

# **2008 S&T Stakeholders Conference East**

***June 2-5***

**Ronald Reagan Building and International  
Trade Center, Washington, DC**



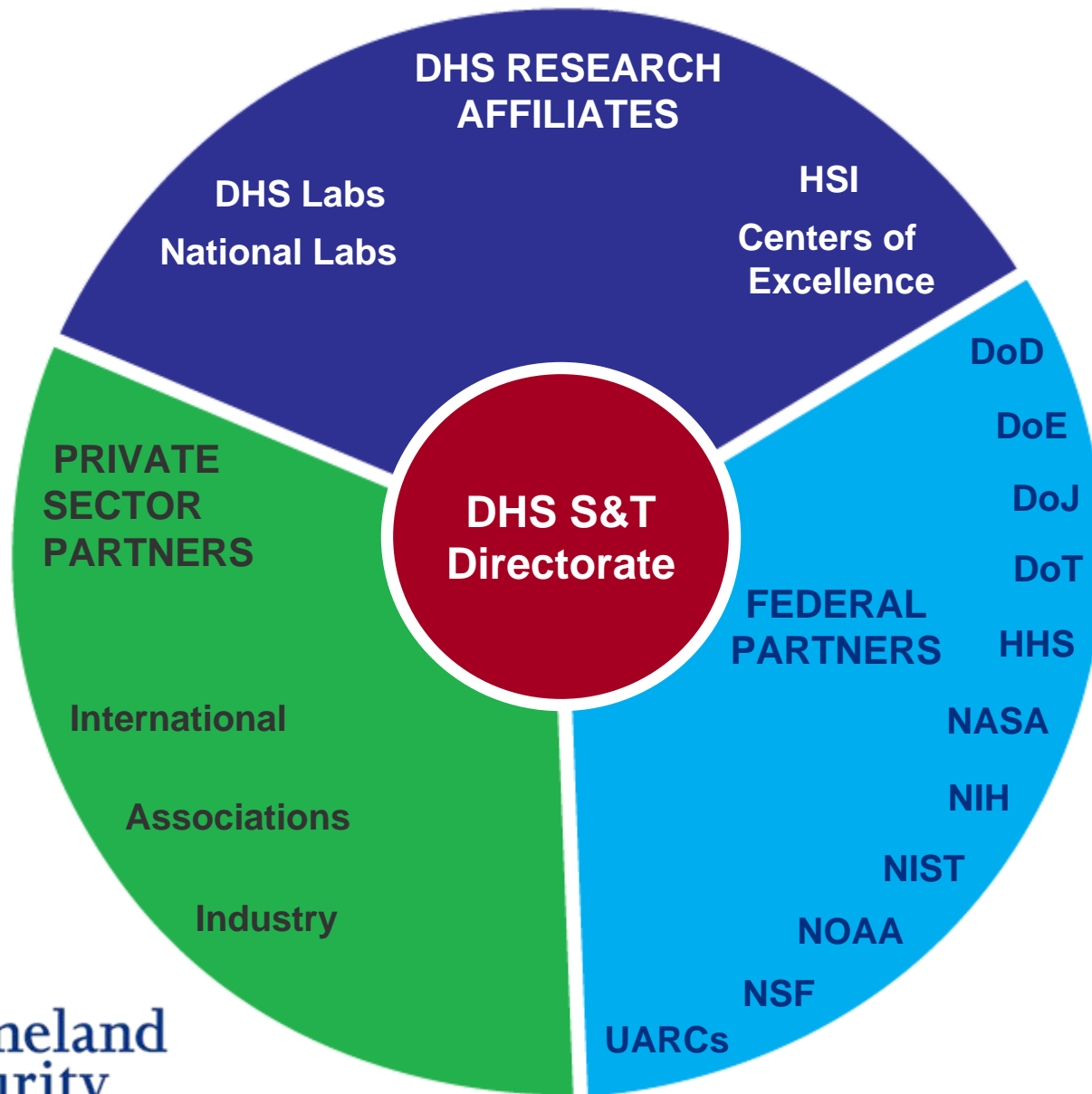
**Jay M. Cohen**

**Under Secretary For Science and Technology U.S. Department of Homeland Security**

# The Six B's



# Homeland Security S&T Enterprise



Homeland Security

# DHS S&T Challenge: To Address Interoperability Across Disciplines and Jurisdictions

AWACS



Cavalry – NORTHCOM



National Guard



Federal National Guard



County Police



State Troopers



Sheriff of Mayberry



**Homeland Security**

# TERRORIST ROADMAP

LIKELIHOOD OF OCCURRENCE

LOWER

HIGHER

Gov't, economy,  
societal instability

IEDs

Cyber

Trans Nat'l  
Migration

Physical Critical  
Infrastructure Attack

Chemical

Biological

HIGHER

Radiological

Nuclear

LOWER

CONSEQUENCE OF OCCURRENCE

*BOMBS, BORDERS, BUGS, BUSINESS, BODIES, AND BUILDINGS*

# DHS S&T FY09 Investment Portfolio

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

<p><b>Product Transition (0-3 yrs)</b></p> <ul style="list-style-type: none"><li>▪ Focused on delivering near-term products/enhancements to acquisition</li><li>▪ Customer IPT controlled</li><li>▪ Cost, schedule, capability metrics</li></ul> <p>Goal: 50% FY09: 49%</p>	<p><b>Innovative Capabilities (2-5 yrs)</b></p> <ul style="list-style-type: none"><li>▪ High-risk/High payoff</li><li>▪ “Game changer/Leap ahead”</li><li>▪ Prototype, Test and Deploy</li><li>▪ HSARPA</li></ul> <p>Goal: 10% FY09: 8%</p>
