Armaments Technology Seminar & Exhibition

"Adapting Lethality to the Realities of the Global War on Terrorism"

Parsippany, NJ

13-15 June 2005

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Armaments Technology
Seminar & Exhibition

"Adapting Lethality to the Realities of the Global War on Terrorism"

Onsite Agenda

Event # 5600
June 13-15, 2005
Hilton Parsippany
Parsippany, NJ

13 June 2005

10:00am-4:00pm   Exhibitor Move In

12:00pm-4:15pm   Registration

5:00pm-5:45pm   Reception

14 June 2005 (Happy Birthday US Army)

7:00am   Continental Breakfast & Registration

8:00am-6:00pm   Exhibits Open

8:00am   Administrative Remarks

8:10am   Welcome: Dr. Robin Keesee, Acting Deputy to the Commander, RDECOM

8:30am   Seminar Overview: Mr. John F. Hedderich III, Acting Technical Director, US Army ARDEC

8:50am   Mr. John F. Hedderich III, Acting Technical Director, US Army ARDEC
                       Solider Recognition

9:10am   LTC Matt Butler, USA, PMAS
                       Small and Medium Caliber Ammuntion Production in Support of the Global War on Terrorism

10:00am   Break in Exhibit Area

10:30am   Col Michael Longoria, USAF, Joint Air-Ground Operations Office, Air Combat Command
                       USAF Adaptation of Assets to Support Counter Insurgency Operation in SWA

11:00am   Mr. Anthony Sebasto, Associate Senior Technical Executive, ARDEC
                       Technology Successes in the GWOT

| 11:30am | Gold Medal presention by MG Barry Bates, USA (Ret), NDIA |
| | Recipients: |

         - Mr. Carl L. Wilson, *Head of the Program Management Section of Day & Zimmermann's Kansas Division at Kansas Army Ammunition Plant, Parsons, Kansas*

         - Mr. William Don Chamlee, *recently retired as Day & Zimmermann's Lone Star Division Director of Engineering & Quality Assurance*

| 11:45am | Lunch |

| 1:15pm | BG James E. Chambers, USA, CG 13th Corps Support Command |
| | *Challenges Faced by Combat Support Units in SWA* |

| 1:45pm | Mr. Ray Carr, Picatinny Arsenal |
| | *ARDEC's Anti Improvised Explosive Devices (IED)* |

| 2:15pm | Mr. Mark Oetken, PM UA Lethality Systems' Integration (Acting) and Mr. William "Bud" Irish, FCS Program Manager for Lethality, SAIC |
| | *How PM-UA is Addressing the GWOT and What Impact Will FCS Have in Combating the GWOT* |

| 2:45pm | Break in Exhibit Area |

| 3:15pm | MG William Chen, USA (Ret), Vice President, United Defense LP |
| | *An Industry Perspective on the GWOT and Lethality Challenges* |

| 3:45pm | Mr. Matthew Zimmerman, Program Executive Office Ammunition |
| | *Managing DoD's Ammunition Industrial Base to Successfully Meet the Warfighters' Needs* |

| 4:15pm | Wrap-up |

| 4:30pm-6:00pm | NDIA Reception |

15 June 2005
Concurrent Sessions

7:00am   Continental Breakfast & Registration

	Panel Session 1: Adapting Lethality for Homeland Defense/Security **Chairperson:** Dr. Floyd Ribe, Chief, Homeland Defense Technology Center, ARDEC	**Panel Session 2:** Dismounted and Support Units Adapt to GWOT **Chairperson:** COL Scott Crizer, USA, Commander, Armament Systems Integration Center (ASIC), ARDEC
8:00am-3:45pm	Exhibits Open	Exhibits Open
8:00am	Dr. Floyd Ribe, Chief, Homeland Defense Technology Center, ARDEC *Panel Introduction*	COL Scott Crizer, USA, Commander, Armament Systems Integration Center (ASIC), ARDEC *Panel Introduction*
8:10am	Mr. John Dalton, Vice President, Advanced Systems, CACI *System of Systems Security Integration*	COL Anthony Puckett, USA Commander, 30th Field Artillery Regiment
8:30am	Mr. Tim Teen, CEO, Insitech	LTC Andre Kirnes, USA, PM Mortars *Mortars Systems Supporting the GWOT*
8:50am	MAJ Gingee Guilmartin, USA, Dept of Social Sciences, US Military Academy	COL Carlton Reid, USA 17th Field Artillery Brigade
9:10am	**Break in Exhibit Area**	**Break in Exhibit Area**
9:30am	**Keynote Address**: LTG Joseph L. Yakovac, Jr., USA, Military Deputy to the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) *Adapting to the Realities on the GWOT - Followed by Question and Answer*	**Keynote Address**: LTG Joseph L. Yakovac, Jr., USA, Military Deputy to the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) *Adapting to the Realities on the GWOT - Followed by Question and Answer*

	Panel Session 1: Adapting Lethality for Homeland Defense/Security (Continued)	**Panel Session 2:** Dismounted Units Adapt to GWOT (Continued)
10:15am	**Break in Exhibit Area**	**Break in Exhibit Area**
10:30am	Mr. Joseph C. Bober, Chief, NJ Transit *Civil Concerns to the GWOT and How Military Technologies Can Help*	Dr. Raymond Bateman, Science Advisor to the Commander III Corps *Report from the Field*
10:50am	Ms. Angela Messer, Booz Allen Hamilton	Mr. Brian Newman, Deputy for Logistics, Army Field Support Command *AFSC Support to OIF*
11:10am	Mr. Brendan McCluskey, UMDNJ Center for BioDefense *BioDefense and the GWOT*	Mr. James E. Rogers, Chief, Logistics Operations Div, J4, US Central Command *CENTCOM Perspective on the GWOT*
11:30am	Dr. Floyd Ribe, Chief Homeland Defense Technology Center, ARDEC *Technologies to Support Homeland Defense*	Mr. Alan Galonski, Competency Manager, Future Concepts Division, ARDEC *Technology Being Developed to Help Support Units Adapt to the GWOT*
11:50am	**Lunch**	**Lunch**
1:00pm	Panel Discussion on Homeland Defense and Homeland Security	Panel Discussion
1:30pm	**Break in Exhibit Area**	**Break in Exhibit Area**

1:45pm	**Panel Session 3:** Mounted Units Adapt to GWOT **Chairperson:** COL Peter Janker, USA, Commander, Armament Engineering Technology Center, ARDEC
1:55pm	COL Russ Hrdy, USA, FCS *Future Combat Systems Spinout to Current Forces*
2:15pm	Dr. Robert Cameron, Armor Branch Historian *Armor, Adaptability, and the Global War on Terror: Historical* *Perspectives*
3:00pm	COL John Shay, USA, TSM ABRAMS, Ft. Knox *Use of Current Systems in the GWOT - ABRAMS MBT Operation* *in Urban Environments and Needed Modifications (i.e. TUSK)*
3:30pm	**Break in Exhibit Area**
3:45pm	COL Judy Lemire, USA, TRADOC Futures Directorate *Requirements for Mounted Units Needs in the GWOT vs.* *Traditional Warfare - How TRADOC is Changing to More* *Rapidly Transition Soldier Needs into Combat Systems*
4:15pm	LTC Barry Huggin, USA, CMD Stryker, BN *Mounted Operations Using Stryker Systems and Lessons* *Learned in Iraq*
4:45pm	Panel Discussion
5:10pm	Closing Remarks
5:15pm	Seminar Adjourns

Notes

Operation Iraqi Freedom FAST Deployments

April – October 2003
October 2004 – February 2005

Dr. Raymond M. Bateman

Science Advisor to Commander, III Corps
US Army Research Laboratory
Human Research and Engineering Directorate

Agenda

- FAST Mission Overview

- Assessment

- Operational Observations

- Working Initiatives

- Recommendations

- Questions

FAST Mission

- Field Assistance in Science and Technology (FAST)
  - Serve as link between III Corps Soldiers and materiel development community to ***address capability gaps***
    - Contact with R&D Community
    - Field Evaluations
    - Leverage AMC technology
  - Provide technical advice
  - Demonstrate rapid solutions for materiel problems
  - Improve performance, readiness, safety, and training with science and technology
- RDECOM LNO
- STAT Teams

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Assessment

- Requirements eruption in an austere environment
- Mature battlefield
  - Mitigating IED vs. criminal investigation
  - OEM data proved unrealistic for maintenance
- Operational Needs Statements
- Failure analysis
- Technology development
  - Sustainment
  - Training
  - System Integration
- Adopting modular Brigade structure

Operational Observations

- Anti-Iraqi Forces are resourceful and cunning
- Fallujah Offensive
- Level III Armor Test
- "Skunkworks" inside of AMC Logistical Support Elements
- Vehicles are overloaded
- Many different organizations and commercial vendors working to help Soldiers which causes priority and guidance conflicts

Capability Gaps

- Compatible Battle Command Networked Systems

- Operations in a Counter-Insurgency Environment

- Logistical support in a high OPTEMPO with geographically isolated units

- Joint Operations and interoperability with Coalition Partners

Working Initiatives

- Improvised Explosive Devices
- Ballistic Protection
- Failure Analysis
- Less than Lethal Technology
- Power "tool box" generator
- Joint and Coalition Forces Interdependence

Recommendations

- Communicate with Soldiers that have operational experience – ***critical voice!***
- Address operational capability gaps
  - Field to a capability and not a system
  - Value added?
  - How measured?
- Military modeling and simulation
  - link sustainment and logistics inside of Warfighting models
  - maintenance in isolated and dynamic environments
- Emerging concepts and technologies must include material developers and human factors engineers (MANPRINT)
- Realistic tests for new equipment
- *Can not answer operational questions from behind a computer – go outside!*

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Fundamentals are the key to success

- Basics must be constantly reinforced
  - Every Soldier a warrior; a scout (Scan-Focus-Act)
  - From marksmanship to Coalition management
  - Force protection and safety
  - Values, cultural awareness, ROE
- Our leaning strategy works
  - Individuals through Corps formations
  - Joint fires, logistics, effects based operations
  - Balanced experience, training and education
  - In theater: operate, maintain, rest, train
- Big dividends come from:
  - Leading from the front, discipline, endurance
  - Patience; don't rush to failure; study and think
  - Situational Awareness & Precision; lethal and non-lethal
  - Considering all tools in the Joint kitbag

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Questions?

PROJECT MANAGER MANEUVER AMMUNITION SYSTEMS

Small and Medium Caliber Ammunition Production Support

LTC Matthew Butler

14 Jun 05

Reliable, Precise, Lethal

Take Aways

- **Meeting the Warfighters' Needs**

- **Must Continue Emphasis and Progress with:**
  - **Acquisition Strategies that Support Smart Industrial Base Strategies**
  - **Production at High Levels**
  - **Application of Technologies to Improve Products**

Reliable, Precise, Lethal

Agenda

- **Robust Support to GWOT**

- **Acquisition Strategies to Position for the Future**

- **Requirements at High Levels: Contemporary Operating Environment (COE)**

- **Lethality Discussion**

PM-MAS Mission

PM MAS Provides Direct Fire Combat And Training Ammunition Capabilities To Warfighters (Army, Navy, Air Force, Marines) And Government Agencies To Support Dismounted Soldiers, Combat Vehicles, Helicopters, Naval Vessels, And High Performance Aircraft. The PM Does This Through Life Cycle Program Management Of Ammunition In The Following Categories:

