

# S&T Stakeholders Conference

January 14-18, 2008

*Federated Simulation Based Training, Exercise, and  
Lessons Learned*



***Jalal Mapar***

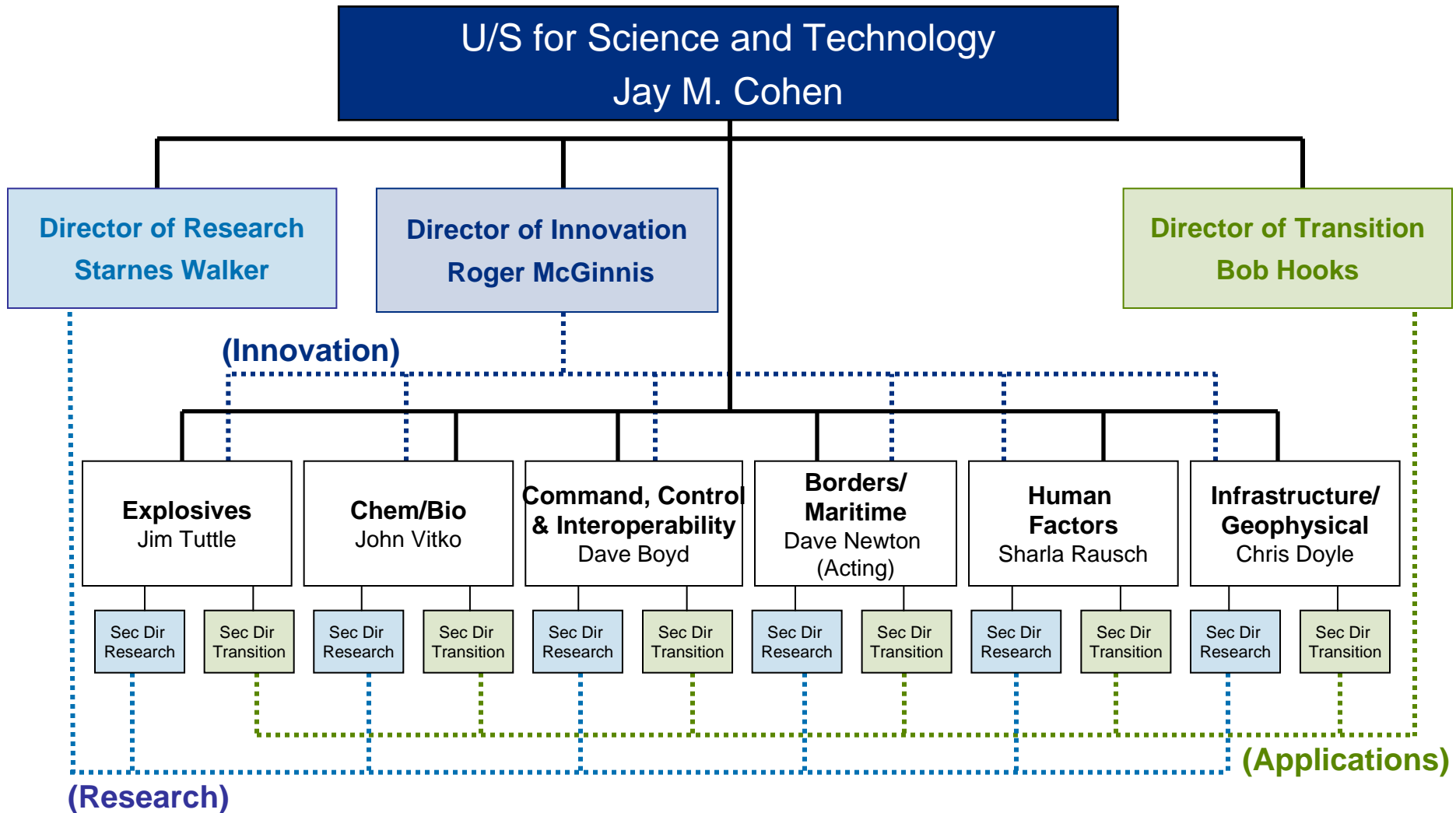
***Infrastructure & Geophysical Division***