<p><b>Basic Research (&gt;8 yrs)</b></p> <ul style="list-style-type: none"><li>▪ Enables future paradigm changes</li><li>▪ University fundamental research</li><li>▪ Gov’t lab discovery and invention</li><li>▪ Homeland Security Institute</li></ul> <p>Goal: 20% FY09: 20%</p>	<p><b>Other (0-8+ years)</b></p> <ul style="list-style-type: none"><li>▪ Test &amp; Evaluation and Standards</li><li>▪ Laboratory Operations &amp; Construction</li></ul> <p>FY09: 23%</p>

**Customer Focused, Output Oriented**



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# Explosives Division

## Thrust Areas & Programs



### Counter MANPADS

- DIRCM – Directed Infrared Countermeasures
- Emerging Counter-MANPADS Technologies
- Unmanned Aerial Vehicle (CHLOE)

### Checkpoint Explosives Detection

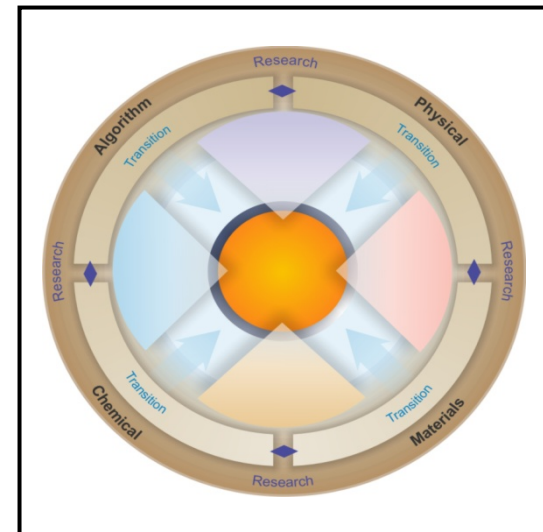
- Passenger Screening
- Carry-on & Checked Baggage
- Cargo Screening

### Explosives Characterization and Blast Mitigation

- Homemade Characterization
- Conveyance Protection

### Suicide and Vehicle-Borne IEDs

- Response
- Standoff Detection



# Chemical/Biological Division Thrust Areas & Programs



## Biological

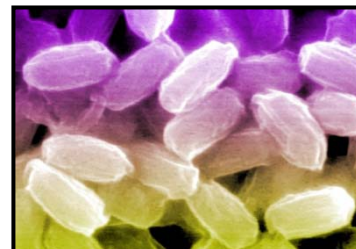
- Systems Studies
  - System tradeoffs e.g. Gen 3 BioWatch
- Threat Awareness
  - Risk assessment; lab studies to close gaps
- Surveillance and Detection R&D
  - Detection systems for air, food
- Forensics
  - Enhance and operate National Bioforensics Analysis Center (NBFAC)
- Response and Restoration
  - System approaches for recovering from bio attack

## Agriculture

- Foreign Animal Diseases
  - Modeling, vaccines & diagnostics

## Chemical

- Analysis
  - Chemical threat Characterization
- Detection
  - Chemical detection and systems for facility monitoring and first responders
- Response and Recovery
  - Decontamination tools and systems approaches for chemical decontamination