Small Caliber
Medium Caliber
Large Caliber
Smart Munitions

Ammunition Products

TOTAL
189

100		
69		
20		

Small Caliber

Medium Caliber

Large Caliber

Robust Support to GWOT
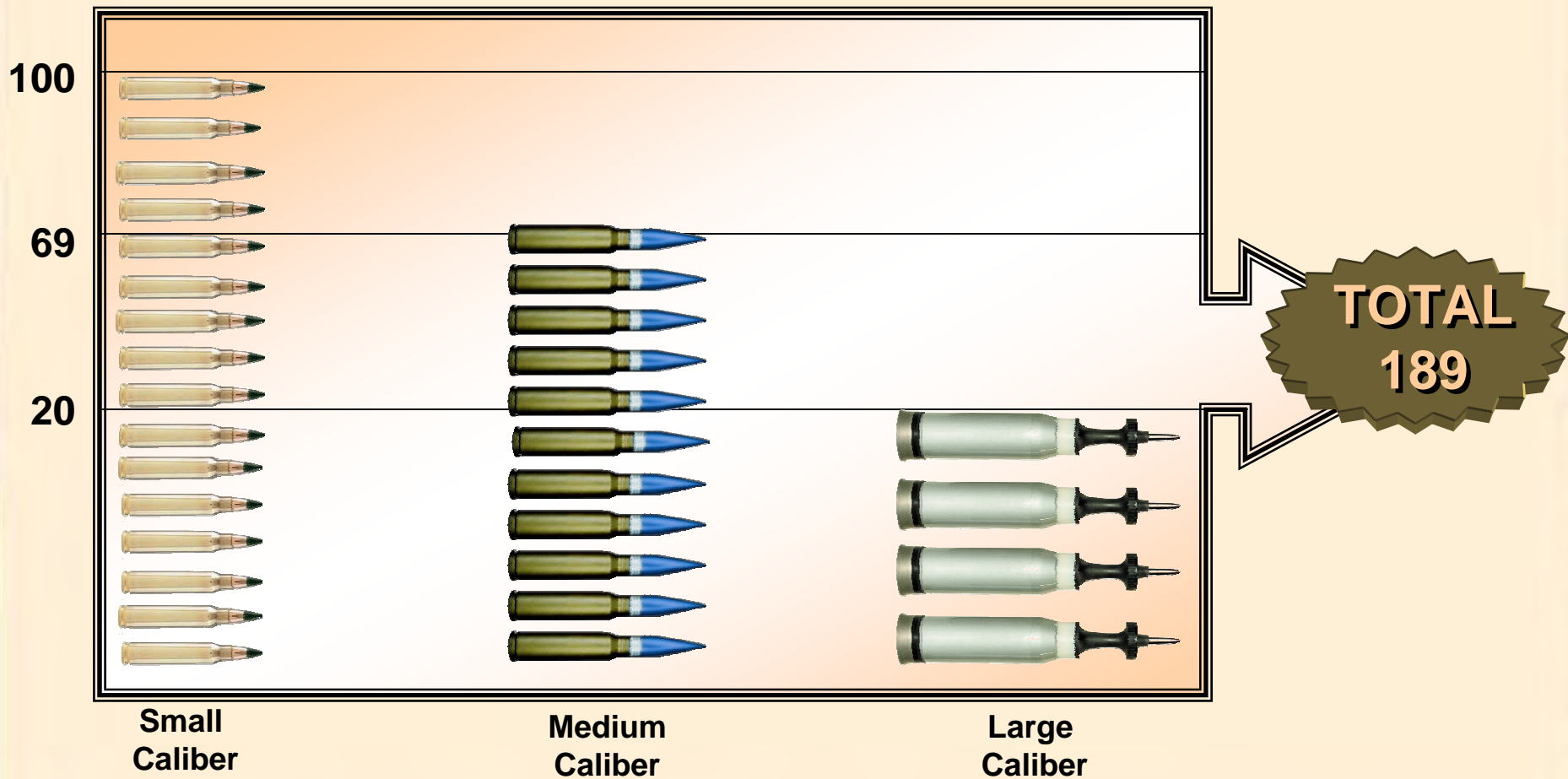
PM MAS
FY05 Production Quantities Projection

Small Caliber (1710M)	5.56MM	1,271M
	7.62MM	273M
	.50 Cal	80M
	9MM	75M
	MISCELLANEOUS	11M
Medium Caliber (21.5M)	20MM	4M
	25MM	1M
	30MM	5.5M
	40MM	11M
Large Caliber (233K)	105MM	.02M
	120MM TRAINING	.2M
	120MM TACTICAL	.013M

Robust Support to GWOT

Contributions to War on Terrorism
(US Army Only)

Rounds / Operation	5.56mm	7.62mm	.50 Cal	Other Small Cal	Small Cal	Med Cal	Large Cal	Total
OIF (Sep 02- Oct 04)	371 M	80 M	25 M	14 M	490 M	12 M	211 K	502 M
OEF (Oct 01- Oct 04)	15 M	6 M	2 M	2 M	25 M	1 M	0	26 M

Robust Support to GWOT

Priority Road Map-Small and Medium Caliber Primary Efforts
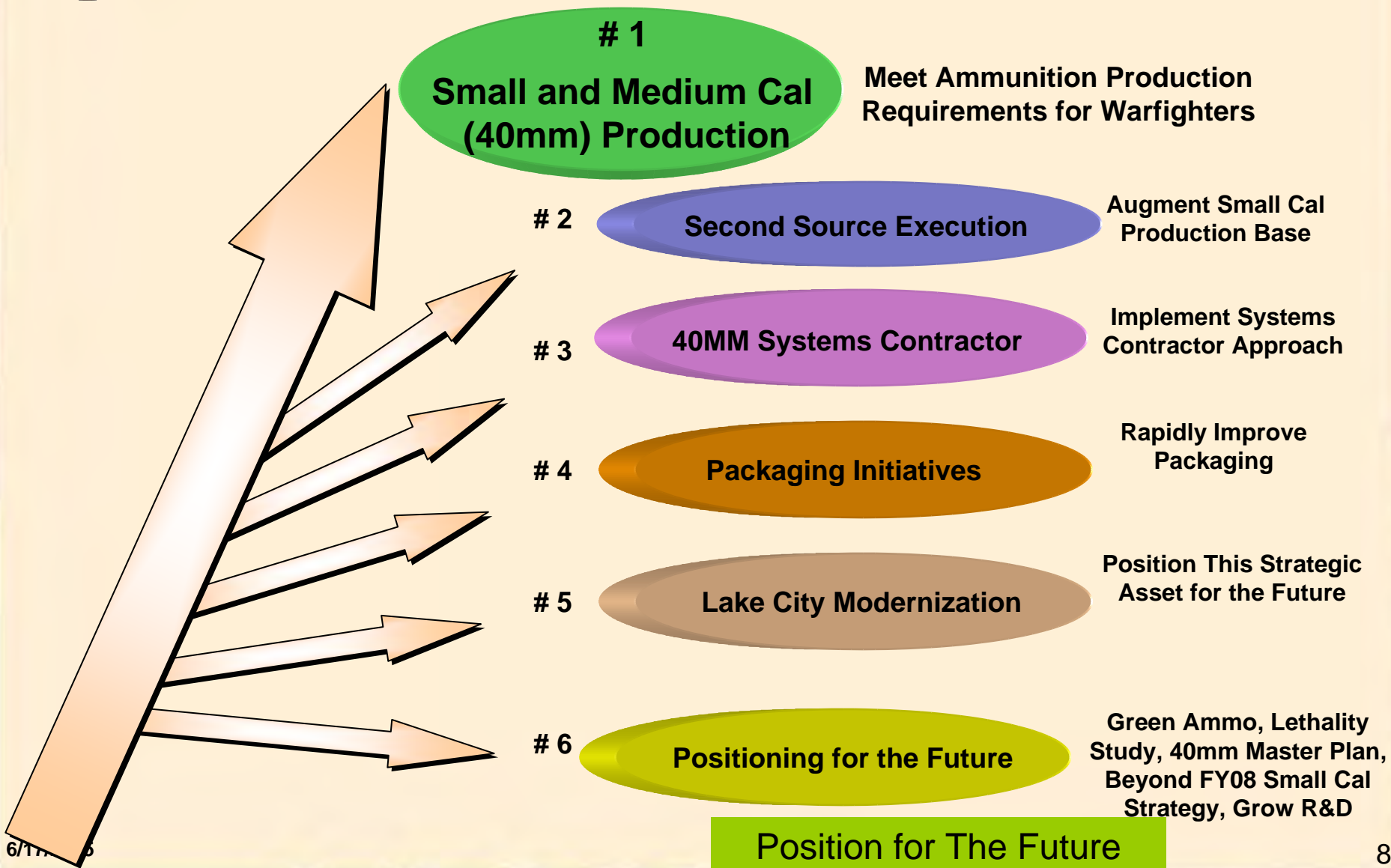
 # 1

Small and Medium Cal (40mm) Production

Meet Ammunition Production Requirements for Warfighters

 # 2 — Second Source Execution

Augment Small Cal Production Base

 # 3 — 40MM Systems Contractor

Implement Systems Contractor Approach

 # 4 — Packaging Initiatives

Rapidly Improve Packaging

 # 5 — Lake City Modernization

Position This Strategic Asset for the Future

 # 6 — Positioning for the Future

Green Ammo, Lethality Study, 40mm Master Plan, Beyond FY08 Small Cal Strategy, Grow R&D

Position for The Future
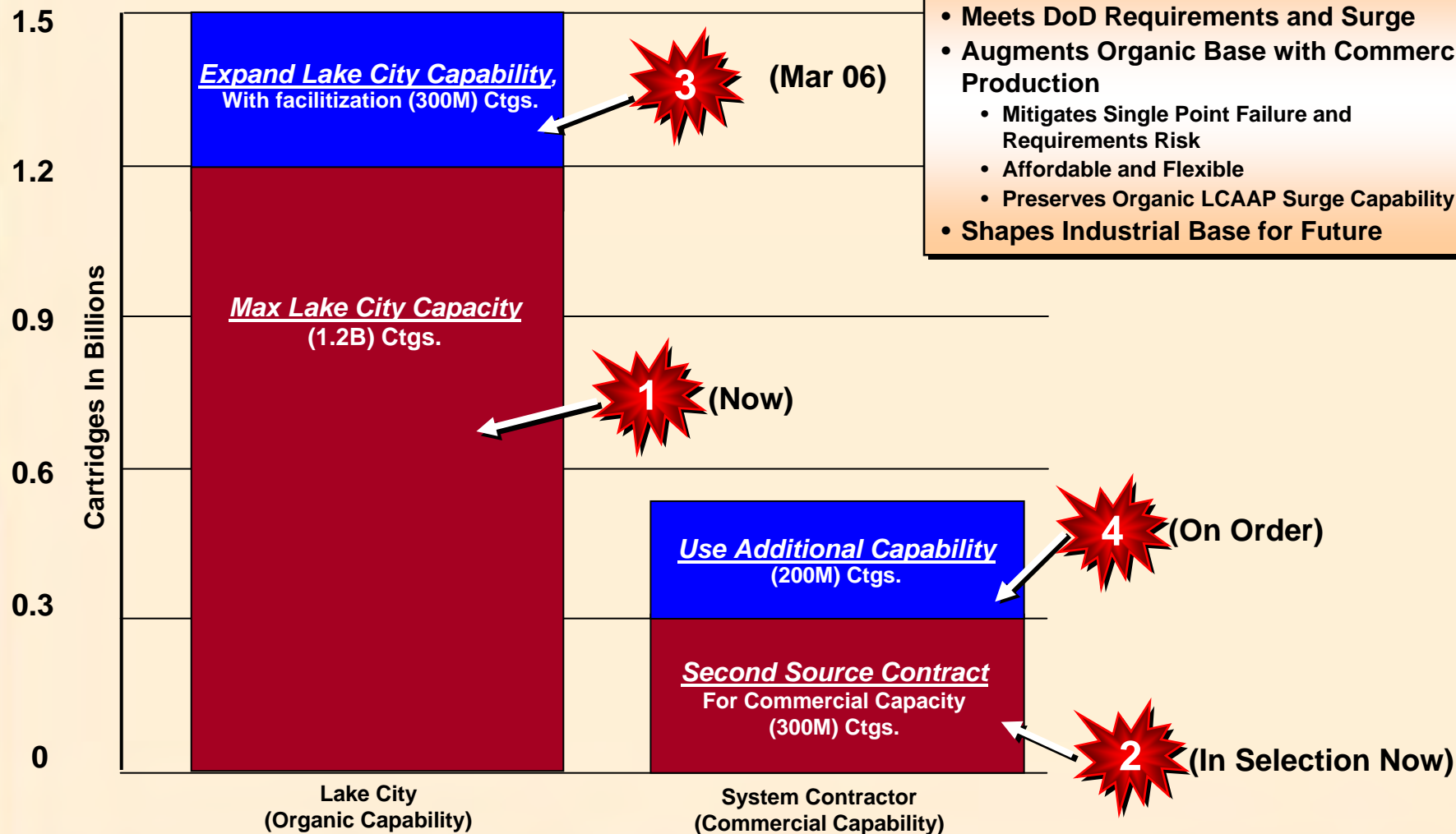
Small Caliber Initiatives

- **LCAAP Capacity Expansion & Modernization**
  - Increases Capacity From 1.2B To Over 1.5B, Available Mar 06, Progressing On Schedule
  - Modernizes Antiquated And Obsolete Equipment, Improves Production Quality, Flexibility And Cost, FY05 Fully Funded (34.74)
  - Secondary Effort to Address Infrastructure Needs Being Developed