***Science and Technology Directorate***



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# DHS S&T Directorate



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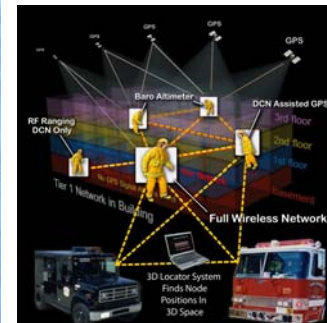
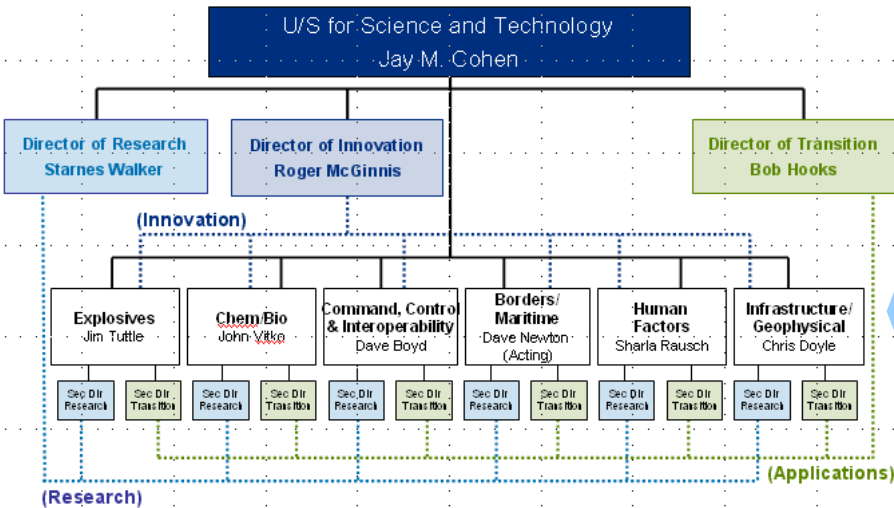
# Infrastructure and Geophysical Division

## Objectives

- Develop capabilities to identify and mitigate the vulnerabilities of the 17 critical infrastructure and improve the ability of the Nation to prepare for, respond to, and recover from all-hazards emergencies to keep our society and economy functioning

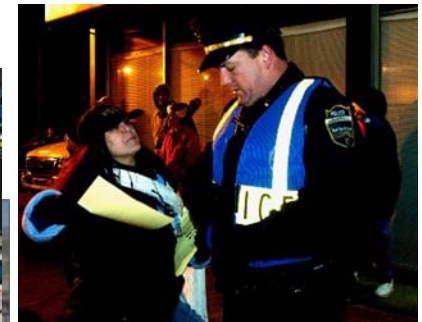
## Program Elements

- Critical Infrastructure Protection
- Preparedness & Response
- Geophysical



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# Preparedness & Response



## • Objectives

- ◆ Enhance first responders ability to prepare for, respond to and recover from all-hazards emergencies through development and deployment of enabling technologies

## ◆ Customer

- ◆ DHS/FEMA (*primary*), and others (CBP, CG, TSA, ...)

## • End-User

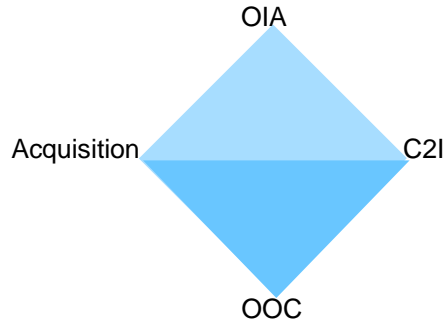
- ◆ 44,000 Emergency Response Organizations
- ◆ 18,000 Law Enforcement Agencies
- ◆ 30,000 Fire Departments
- ◆ 83,000 State/Local Governments