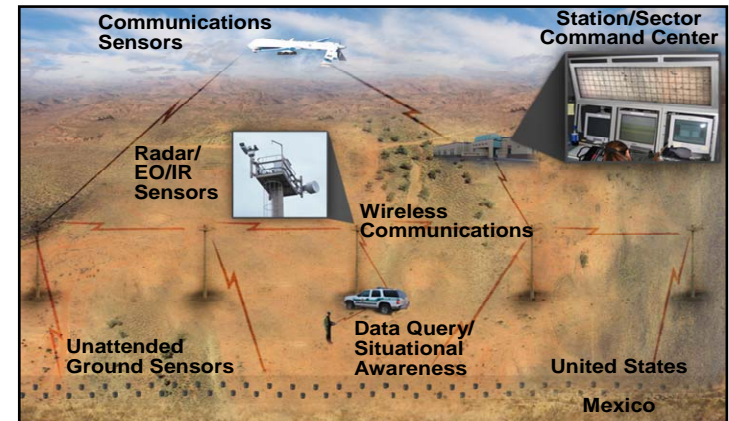


# Border and Maritime Security Thrust Areas & Programs



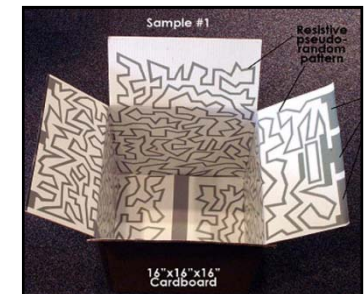
## Border Watch

- Border Technologies Program
  - Delivers technologies for providing advanced protection, identification and enforcement capabilities along land and maritime borders
- Maritime Technologies Program
  - Focuses on developing sensors and surveillance and enhance situational awareness and information management along our maritime borders
- Border Officer Tools and Safety Program
  - Provides tools and technologies to support border security law enforcement officers in the area of vehicle and vessel inspections



## Cargo Security

- Cargo and Conveyance Security Program
  - Focus is on a Marine Asset Tracking System, Advanced Container Security Device, Supply Chain Security Architecture and more



# Command, Control and Interoperability Thrust Areas & Programs



## Communications, Interoperability and Compatibility

- Multi-Band Radio
- Project 25 Compliance Assessment Program (P25 CAP)

## Cyber Security

- Domain Name System Security (DNSSEC)
- Secure Wireless Access Prototype (DSWAP)

## Knowledge Management Tools

- Critical Infrastructure Inspection Management System (CIIMS)
- AZLink technology system

## Basic/Futures Research

- Visual Analytics and Physics-based Simulation Program
- National and Regional Visualization and Analytics Centers

## Reconnaissance, Surveillance, and Investigative Technologies

- Fully Searchable Digital Ink Library
- Forensic Speaker Recognition



# Human Factors Division Thrust Areas & Programs

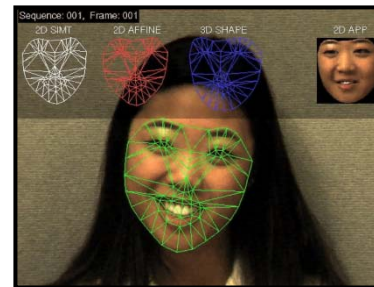


## Social-Behavioral Threat Analysis

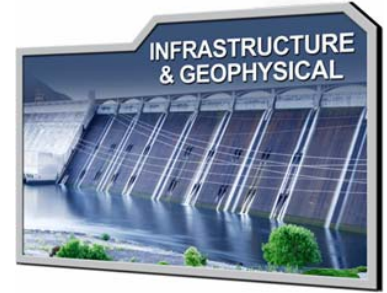
- Precursors, Signatures, and Deterrence of Radicalization
- Suspicious Behavior Detection
- Community Preparedness, Response, and Recovery

## Human-System Research & Engineering

- Personal Identification Systems
- Technology Acceptance and Integration
- Human-System Optimization