- **Second Source**
  - Urgency Buy – Four Contractors\ten contracts – currently executing (Oct 04 > April 06 deliveries)
  - Second Source System Integrator – Bids Received, Evaluation In Progress – June 05 award anticipated

Old Crate Loading System   **New Crate Loading System**

Position for The Future
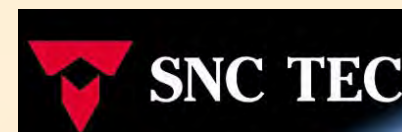
40mm Grenade System Strategy

New Strategy: 6 Rounds, Two Producer Teams

- Reorganized the 40mm Procurements from a Breakout/Component Strategy to a Grouped Ammunition System Strategy

- Protect the 8a Base for M918/M385 Projectile Assemblies

- Awarded Long Term Firm Fixed Price Contracts in April 05 to 2 Joint Venture Small Business Teams
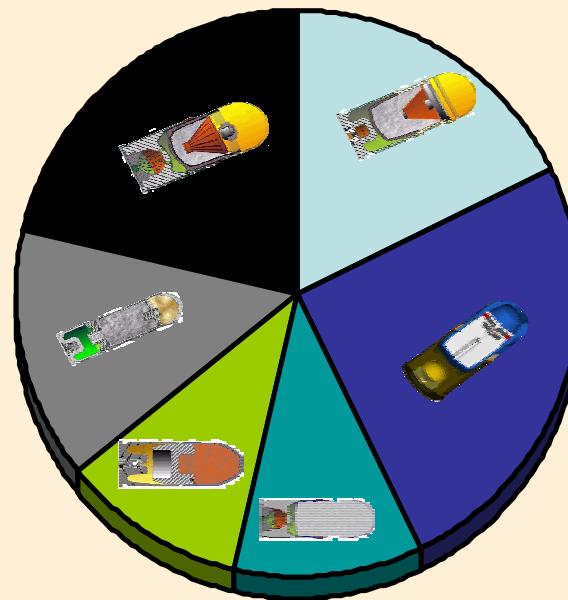
40mm Family
- ☐ M433
- ■ M918
- ■ M385
- ■ M781
- ■ M583
- ■ M430A1

Largest Small Business Set-Aside in US Army History (Up to $1.3B)

Position for The Future

# 40MM Grenade Initiatives

- **40mm Master Strategy**

  - **Awarded First System Contract for 40mm Ammunition**

  - **Baseline 40mm Grenade Performance**

  - **Assess Feasibility of M918/M385 mix**
    - Coordinating with DCD/TRADOC/G3
    - Assess Optimum Mix Ratios / Production Impacts
    - Potential for Significant Cost Savings
      - *$+50M Savings per year (Assumes 2:1Mix and 17M rds/yr)*
    - *Feasibility Test End of May/Early June with User*

  - **Aggressively Explore and Execute VE Initiatives on Family of Munitions**
    - M385A1 Material Replacement Effort ($1 per Ctg)
    - Single Chamber Cartridge Case Design (20%)
    - Links – Single Piece Design (25% vs. the Current Design)

Position for The Future
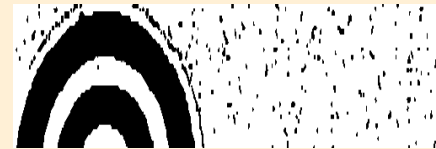
Medium Cannon Cal

- ## New Cannon Caliber PM

- ## Family Buy Strategy
  - **Multiple Year Contract for FY06- FY10**
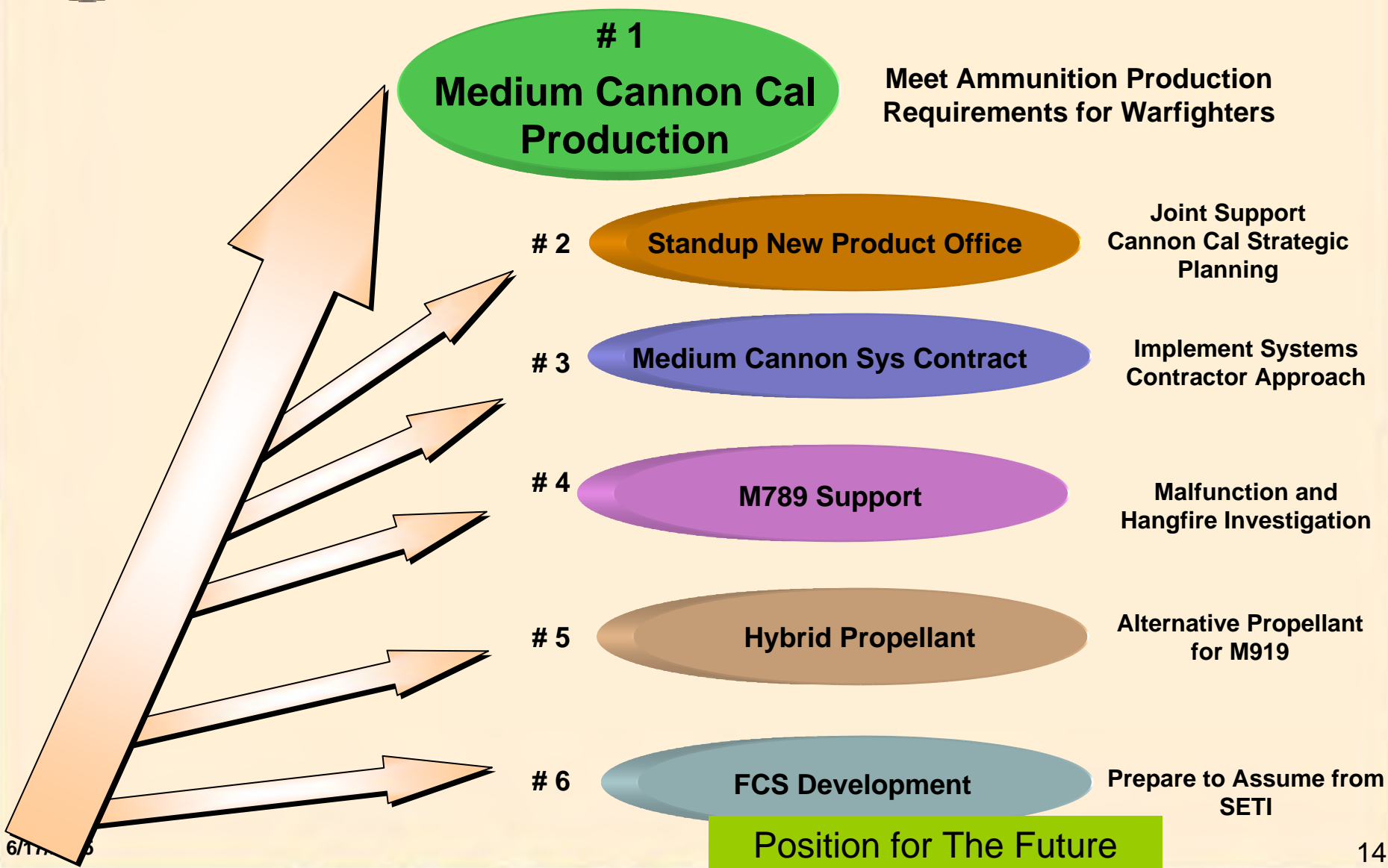 - **Considering 20mm, 25mm, 30mm**

- ## SMCA Support to Other Services

GENERAL DYNAMICS
Ordnance and Tactical Systems

ATK

SNC TEC

Position for The Future

Priority Road Map-Medium Cannon Caliber Primary Efforts

 # 1

Medium Cannon Cal Production

Meet Ammunition Production Requirements for Warfighters

 # 2 — Standup New Product Office

Joint Support Cannon Cal Strategic Planning

 # 3 — Medium Cannon Sys Contract

Implement Systems Contractor Approach

 # 4 — M789 Support

Malfunction and Hangfire Investigation

 # 5 — Hybrid Propellant

Alternative Propellant for M919

 # 6 — FCS Development

Prepare to Assume from SETI

Position for The Future

6/17/2005
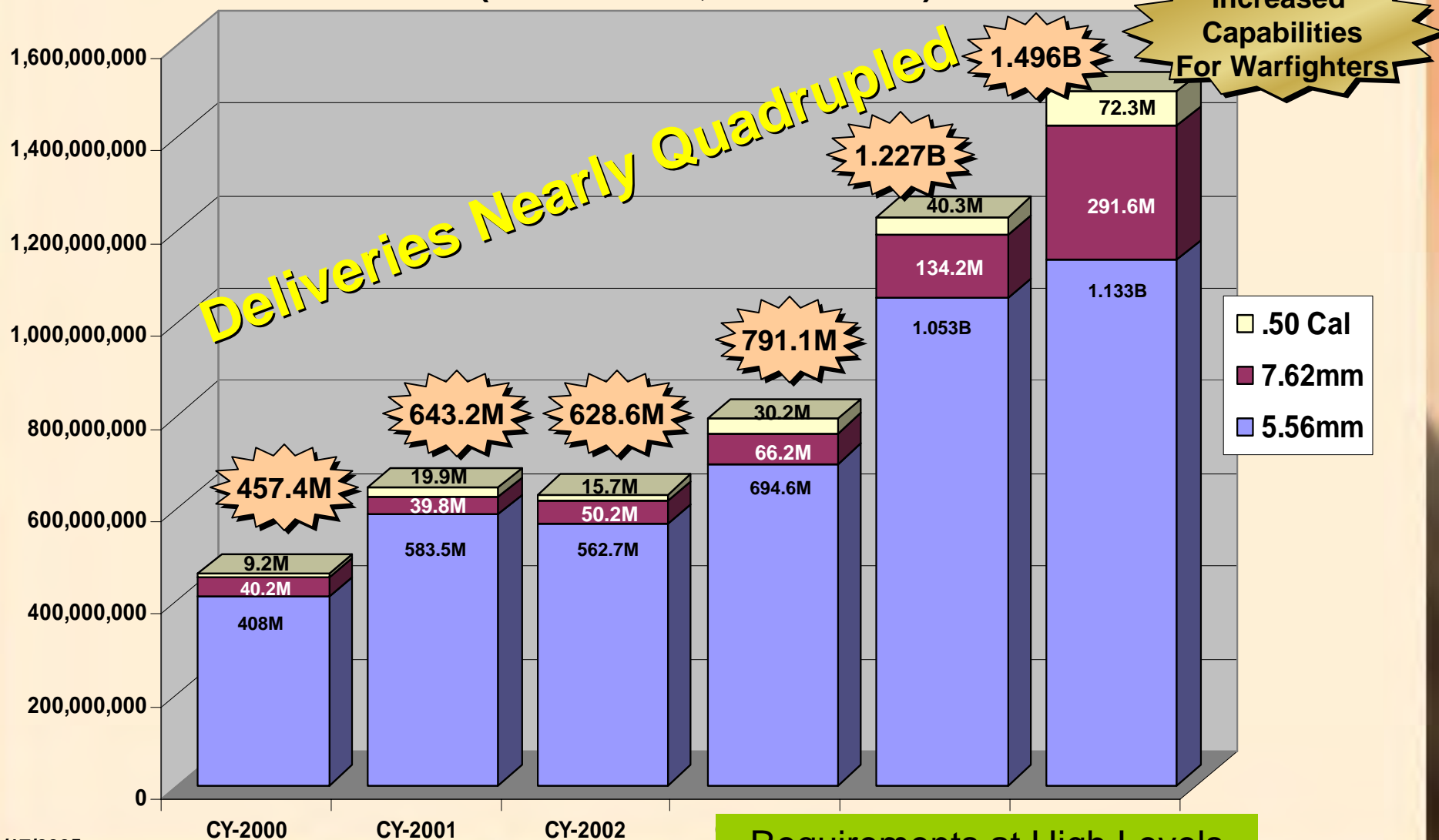
14

COE Drove Increase Demand

- **Small and Medium Caliber Ammunition**
  - **Pre GWOT**
    - **Less Training (Individual & Crew Served Weapons) (Non Infantry)**
    - **Living on Stockpile**
  - **GWOT On**
    - **CSA Initiative**
      - **"Every Soldier a Rifleman"**
    - **Modularity**
    - **Operational Use**

Watch Areas

- Armor Piercing
- Intermediate Barriers

Requirements at High Levels

Small Caliber Ammunition State of the Union

(All Services, All Sources)