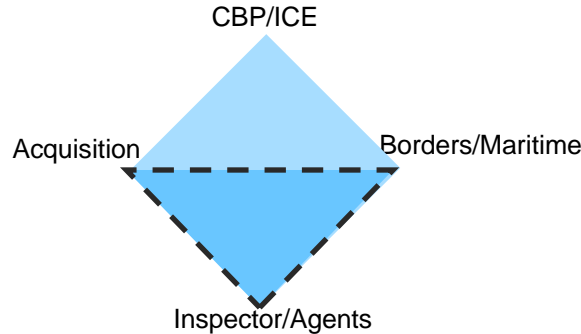
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# Homeland Security Capability IPTs

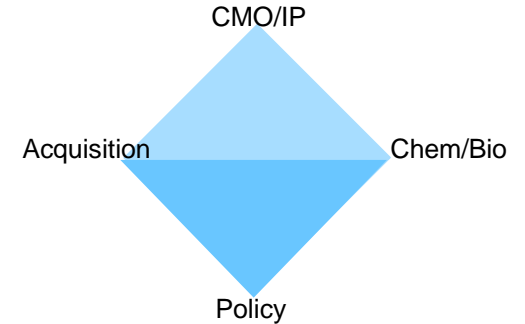
## Information Sharing/Mgmt



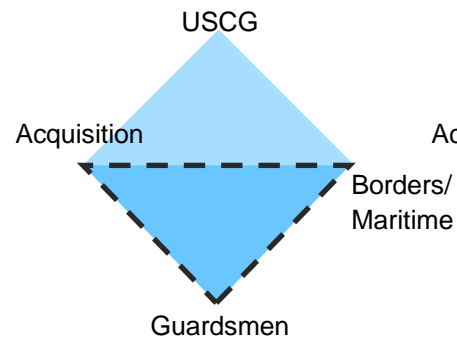
## Border Security



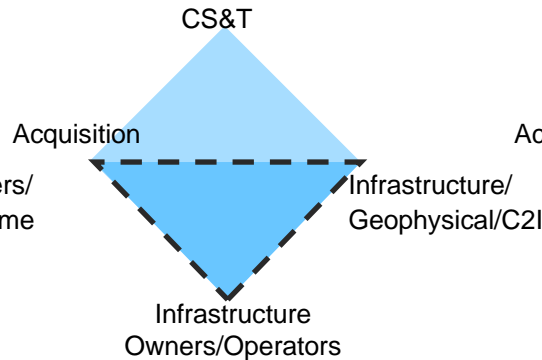
## Chem/Bio Defense



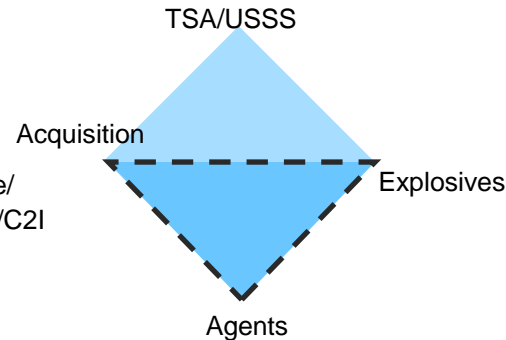
## Maritime Security



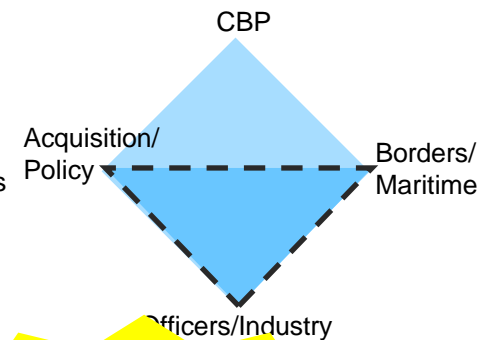
## Cyber Security



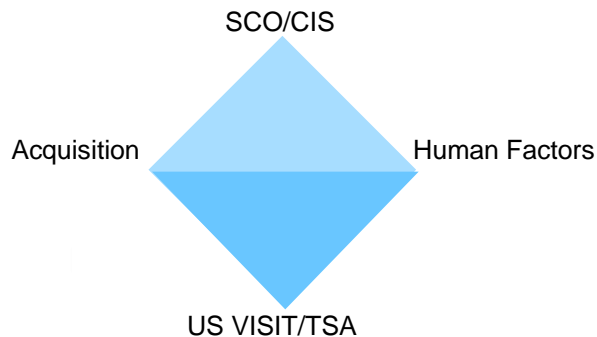
## Explosive Prevention



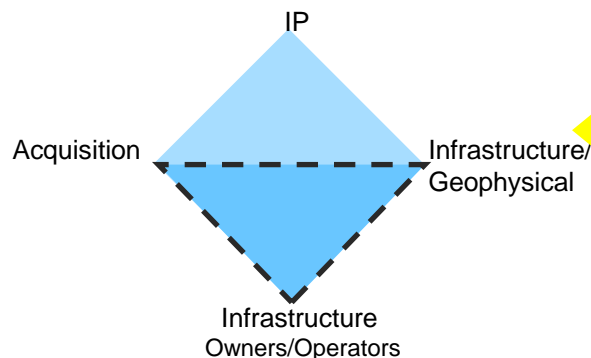
## Cargo Security



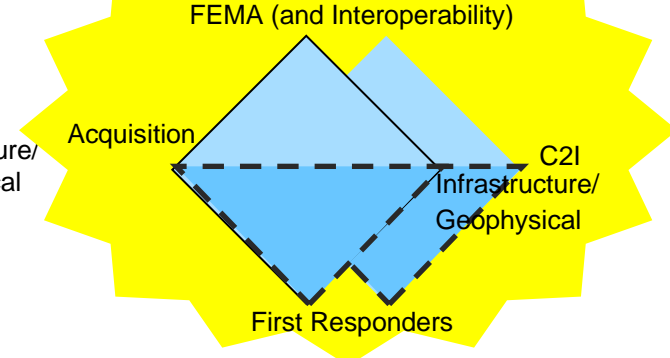
## People Screening



## Infrastructure Protection



## Incident Management



# Incident Management IPT

- **Capstone IPT Leads are from FEMA and S&T**
  - FEMA: Ret. VADM Harvey Johnson, Deputy Director/COO
  - S&T: Chris Doyle, Director, Infrastructure and Geophysical Division
- **Participants**
  - FEMA (primary), CBP, USCG, TSA, ICE, USSS
- **Process**
  - Several rounds identified prioritized capabilities
    - *S&T Projects established to develop technologies for out years*
- **Outcome**
