity rail services S; Units Commercial airline S; Units Private air services S; Units Cruise lines S; Units Cruise lines S; Units Long-haul maritime shipping S; Units Bus services S; Units Eus services S; Units Eus services S; Units Automobile travel S; Units Roads, Highways, bridges and tunnels S; Units	echnology Hardware providers

SECURETM Program

Developing Solutions in Partnership with the Private Sector

•'Win-Win-Win" Public-Private Partnership program benefits DHS's stakeholders, private sector and –most importantly- the American Taxpayer

•Saves time and money on product development costs leveraging the freemarket system and encouraging the development of widely distributed products for DHS's stakeholders

•Detailed articulation of requirements (using MD 102-01 ORD template) and T&E review provides assurance to DHS, First Responders and private sector users (like CIKR) that products/services perform as prescribed



http://www.dhs.gov/xres/programs /gc_1211996620526.shtm

FutureTECHTM Program Addressing the Future Needs of DHS

•'Win-Win-Win" Public-Private Partnership program benefits DHS stakeholders, private sector and –most importantly- the American Taxpayer

•5W template provides detailed overview of Critical Research/Innovation Focus Areas

•Critical Research/Innovation Focus Areas provide universities, national labs and private sector R&D organizations insight into the future needs of DHS stakeholders

•Partnership program encourages R&D organizations to work on development of technology solutions up to TRL-6 to address long-term DHS needs.



http://www.dhs.gov/xres/programs /gc_1242058794349.shtm

Public-Private Partnerships

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

Commercialization Office Highlights:

- White House Office of Science and Technology Policy briefings (Chief Technology Officer Aneesh Chopra)
- •Homeland Security Council: Recommended priority for FY11-15 for transportation security: SECURE Program
- Homeland Security Advisory Council, Essential Technology Task Force Report, June 2008
- •Council on Competitiveness, Chief Commercialization Officer is first Federal Government Representative
- "Big Bang Economics": CNN Feature Video with Jeanne Meserve
- •Two Federal Certification Programs developed and implemented– SECURE[™] and FutureTECH[™]: Innovative public-private partnerships
- Published Five books (and more than 20 articles) on requirements development and public-private partnerships
- •Commercialization Office websites have highest number of page visits and longest dwell time (over 17 minutes) of all S&T Directorate websites

Summary

- Commercialization can be viewed as a "Win-Win-Win" approach to developing capabilities for DHS stakeholders
- Innovative public-private partnerships offer alternative to traditional Acquisition activities at "Obtain" phase
- Increase speed-of-execution and net realizable budget for DHS, extendable to other federal agencies

Questions and Answers

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

Dr. Cellucci accepted a five-year appointment from the Department of Homeland Security in August 2007 as the Federal Government's first Chief Commercialization Officer (CCO). He 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 other DHS stakeholders such as First Responders and Critical Infrastructure/Key Resources owners and operators. Cellucci has also developed and continues to drive 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. His efforts led to the establishment of the DHS-S&T Commercialization Office in October 2008. The Commercialization Office is responsible for four major activities; a requirements development and execution of private sector partnership programs such as SECURE and leading the private sector outreach for the S&T directorate.



Since his appointment, he has published three comprehensive guides [Requirements Development Guide (April 2008), Developing Operational Requirements (May 2008), and Developing Operational Requirements, Version 2 (November 2008)] dealing with the development of operational requirements, developed and implemented a commercialization model for the entire department and established the SECURE Program—an innovative public-private partnership to cost-effectively and efficiently develop products and services for DHS's Operating Components and other DHS stakeholders. In addition, he has written over 25 articles and a compilation of works [Harnessing the Valuable Experiences and Resources of the Private Sector for the Public Good, (February 2009)] geared toward the private sector to inform the public of new opportunities and ways to work with DHS. Cellucci has received recognition for his outreach efforts and engagement with the small and disadvantaged business communities who learn about potential business opportunities and avenues to provide DHS with critical technologies and products to help secure America. Cellucci is an accomplished 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. He has authored or coauthored over 139 articles on Requirements development, Commercialization, Nanotechnology, Laser physics, Photonics, Environmental disturbance control, MEMS test and measurement, and Mistake-proofing enterprise software. 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". Dr. Cellucci is also a commissioned Admiral and Commander of a Squadron in Texas responsible for civil defense and has been a first responder for over twenty years. As a result of his consistent achievement in the commercialization of technologies, Cellucci has received numerous awards and citations from industry, government and business. In addition, he has significant experience interacting with high ranking members of the United States government—including the White House, US Senate and US House of Representatives—having provided executive briefs to three Presidents of the United States and ranking members of Congress. Cellucci represents DHS as the first Federal Government member on the U.S. Council on Competitiveness.

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 regularly asked to serve as keynote speaker at both business and technical events.



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