Small and Medium Caliber Lethality

- **De-Emphasis on Armor "Hard" Defeat**
- **Requirement vs. General Purpose Capability**
  - **Long Range Defeat**
    - **Soft / Hard Targets**
  - **Close Quarters Battle**
    - **Soft / Hard Targets**
- **Strategy to Improve**
  - **Aggressively Bringing The Science Into The Art Of Small and Medium Caliber Ammunition**
    - **Deeper Understanding of Lethality**
  - **Building "Lethality" Tools To Give Better Answers Faster Throughout The Ballistic Test Community**

Issue: in-theater briefs said there was a problem with the M855's "stopping power" in close quarter battle (CQB) engagements

- **On 15 April, 2002, the U.S. Army Infantry Center hosted a meeting to evaluate and address the concerns.**
  - **The consensus from the meeting was that** the M855 was performing as it is intended**. However, the role of the ground combatant has changed, as well as, the specific threat target.**
- **Currently in Afghanistan and Iraq, users were frequently engaging targets in Close Quarter Battle (CQB) scenarios. In CQB, targets are engaged as close as 10 feet.**
- **It was observed that** the M855 has not been providing the "stopping power" the user would like **at engagement ranges less than 150 yards.**

Long Range Body Armor Penetration

CQB Light Target Effectiveness

Paradigm Shift

Lethality Discussion

Lethality Elements

Bullet Lethality = shot placement +ballistics + projectile/target interaction + psychology

Lethality
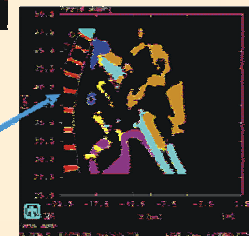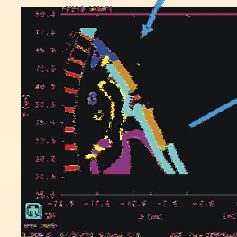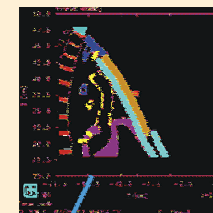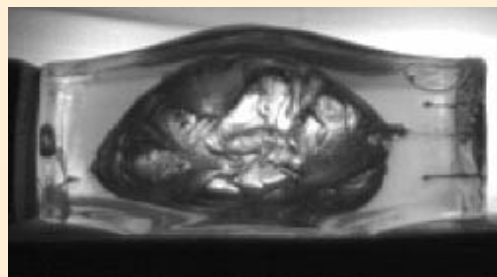1. Shot Placement
2. Geometry
3. Bullet Weight
4. Bullet Velocity
5. Bullet Yaw
6. Projectile Target Interaction
7. Psychology

Ballistics
Interior/
Exterior

•Energy Deposit
•Damage / Trauma
•Incapacitation
•Physiology

Lethality Discussion

Small Caliber Initiatives

- **Improving Accuracy for Combat Rounds**
  - **LV / HV Baseline Testing / Lethality Assessment**
  - **Build Models (PRODAS)**

- **Developing Green Ammo**
  - **Building Upon Phase I Material Characterization Results**
  - **Cost Control and Environmental Risk Mitigation are Overarching Goals**
  - **On Contract May 05**

M855 Accuracy Performance

(Chart: Average STD vs. Month, Jan-04 through Mar-05)

Legend: Mil Stnd Accuracy — AVSTD — AHSTD — MOA Conversion

Jacket

Slug   Core
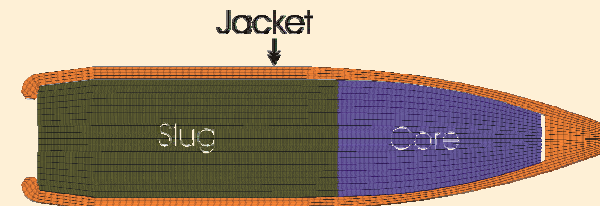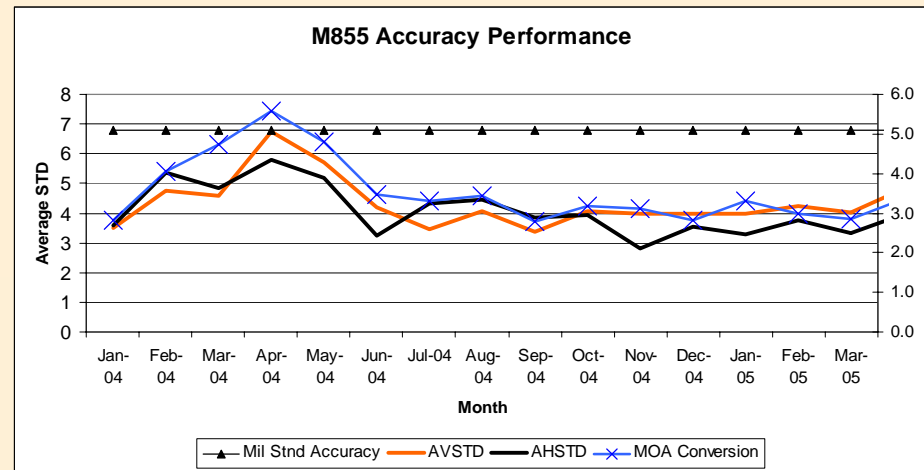
M855 Bullet Cutaway
Showing Lead Slug - Phase II
Effort will Focus on Replacement of Lead / Redesign
Of projectile

Lethality Discussion

Summary

- **Meeting the Warfighters' Needs**

- **Must Continue Emphasis and Progress with:**
  - **Acquisition Strategies that Support Smart Industrial Base Strategies**
  - **Production at High Levels**
  - **Application of Technologies to Improve Products**

Reliable, Precise, Lethal

Backup

Benefits To date

Es 9000

- ARL- Initial Models Developed For Exterior And Terminal Ballistics
- ARL - Some Models Developed Under Lethality Are Currently Being Applied To Green Ammo.
  - Reducing Decision Risk
  - Reducing Shooting Requirements

- ARDEC – Preliminary Models Started On 10% Gel.
- Arl-20% Preliminary Gel Models
  - Gel Aging Study
  - Gel Strength
  - Tissue Mechanical Properties
- ARL- Frag. Study In ComputerMan Started.
- Digitization Of ARL Baseline Technical Notebooks.

Es 9001

- ARDEC-standardized 10% Gel Manufacturing Standard
- ARDEC - Extensive 10% Gel Comparison Of 29 Small Arms Rounds.
- ARDEC - Completed Draft Reports On Above.
- ARL - Complete Aero On 14 Military 5.56MM Rifle Systems.
- ARL - Initial Fleet Yaw In Progress.

"Lethality" A Gauge or Metric of Effectiveness

The "Lethality" of a system is misleading and ambiguous

Fact: "Stopping Power" is the common term for lethality.

Goal: A straight forward way to evaluate and compare the <u>typical or expected</u> performance of weapon systems.

Issue: Terminal ballistics or more appropriately "Wound Ballistics" appears simple but involves diverse concepts in a variety of fields and disciplines.

Impact: Whenever the "Lethality" of a system is reported, you have to know specifically what is meant by "Lethality" and what simplifications and assumptions were made to give you that measure of expected performance.

"When a shooter asks the experts about his weapon's "lethality". He is likely to get more responses than he has rounds. These answers, like his shots, will all be off target to some degree."

A Closer Look at Some of the Variables

Lethality = **Shot placement** +Ballistics + Projectile/Target interaction
+ Psychology + Legal Restrictions + Logistics

Shooter

Knowledge (choice of target)
Accuracy & Conditioning. (proficiency & physical ability)
Stress (mental state)
Time (time to acquire)

Weapon System (weapon and ammo)

Quality (condition & design of the weapon and ammo. Including ammo tolerance)
Ranging errors (instrumental & shooter skill level)

Environmental

Exposure (Intervening barriers)
Weather Effects (Wind, Temperature, Humidity, etc)

A Closer Look at Some of the Variables

Lethality = Shot placement + **Ballistics** + Projectile/Target interaction
+ Psychology + Legal Restrictions + Logistics

Interior Ballistics

Propellant (pressure, flame temperature, etc…
Weapon (twist, barrel length, user restrictions, etc..)
Projectile (mass, diameter, geometry, etc.)
Recoil (this shot and the effect on accuracy of the next shots fired)

Exterior Ballistics

Effective Ranges (close up, far away, or all of the above)
Dispersion / Accuracy Requirements (tied to range)

Terminal Ballistics

Impact Velocity Requirements
Striking Yaw / Angle of Attack
Barrier Effectiveness Requirements (auto glass, steel, drywall, body armor)
Types of Target (hard/soft, prone/frontal/dorsal, etc)
Desired Effect (Suppression, Incapacitation, Death)
Time Frame (immediate, 30 sec, 5 min, 72 hr, etc)

A Closer Look at Some of the Variables

Lethality = Shot placement +Ballistics + **Projectile/Target interaction**
+ Psychology + Legal Restrictions + Logistics

Biological Factors

Circulatory Collapse (blood loss)
Central Nervous System and Vital Structure Injury (CNS, etc...)
Role of Pain (plays a role with less than "lethal" munitions)
Shot Line (path through the body)
Adrenaline / Drugs / Alcohol (Effect on pain)
Material Properties of Tissues (bone, muscle, etc are very resilient)

Event Mechanics

Permanent Cavity (the hole)
Temporary Cavity or Cavitation (stretching the medium)
Projectile Deformation / Fragmentation ("energy deposit" / material failure)

A Closer Look at Some of the Variables

Lethality = Shot placement +Ballistics + Projectile/Target interaction
+ **Psychology + Legal Restrictions + Logistics**

Psychology

Belief System / Motivation (Fight/Flight or no option)
Hollywood Effect (I've been shot! / false expectations of performance)

Legal Restrictions

International Conventions (no expansion, visible to x-ray, etc…)
Domestic Law Enforcement vs. Military (restrictions not the same)

Logistics

Time Considerations: Expected length of time till re-supply
Stowed Kills vs. rounds carried (weight considerations)
Versatility (How many weapon systems / countries / services use this ammo?)

SYSTEM OF SYSTEMS SECURITY INITIATIVE

A Consortium of Industry, Government and Academia Providing integrated scalable solutions serving local, regional and national needs to meet the emerging threats of the 21st Century

John Dalton
Vice President, Advanced Programs
CACI Technologies Inc

Outline

- **Background-Why SOSSEC is needed**

- **What SOSSEC is**

- **How SOSSEC meets the need**

- **Status, Vision and Plan**

Why SOSSEC Is Needed

- **Homeland Security and Force Protection demand agility and responsiveness that match the threat**
  - Collaboration and cooperation from local through federal/military levels
  - Across geographic, jurisdictional, organizational boundaries
  - "Sense and respond"
  - All phases: intelligence alerts through response and recovery

- **Challenge demands new tools and technologies- but transcends any individual technology**

- **System of Systems solutions are needed to deliver the required range of capabilities that tie together people, organizations, strategies and technology to meet the threat**