  - Resource-constrained, prioritized list of out-year Capability gaps and Project areas

***Simulation Based  
Incident Planning and  
Response***

***1st Responder  
Equipment***

***Common Operating  
Picture & Situational  
Awareness***



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# Preparedness & Response

## Infrastructure and Geophysical



## Preparedness & Response

Integrated Modeling, Mapping, & Simulation

Emergency Responder Technology

- Responder Tracking System
- Physiological Monitoring System

Incident Management Enterprise

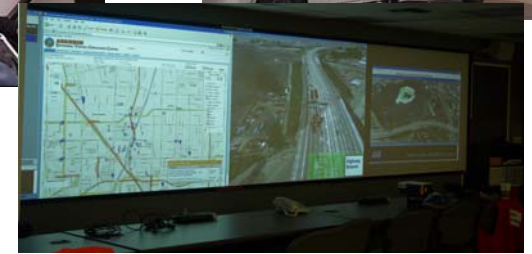


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# Filling The Capability Gap (S&T Style)

## **IM IPT Stakeholder Requirements**

- *Training for Unified Incident Commanders and other Multi-Agency Emergency Managers*
- *Modeling and Simulation for State, Tribal and Local Emergency Planning*



## **S&T P&R Portfolio (Programs)**

### **Integrated Modeling, Mapping, & Simulation**

- **Simulation Based Incident Planning and Response**
- **Simulation Based Training, Exercise & Lesson Learns (TELL)**



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# Federated Simulation Based Training