# Infrastructure and Geophysical Division Thrust Areas & Programs

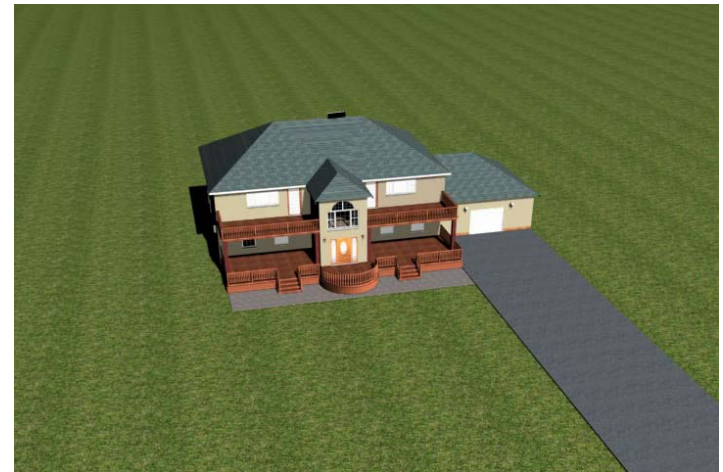


## Critical Infrastructure

- Protective Technologies
- Modeling, Simulation and Analysis
- Advanced Surveillance
- Rapid Response and Recovery

## Preparedness and Response

- Incident Management Enterprise
- Advanced Concepts and Studies
- First Responder Technologies



## Geophysical

- Southeast Regional Research Initiative (SERRI)
- Secure Against Fires and Embers (SAFE)





# DHS Science and Technology

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**PRODUCT** is Job **ONE** for the  
Nation's Security and Trust!



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# FROM SCIENCE...SECURITY

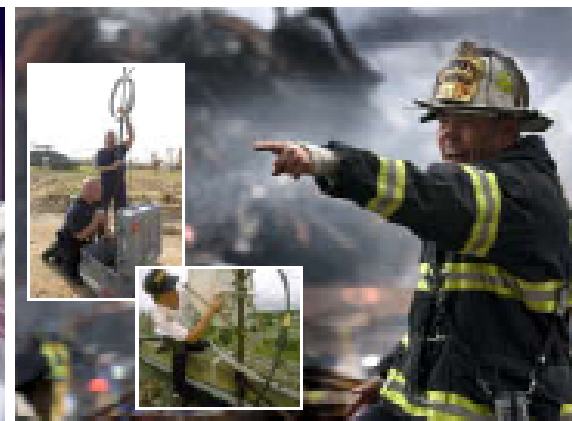
## Explosives



## Chemical/Biological



## Command, Control, & Interoperability



## Borders/Maritime



## Human Factors



## Infrastructure/Geophysical



# FROM TECHNOLOGY...TRUST

# Back-Up



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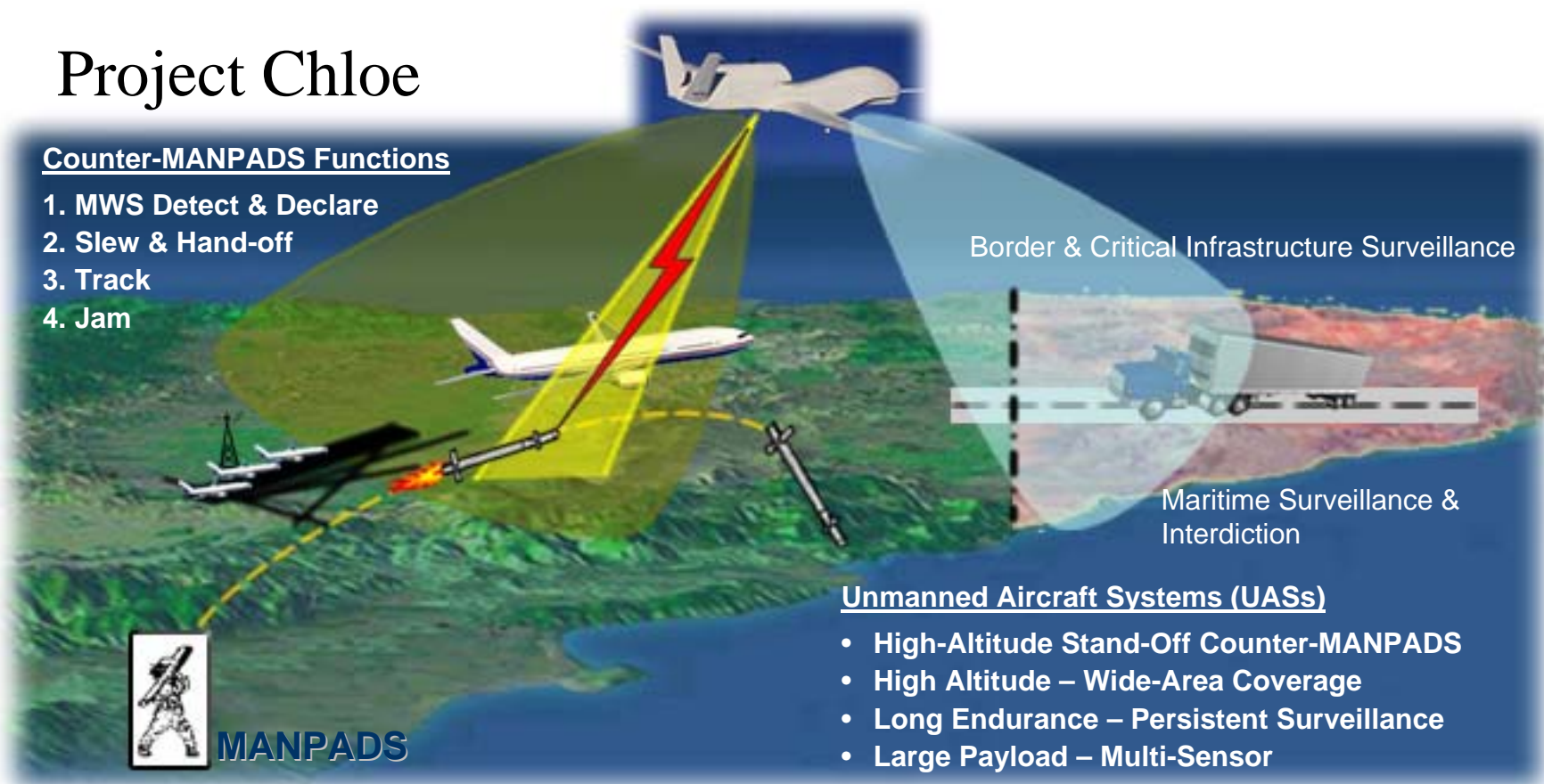
# Counter-MANPADS/Persistent Surveillance