- **Value added for participating programs**

Current Situation:
Many Isolated "Islands" of Capability
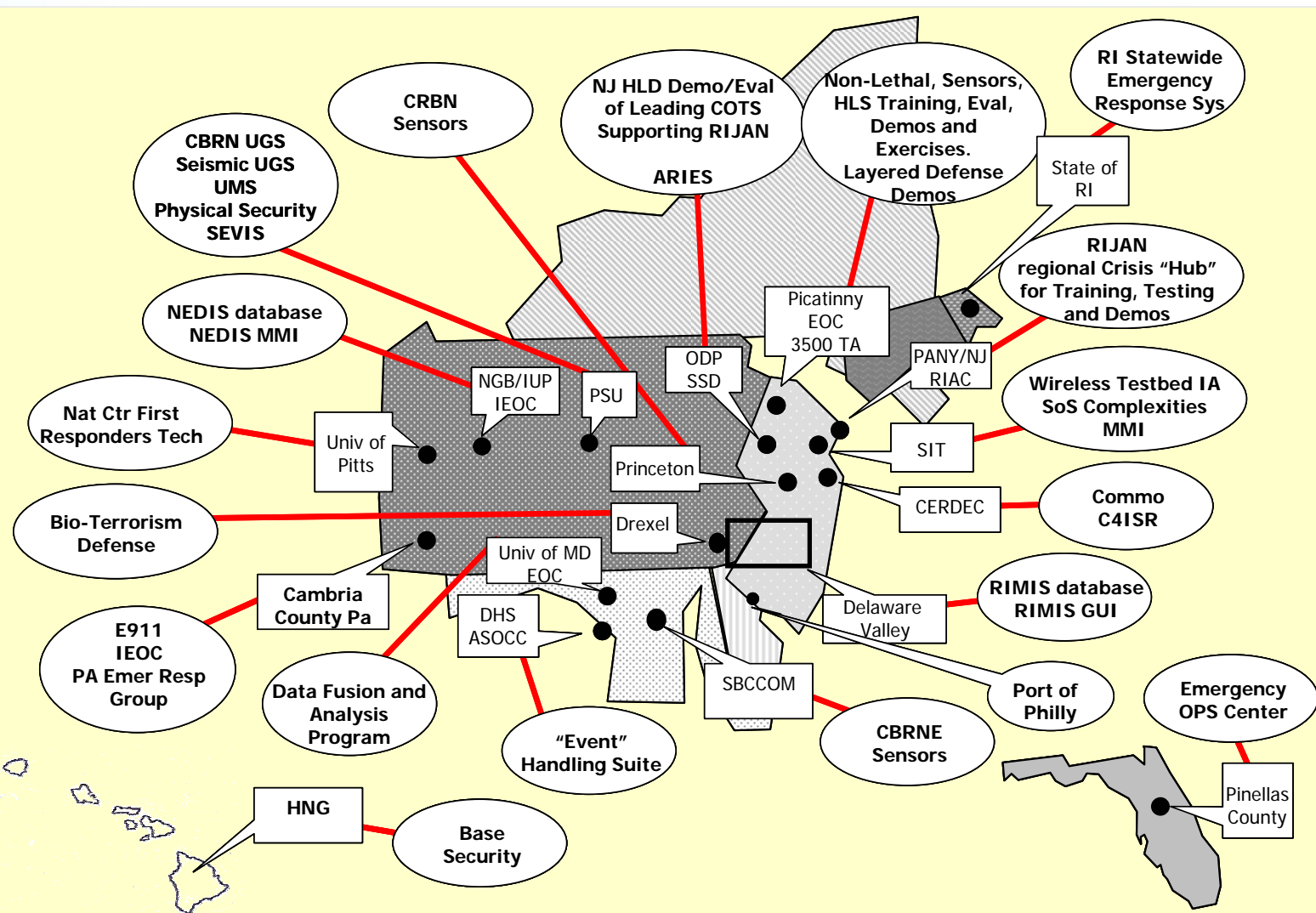
How SOSSEC Meets the Challenge

- **Integration of multiple existing and ongoing HD/HS projects and systems markedly improves regional security - rapidly and efficiently**

- **Application of DoD Net-Centric Operations concepts**

- **Practical strategy for expansion and replication of regional capabilities will accelerate achievement of large scale interoperable security capabilities**

- **The growing SOSSEC Consortium represents a community of interest to foster best of breed concepts, technologies and products for long term national HD/HS development**

SOSSEC Strategy Fosters Effective Partnering

- **Standards- Based Service Oriented, Web Service Enterprise Architecture Framework for Ease of Affiliation**
    - "Loose" integration, avoiding the pitfalls of traditional approaches
    - Faster, less costly
    - Preserves autonomy of individual communities' decision making
    - Leverages DoD experience and capabilities- Net Centric Operations
- **Federated Operating model facilitates collaboration across projects**
- **A practical spiral development strategy**
    - High impact solutions near term
    - Rapid, efficient evolution to large scale solutions for homeland protection
    - Dual- use benefits to the warfighter
    - Best of breed technology adoption
    - Natural migration path from pilot programs to self-sustaining programs
- **A means to rapidly expand and propagate interoperable System of Systems capabilities across regions- potentially to national scale**
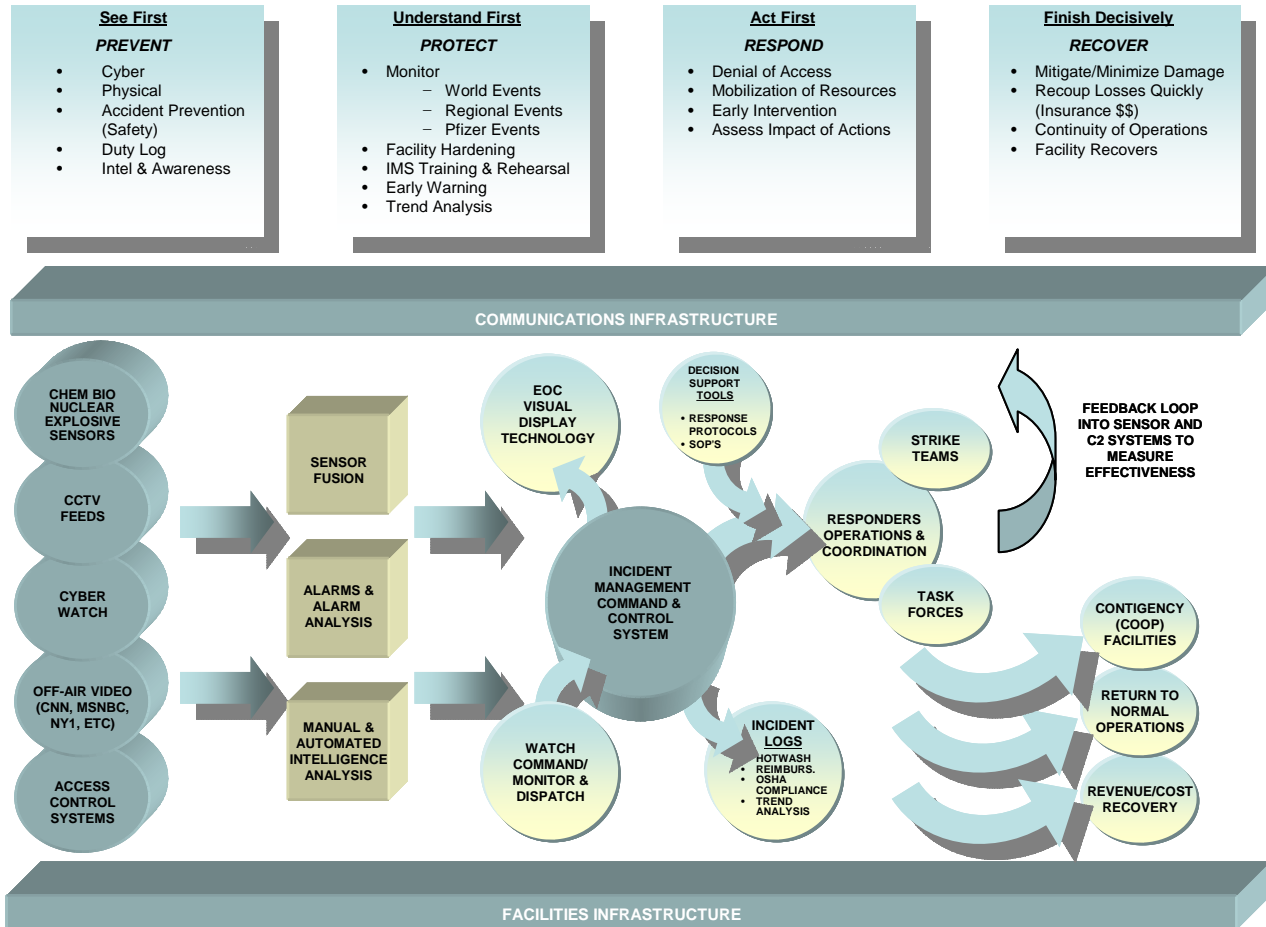
New Model, Proven Principles

Standards- Based Enterprise Architecture Framework Supports all Phases of Homeland Defense/Force Protection Operational Cycle

See First
PREVENT
- Cyber
- Physical
- Accident Prevention (Safety)
- Duty Log
- Intel & Awareness

Understand First
PROTECT
- Monitor
  - World Events
  - Regional Events
  - Pfizer Events
- Facility Hardening
- IMS Training & Rehearsal
- Early Warning
- Trend Analysis

Act First
RESPOND
- Denial of Access
- Mobilization of Resources
- Early Intervention
- Assess Impact of Actions

Finish Decisively
RECOVER
- Mitigate/Minimize Damage
- Recoup Losses Quickly (Insurance $$)
- Continuity of Operations
- Facility Recovers

Goals & Strategies

Investment & Resources

People in an Organization

Processes

Business & Operations

Information & Applications

Systems & Technology

COMMUNICATIONS INFRASTRUCTURE

CHEM BIO NUCLEAR EXPLOSIVE SENSORS

CCTV FEEDS

CYBER WATCH

OFF-AIR VIDEO (CNN, MSNBC, NY1, ETC)

ACCESS CONTROL SYSTEMS

SENSOR FUSION

ALARMS & ALARM ANALYSIS

MANUAL & AUTOMATED INTELLIGENCE ANALYSIS

EOC VISUAL DISPLAY TECHNOLOGY

INCIDENT MANAGEMENT COMMAND & CONTROL SYSTEM

WATCH COMMAND/ MONITOR & DISPATCH

DECISION SUPPORT TOOLS
- RESPONSE PROTOCOLS
- SOP'S

RESPONDERS OPERATIONS & COORDINATION

STRIKE TEAMS

TASK FORCES

INCIDENT LOGS
- HOTWASH REIMBURS.
- OSHA COMPLIANCE
- TREND ANALYSIS

FEEDBACK LOOP INTO SENSOR AND C2 SYSTEMS TO MEASURE EFFECTIVENESS

CONTIGENCY (COOP) FACILITIES

RETURN TO NORMAL OPERATIONS

REVENUE/COST RECOVERY

FACILITIES INFRASTRUCTURE

Support for National/Response Plan and National Incident Management System
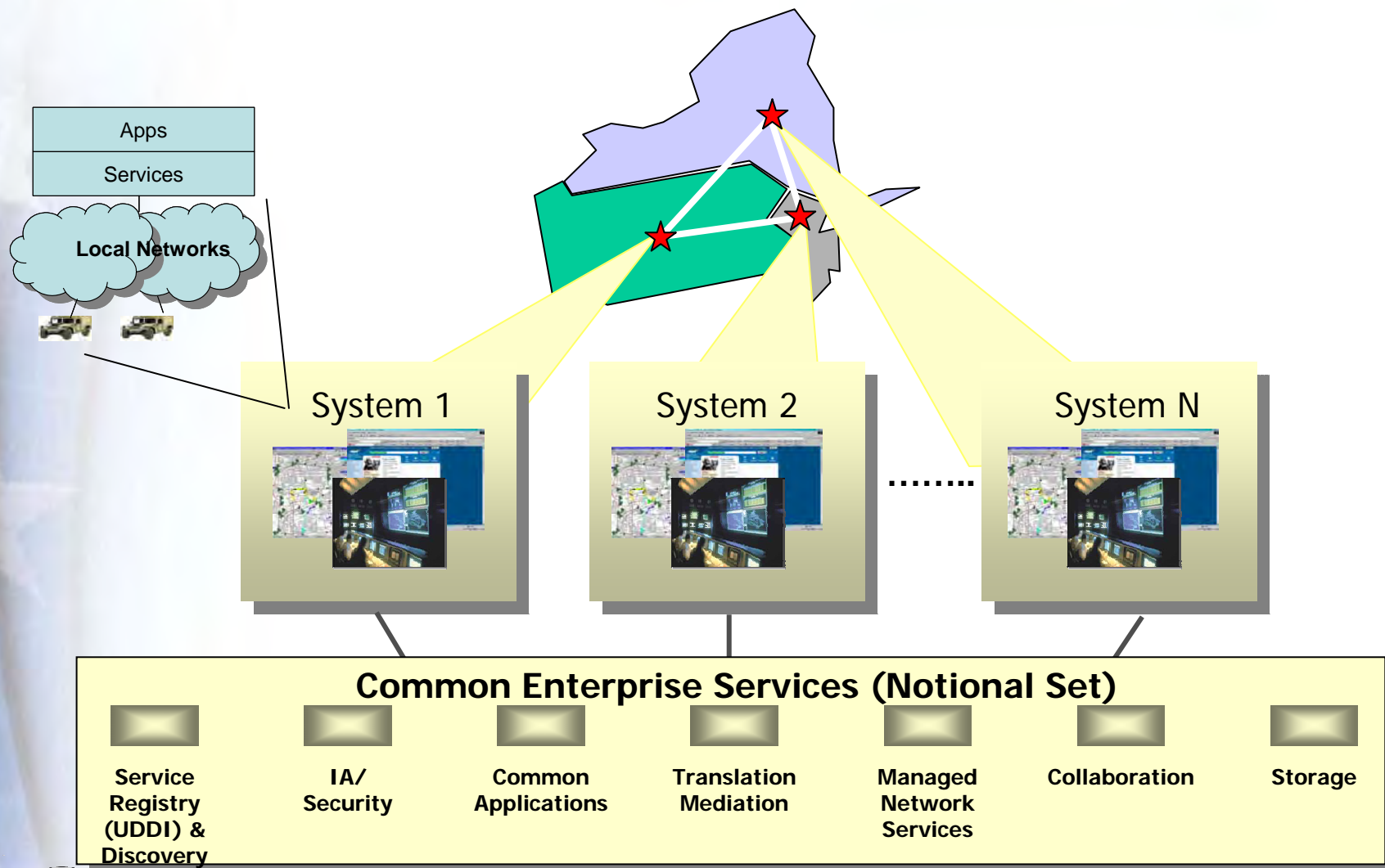
System of Systems Security SOSSEC