- **Simulation-based exercises offer an improvement to multi-jurisdictional training exercise programs**
  - Ability to train on a recurring basis
  - Provide a mechanism to show the responder the downstream consequences to his/her decision
  - Cost affordable and complement to live-exercise
  - Will potentially stimulate more opportunities for exercise
  - Simulations can also roll up all the performance metrics from a multi-jurisdictional exercise into a single location
  - Provide the ability to complete aggregated assessment of larger-scale operations



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# Federated Simulation Based Training

- **Simulation-based exercises contrast with table top**
  - Not scripted, runs in real-time, uses actual communication media
  - Geographical features: topography, floors, tunnels, water, fire, etc.
  - Simulating on-scene personnel, eliminating need to take first responders off the job while commanders participate in exercise
  - Playback facilitates individual/collaborative review of decisions
- **Requirements**

## • Katrina White House report

- Recommendation 110: *DHS should consolidate homeland security related training and exercise assets in a new Office of Training, Exercises and Lessons Learned (TELL) during FY06. Key components should include, but not be limited to: Noble Training Center, Center for Domestic Preparedness, National Emergency Training Center, National Exercise and Evaluation Program.*
- Recommendation 111: *DHS should support the use of simulation and modeling to assist in the development of operational procedures and exercises (particularly those based on catastrophic incidents) and as a resource to assist in responding to catastrophic incidents. Simulations of this type should be run out of the SIMCEN."*

## • 9 11 Commission Report

- "In the future, the Department of Homeland Security should consider making funding contingent on aggressive and realistic training in accordance with ICS and unified command procedures."
- "Private-sector preparedness is not a luxury; it is a cost of doing business in the post-9/11 world. It is ignored at a tremendous potential cost in lives, money, and national security."
- "The Department of Defense and its oversight committees should regularly assess the adequacy of Northern Command's strategies and planning to defend the United States against military threats to the homeland."

## • Project Responder

- Reduce cost and complexity of training for decision making
- Easy method to bring responders together
- Use validated models to better reflect the true nature of the emergency
- Use same analysis models for training

## • National Response Plan

- Integrate the capabilities and resources of various governmental jurisdictions, incident management and emergency response disciplines, NGOs), and the private sector into a cohesive, coordinated, and seamless national framework for domestic incident management



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# Federated Simulation Based Training

- **DHS S&T has developed a concept prototype for a federated Simulation based Training Exercise & Lessons Learned (TELL)**
  - Live, Virtual, Constructive system
  - Supports continuous improvement of our Nation's preparedness to respond to catastrophic events, as called for in HSPD-8
  - Allows responders at all levels to affordably train and exercise for large and complex events in a virtual/constructive/live environment
  - System will link multiple agencies, functions, and jurisdictions to improve preparedness for emergency responders and managers
    - *Become more proficient in their decision making capabilities*
  - Incorporates training objectives, scenarios, and metrics
  - Addresses the successful implementation of NIMS and the ability to conduct quick, repeatable, economical, and effective means of training incident commanders so they can be better prepared to handle complex incidents