## Office of Innovation - Homeland Innovative Prototypical Solutions

### Project Chloe

#### Counter-MANPADS Functions

1. MWS Detect & Declare
2. Slew & Hand-off
3. Track
4. Jam



#### Unmanned Aircraft Systems (UASs)

- High-Altitude Stand-Off Counter-MANPADS
- High Altitude – Wide-Area Coverage
- Long Endurance – Persistent Surveillance
- Large Payload – Multi-Sensor

#### Operational Characteristics

- Real-time sensor fusion/dissemination
- Multi-user / border surveillance requirements
- Commercial Aircraft MANPADS protection
- Automatic target detection/recognition
- Persistence (24/7, all-weather coverage)



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# **Project CHLOE**

High Altitude Unmanned  
Counter-MANPADS / Persistent Surveillance



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# Homeland Innovative Prototypical Solutions Levee Strengthening and Rapid Repair

**Pre-emptive mapping  
of weak levees**

**Pre-Flood Deployment of Protective  
And Rapid Repair Supplies to  
Problem Locations**

**Drop-in structures  
lofted by aircraft**

**Float-in structure guided  
by cables**

**Explosively Emplaced  
Support Structures**

**Roll-out protective  
coverings such as  
articulated concrete mats**



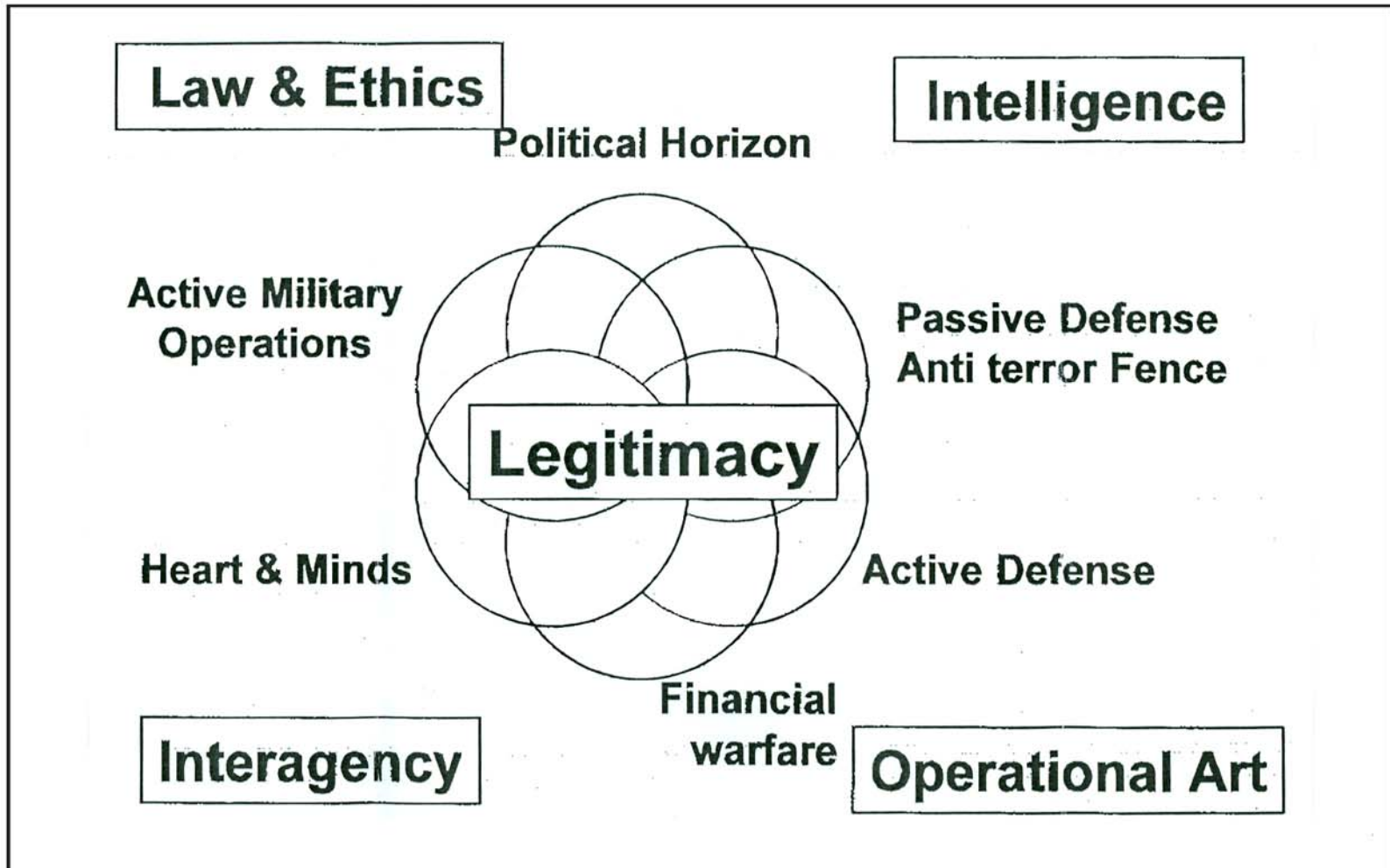


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# Dimensions of Fighting Terror