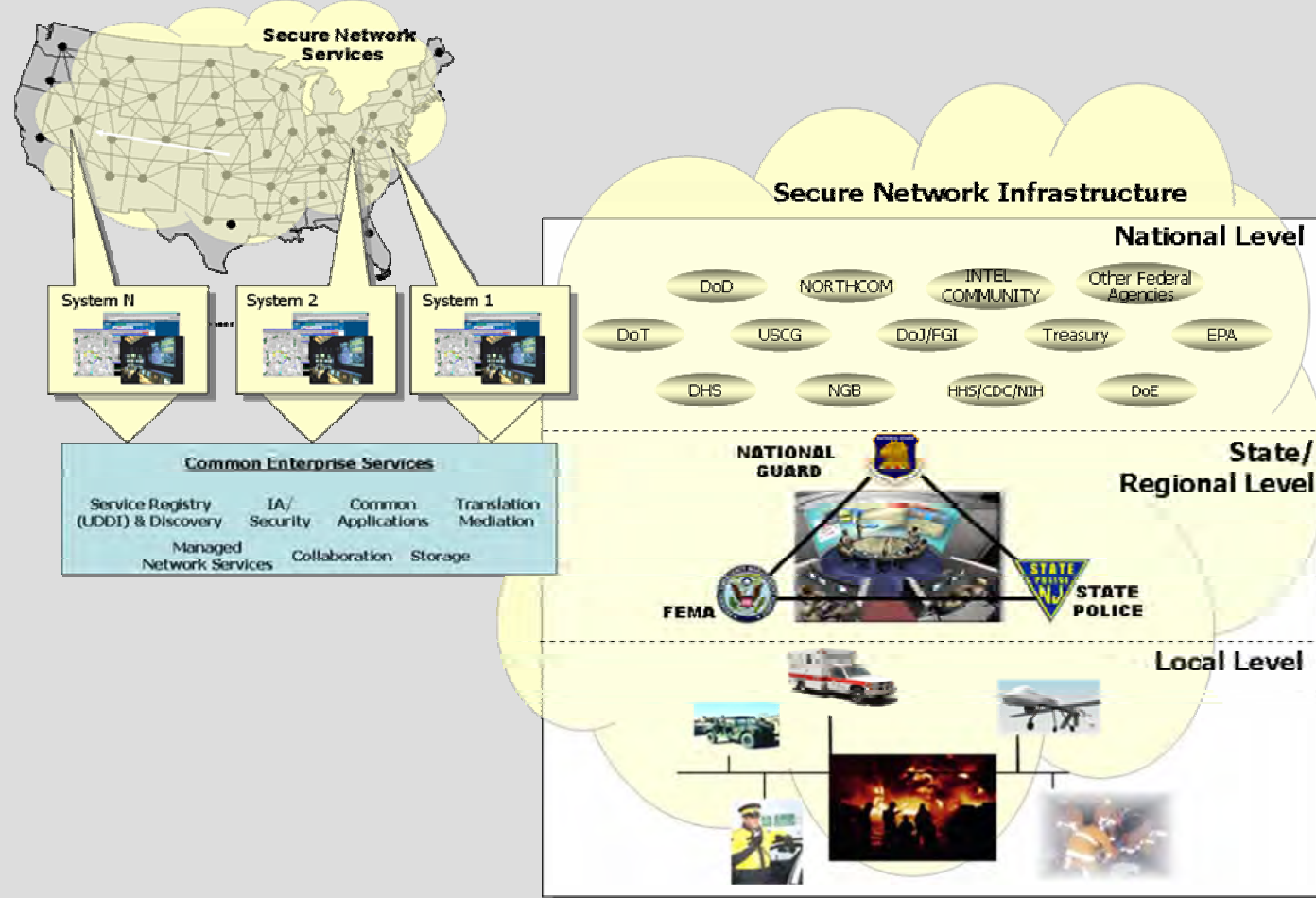# SOSSEC Enterprise Architecture Framework

- **Standards- based EA Framework- not a rigid architecture**

- **Applies Service Oriented Architecture and Web Services concepts and standards**

- **Network- Centric Core Enterprise Services are a critical component**

  - Better, Faster Planning and Decision making via enhanced access to information and services outside individual user domains

  - Better collaboration through shared situation awareness, rapid community of interest formation- sense and respond operations

  - Interoperability

  - Ease of affiliation

- **Basis for expanding System of Systems**

"Loosely" Integrated Systems Supported by Common Enterprise Services

Apps

Services

Local Networks

System 1

System 2

System N

....

Common Enterprise Services (Notional Set)

Service Registry (UDDI) & Discovery	IA/ Security	Common Applications	Translation Mediation	Managed Network Services	Collaboration	Storage

Network-Centric Enterprise Architecture Framework Supports Agile, Coordinated Operations

SOSSEC Vision and Plan

START-UP:
- Achieve early critical mass & establish momentum by integrating existing programs on regional level
  - Firmly establish "core" consortium
    - Implement initial enterprise building blocks

TRANSITION:
- Expand coverage to other regions & organizations by attracting new members to consortium
  - Facilitate transition of projects to mainstream programs at federal/regional state levels
    - Expand enterprise service functions

LONG-TERM:
- Facilitate continuous development of new best of breed solutions
  - Provide assistance to communities to rapidly scale up capabilities & link to regional/national system of systems

SOSSEC Launch July 2004

PRESENT June 2005

LDD-1

LDD-2

Picatinny, New Jersey

Picatinny Testbed EOC
(Emergency Operations Center)

- Sound Facility
- Hogan wall
- Simulators
- Sensors
- Information Assurance
- Swat Team
- Underground Tunnel
- Robot Development and Training
- Downtown
- Classroom
- Fire Tower
- Human Non-Lethal Effects
- Administration
- Future Administration Addition
- Maintenance Facility
- Chemical Hazmat
- Aircraft Training

Layered Defense Demonstration - 2

Cambria County, PA
- School Takeover

Port Authority Of Philadelphia
- Radiation Source on Ship

UCC Picatinny, NJ
- Interoperability Architecture/ Situational Awareness Dashboard
- Enterprise Service Platform

EOC Picatinny, NJ
- Bus explosion/ chemical release

Washington, DC
- DMIS

Secure Intranet

SYSTEM OF SYSTEMS SECURITY INTEGRATION FOR HOMELAND DEFENSE AND HOMELAND SECURITY

Forging responsive, enduring security through integration that harnesses the combined power of people, processes and technologies across organizations and geographic boundaries

A partnership of Government, Industry and Academia

Logistics Research & Engineering Directorate

Providing logistics support to our warfighters

Alan Galonski
Chief, Future Concepts Division

Logistics R&E Directorate Support to Operations in Iraq

M7 Forward Repair System Heavy and Body EOD Vehicle - Critical to Operation Iraqi Freedom

Contact Maintenance Truck Estimated 700 deployed to Afghanistan and Iraq

Rock Island Arsenal producing 10 per month

Accelerated fielding and provided 16 prototype Configured Load Building Tool laptops and trained Stryker BCT deploying to Iraq

Captured Enemy Ammunition
- **Provided cost estimate and sources of supply info to Corps of Engineers for 30,000 pallets & banding materials for ammo consolidation & handling**
- **Pursuing modified version of ASIS MHP to provide Iraqi Army ammo stock visibility and surveillance**
- **LRED leading effort on future reconstitution of ammo for Iraqi Defense Forces**

Configured Load Building Tool

Platform Type

Weight and Cube of Finished Load

Configuration of Load

Load Assembly Instructions

Configured Load Building Tool

File Configure

Assets Visualized

Load Name: Class IV

Compute Load Instructions

Transport Steps All

Steps: 0 - 6 < >

0 1 2 3 4 5 6

Information: 6 - 6

C: PackM

0000000000401

enclature: 2-MAN FIGHTING POSITIC

nsion: 48.0 x 96.0 x 20.0

ht: 1840.0

Weight: 7760.0

the long end of the Box (96.0in) parallel
ng end of the Crop in the position shown
er f Gravity is good, it is 0.000 inches from
enter of the CROP when fully loaded

PLS + M3 CROP [1]

Zoom: Rotate Z:

Vertical Position: Rotate Y:

Horizontal Position: Rotate X:

User Selectable 3-D Viewing Angle and Zoom

Status:
- **Fielded with Stryker Brigade in Mid-East**
- **Integrating with SAAS STAMIS for Class V**
- **Incorporating process for irregular shaped objects - July 05**
- **Delivery of Full Operational Capability (FOC) – Sept 05**

3
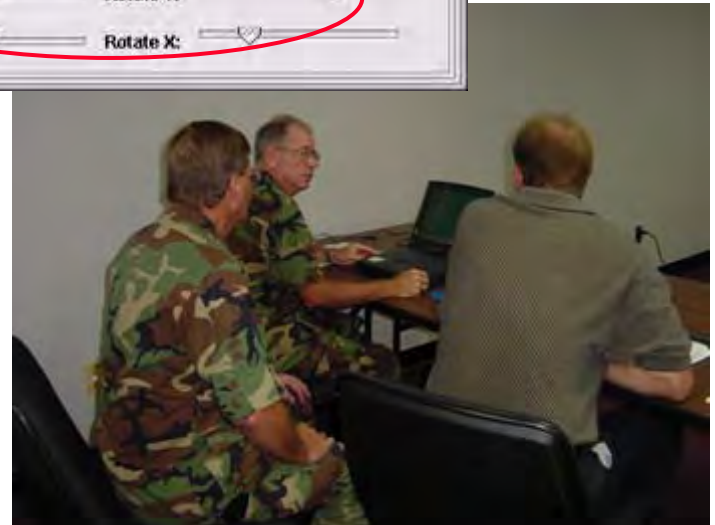
Logistics R&E Directorate Support to Operations in Iraq

Deploying Dec 03 to provide new equipment training and ensure soldiers understand safety issues involved with firing AT4-CS in confined spaces

Providing training on various non-lethal munitions systems to soldiers deploying from Ft. Dix NJ to SWA

Leading numerous malfunction investigations which could impact deployed troops in Iraq

Determined the packaging and palletization materials for 33K STONS of retrograde ammunition

Deployed to Baghdad as part of Rapid Equipping Force to train 101st and 82nd Airborne and 2nd and 3rd BCTs on Gunfire Detection System

New Equipment Training (NET)

Gunfire Detection System
Units trained in Mosul
101st Airborne Division
8 classes, 74 students

AT4 CS HP
Units trained in Afghanistan
3/3 SFG, 10th INF DIV 1st BDE, 2-22 INF,
C Co LRSD Batt and 1st 501st PIR.
4 classes, 63 students

Weapons Optics
M-68 CCO, ACOG,
back-up iron sight, M-145 MGO
Units trained in Camp Victory
1 class, 25 students

Satellite New Equipment Training Center

- **24-hour *on-site* satellite transmission and downlink**
- **CONUS and OCONUS locations to include Southeast Asia**

**Portable Field-Deployable
Satellite System**

**Rapid capability to conduct new equipment training
in response to warfighter needs**

*New capability to enable the Warfighter to reach back to ARDEC subject
matter experts for training and to rapidly resolve technical issues*

Logistics R&E Directorate Support to Operations in Afghanistan

1000 containers provided rapidly to ship items to Afghanistan "Wow - you guys work fast"   - Capt Jansen, Special Ops Support Battalion