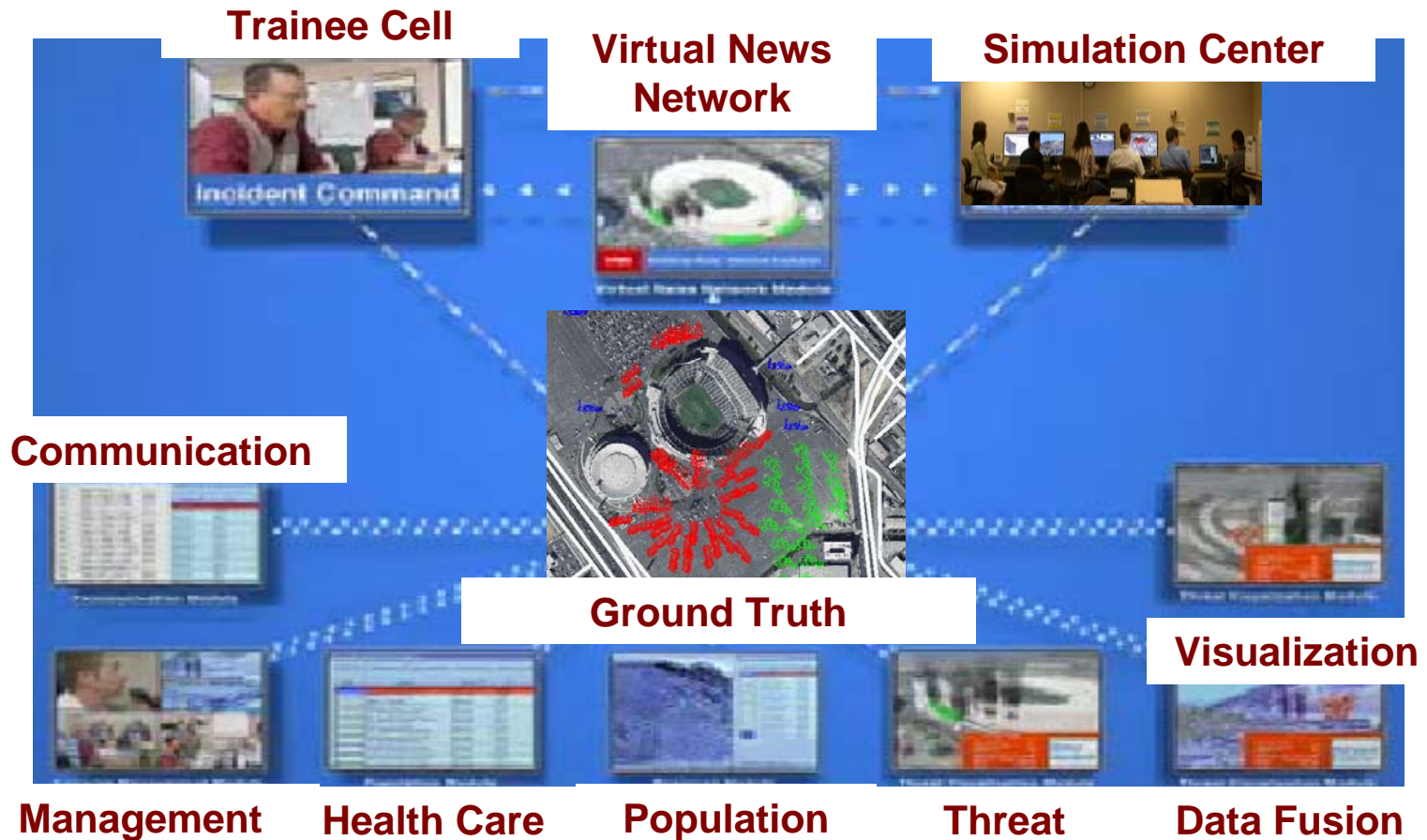


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***Train to Respond, Respond as Trained***

# Federated Simulation Based Training

- TELL Concept operates off distributed simulation centers



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# Federated Simulation Based Training

## Video Clip



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# Current and Future Plans

- **Recent TELL Exercises**

- Golden Guardian 2007, Anaheim, CA
  - *Anaheim PrepEx –The TELL system was used in a exercise that trained Incident Command Teams for the CA Golden Guardian exercise*

- **Future plans**

- Deploy/conduct training in a tri-state region
- Investigate, use, develop, integrate other technologies
  - *Interoperable modeling and simulation framework*
  - *Smart models (entities with behavior)*
  - *Knowledge management to enhance Lessons Learned*
  - *Connectivity to other communities*



*"This did not feel like an exercise, I felt like I was responding to a real event"*

Tim O'Hara - Anaheim Battalion Chief

*"It builds knowledge through experience, the way core knowledge is really learned"*

Tom Wood - Anaheim Assistant City Manager



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# TELL- Integrated Modeling, Mapping, & Simulation (IMMS)

- **TELL supports IMMS**

- Becomes part of our Simulation based incident planning and response
  - *Non-real-time analysis capability using the same TELL models*
  - *Integrated system to support emergency managers, and decision makers to better understand, be prepared, and plan for emergency operations*
- Modeling elements will focus on all possible hazards (natural and terrorist)
  - *Predictive*
  - *Mass evacuation route mapping*
  - *Impact analysis*



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# Homeland Security