# HIPS Project Demo Schedule 2008

## Homeland Innovative Prototypical Solutions

Demo	Date	Location
<b><i>Future Attribute Screening Technology Demonstrations - FAST</i></b>		
Integrated Psycho-physiological Sensor Suite	June 24	Draper Laboratory, Cambridge, MA
Integrated Screening Module & Sensor Suite	Sep 18	Oregon Ridge Park, Hunt Valley, MD
<b><i>REG (Resilient Electric Grid)</i></b>		
Fault Current Limiting High Temperature Superconducting Cable	Sep17-19	Oak Ridge National Lab
<b><i>MagVIZ Liquid Explosives Screening</i></b>		
Proof of Principle in Lab	August 8	Los Alamos National Lab
<b><i>Chloe – High Altitude Counter MANPADS System</i></b>		
Energy on Dome	Sep 9	High Speed Test Track, Holloman Airforce Base, NM
<b><i>Levee Strengthening and Damage Mitigation</i></b>		
Rapid Repair of Levee Breach Project	Sep 20	Stillwater, OK
Identify Problem Levee Locations Project	Oct 21	Lake Okeechobee, FL

# HIPS Project Demo Schedule 2008

## High Impact Technology Solutions

Demo	Date	Location
<b><i>Tunnel Detection</i></b>		
Tunnel Detection Demonstration of UAV mounted sensors	June TBD	Tucson, AZ
<b><i>Critical Infrastructure Change Detection</i></b>		
Demonstration of New Surveillance Sensor Technology	Summer TBD	Manhattan, NY
<b><i>Resilient Tunnel</i></b>		
Proof of Principle in Lab	July 14-18 (Tentative)	Washington, DC



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