"The ASIS (Ammo Surveillance Information System) is Gold in Afghanistan"…Quality Assurance Surveillance Ammunition Specialist (QASAS) responsible to ensure ammo is serviceable in Afghanistan

Assisted with numerous packaging and palletization issues. Example:improved packaging for substitute 5.56mm training rounds

Ammunition Surveillance Information System Munitions History Program (ASIS-MHP)

• **Internet accessible inspection application**

• **Collects & communicates munitions readiness status directly from field to command**

• **Enables authorized users worldwide data access via the internet**
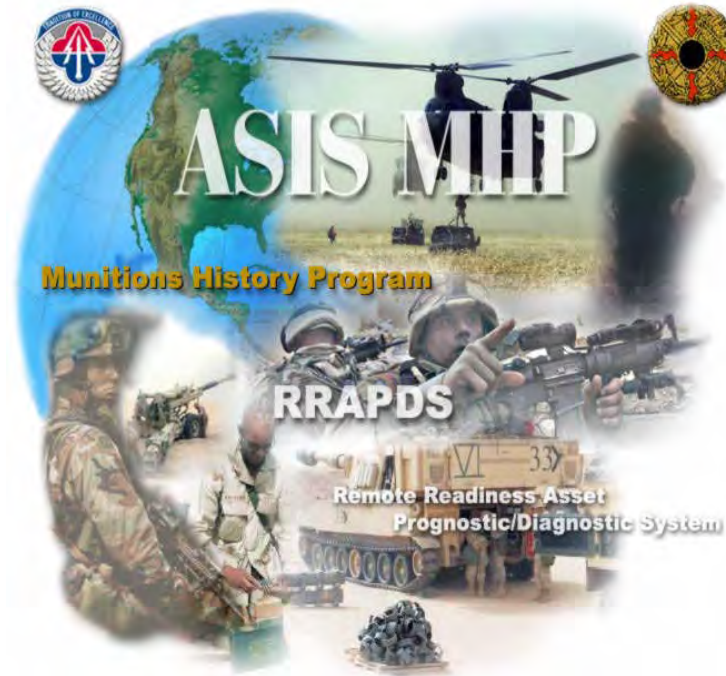
Team Development effort:
• **AMCOM**
• **ARDEC ATS Div**
• **ARDEC, Future Concepts Division**
• **Defense Ammo Center (DAC) QASAS Surveillance Mod Team members**
• **Jacobs Sverdrup**
• **JMC**

Fielded at: Arifjan Kuwait, Blue Grass Army Depot, Crane Army Ammunition Activity, Letterkenny Army Depot, MOTSU Prepo, Picatinny, Tooele Army Depot & USARPAC, Hawaii

- Initial fielding 2003
- 130 worldwide registered users
- Round the clock system operation
- 19,000 inspections successfully entered into ASIS MHP
- Next Stop - Anniston Army Depot – June 2005

8

Ammunition Packaging

The time has come….
to take Ammunition Packaging
to the next step:

- Examine units of issue
- Automation friendly packaging configurations
- Reduced layers
- Rapid reconfiguration and nesting for configured loads
- Insensitive munitions enhancement
- Integration of UID and RFID technologies

M8 Bandoleer
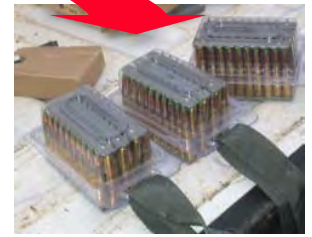
Commercial Blister Pack

Wirebpound Overpack

Commercial PackPlus
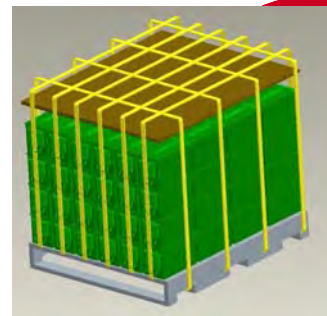
Single item pallets
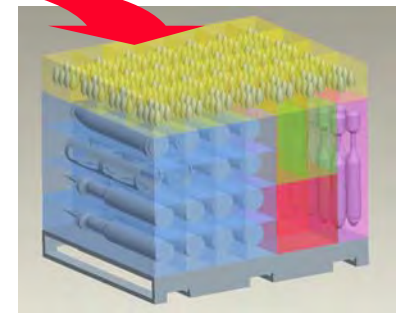
Nestable Packaging

9

Joint Modular Intermodal Distribution System (JMIDS) ACTD

Joint Modular Intermodal Container (JMIC)

Joint Service *packages* and *platforms* with *integrated asset tracking* to enable the efficient and seamless movement of supplies through the distribution system
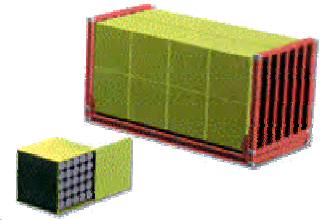
Joint Modular Intermodal Platform (JMIP)

Embedded Automated Information Tracking

Participants:

Lead Service: Army

Partnering Service: USN

Sponsoring CoCOM: TRANSCOM

Technical Manager: ARMY, ARDEC

Operational Manager: TRANSCOM, J5

Transition Managers: Service PEOs / PMs

DoD Agencies: DLA

Supporting Services: USMC, USAF

Supporting CoCOMs: JFCOM

- *Interlocking*
- *Intermodal*
- *Re-configurable*
- *Joint Compatibility*

ARDEC Lead - FY06 ACTD / JCTD Candidate

Joint Modular Intermodal Distribution System (JMIDS) ACTD
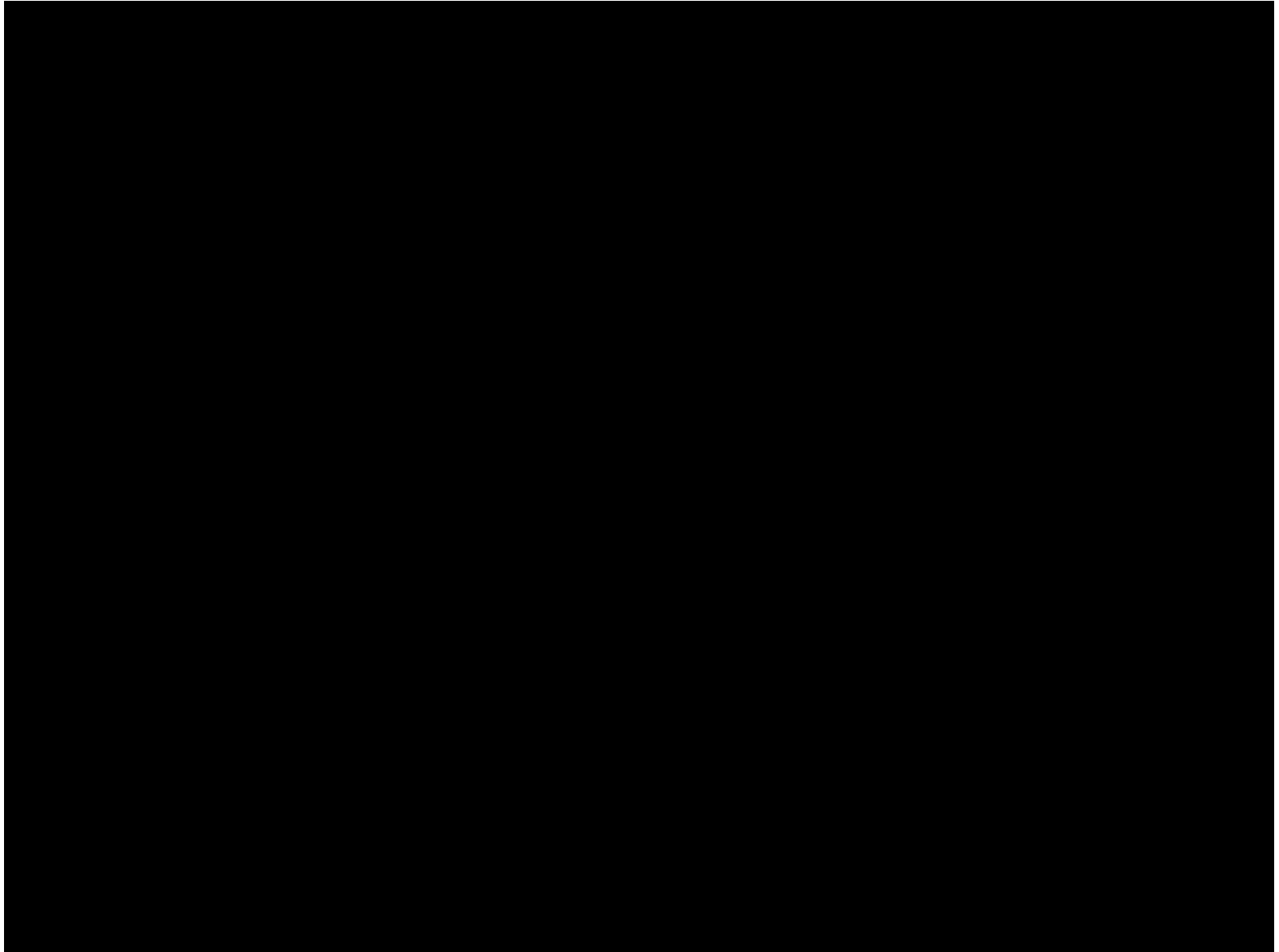
Ammunition Adage

A Soldier can survive in Combat

Forever Without Mail

30 Days Without Food

3 Days Without Water

3 Minutes Without Air

But Not One _Second_ Without Ammunition!

Contact Info:

Alan Galonski

Chief, Future Concepts Division

Logistics Research & Engineering Directorate

Armament Systems Integration Center

ARDEC

galonski@pica.army.mil

(973)724-2349 DSN 880-2349

Local Officials' Preparedness to Combat Extremism:
A Survey of New York and California County Clerks

Prepared for NDIA
15 June 2005

Major Gingee Guilmartin, U.S. Army
Department of Social Sciences
United States Military Academy
845-401-4149

Extremist Contact by Group Type
California and New York
(past five years)

Percent

Group Type

- Tax Protest — California: 65, New York: 23
- Sovereign Citizen — California: 53, New York: 41
- Militia — California: 52, New York: 10
- Property Rights/"Wise Use" — California: 17, New York: 15
- White Supremacist — California: 10, New York: 0
- Anti-Abortion Activists — California: 0, New York: 5
- Radical Environmentalist — California: 7, New York: 0

A Right Wing Phenomenon

■ California ⬚ New York

(CA: N=31, NY: N=39)

Eugenia Guilmartin 1

Extremist Tactics
California and New York
(past five years)

Percent

Tactics

- Challenging Oaths: California 67, New York 55
- Liens: California 67, New York 9
- Warrants: California 43, New York 18
- Intimidation: California 38, New York 23
- FOIA: California 10, New York 36
- Tax Fraud: California 37, New York 0
- Disruption: California 5, New York 14
- "Bogus" Checks: California 10, New York 0

Paper Terrorism

■ California ▨ New York

(CA: N=39, NY: N=31)
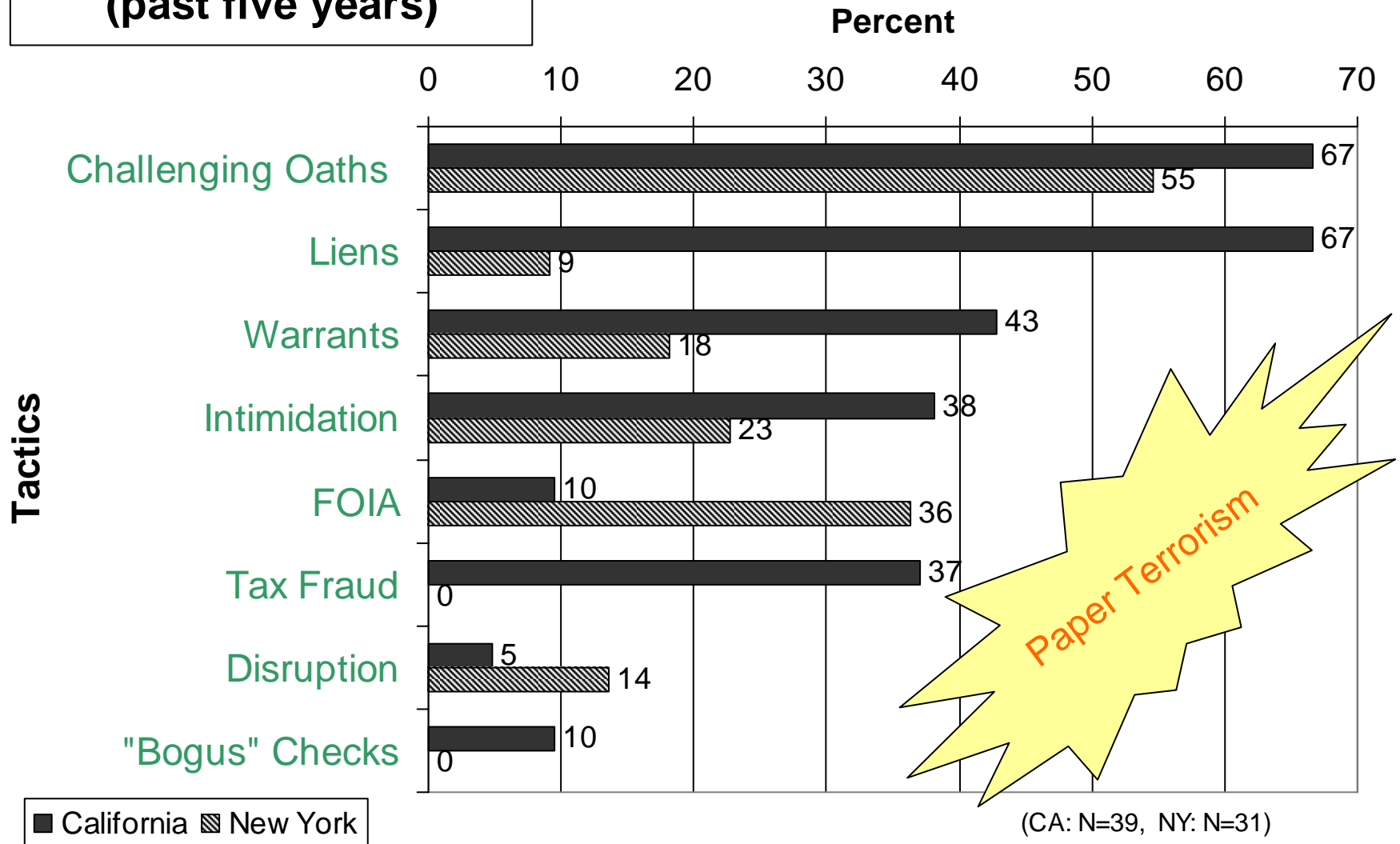
Employees under Threat…

Eugenia Guilmartin   3
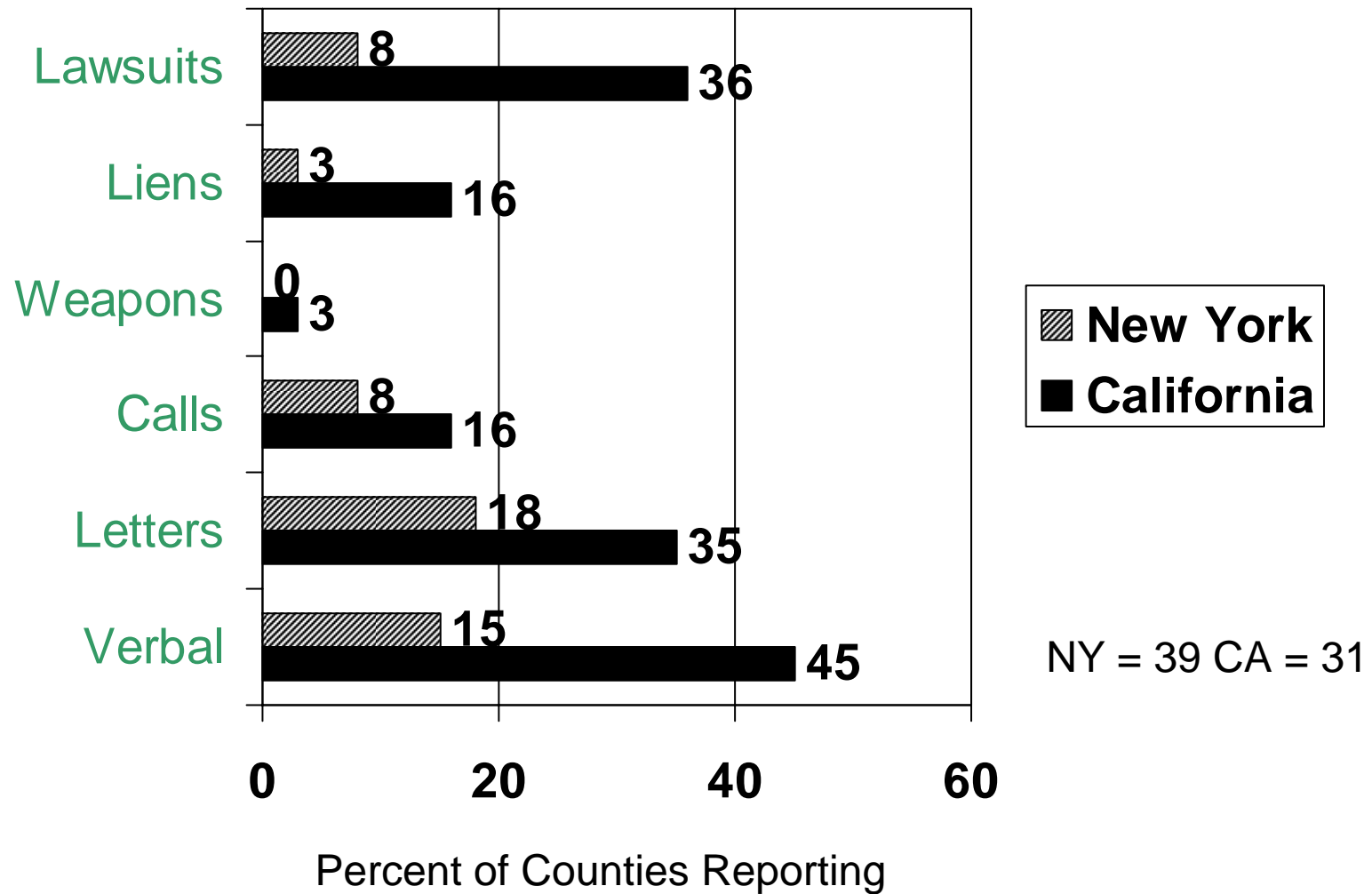
Extremist identification: Employees often first to know

Percent of Counties Reporting

Legend: New York, California

- Suspicious speech or behavior: 26 (New York), 74 (California)
- Law enforcement notification: 3 (New York), 7 (California)
- Complaint by resident: 3 (New York), 0 (California)
- Self-identified: 33 (New York), 42 (California)

NY = 39, CA = 31
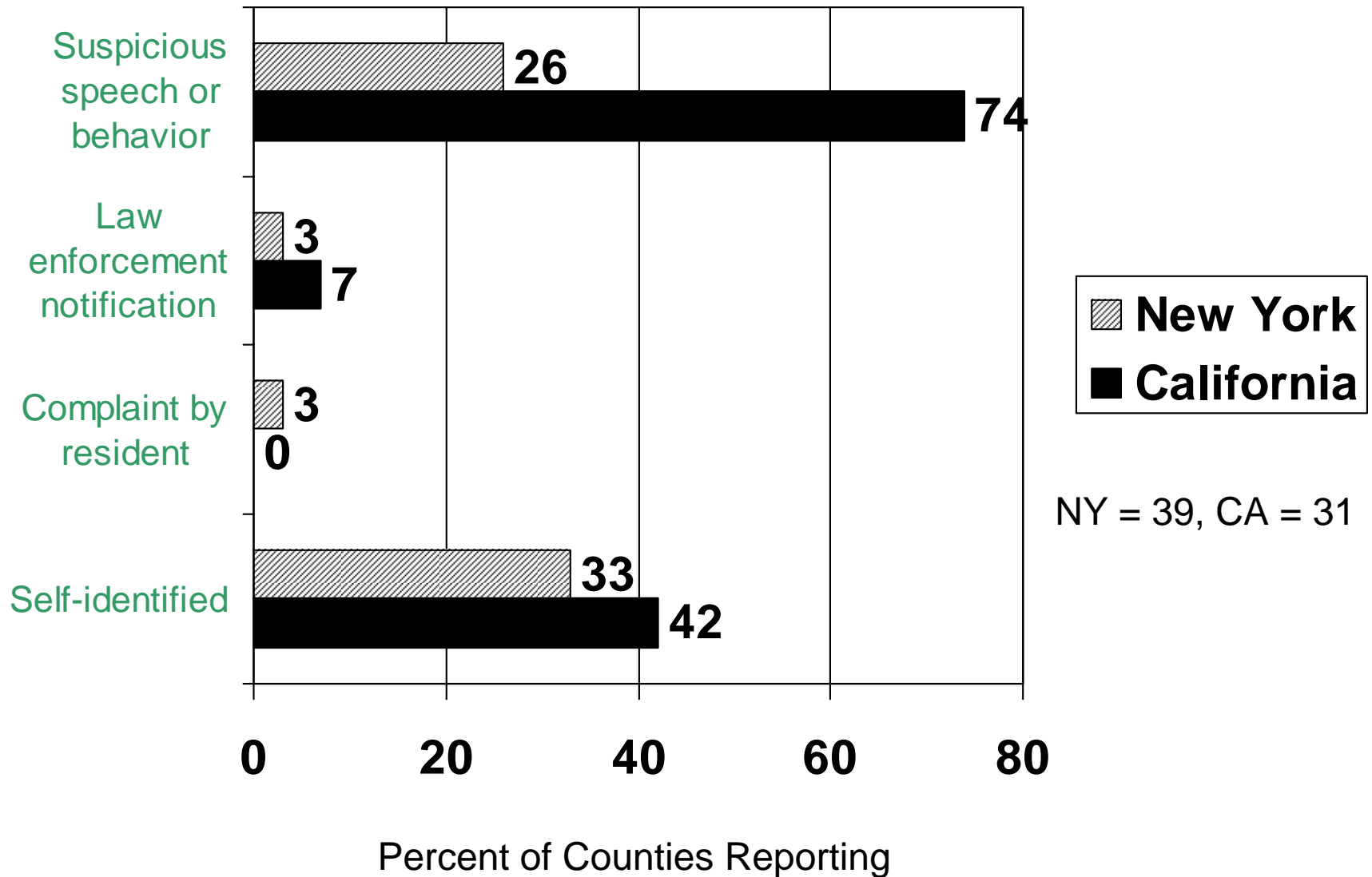
The solution?
Shared (and protected) Information…

- Few counties have policies to address problem
  -- only 5 of the 70 counties (all in California)

- On average, clerk's staffs are 86% women
  -- longtime employees, known to community
  -- 23% use verbal persuasion against extremists

- Information across counties
- Protection of property records (think defensively)

"Paper terrorism" is not an oxymoron… it's effective!

<u>Symposium Overview</u>

Adapting Lethality to the Global War On Terror

14 June 2005
Parsippany , NJ

Styker Shield

Styker Shield

Armaments Technology Seminar

Dr. Robin L. Keesee
Deputy to the Commanding General
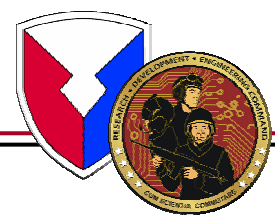
U.S. Army Research, Development & Engineering Command

Mission: Get the right integrated technologies into the hands of warfighters quicker.

**Strike
(Exploit FCS Netted Fires)**

Human Performance & Embedded Training

Sensory Enhancement

What we do:
Technology Out of the Laboratories and into the Hands of Warfighters in the Shortest Time
Direct Support of the Tech Base to Future Combat System (FCS) and Future Force
Manage Speed and Complexity of Technological Change to Operational Needs
Systems Engineering, Assessment, and Analysis
Engineering support to PEOs/PMs, Materiel Management Centers and Current Force
Identify Foreign Technologies for US Army Use

What we manage:
8 Labs and Research, Development, and Engineering Centers (RDECs)
Army Materiel Systems Analysis Activity (AMSAA)
Foreign Comparative Testing & Defense Acquisition Challenge Program
Regional International Technology Centers
Capability & Technology Integrated Process Teams
Agile Development Center

The Magnitude:
Over 17.5K Military, Civilians, and Direct Contractors
75% of Army Science and Technology Objectives
All Army Advanced Technology Demonstrations (ATDs)
6 of 13 Advanced Concept Technology Demonstrations (ACTDs)
20 Foreign Comparative Testing (FCT) & 7 Defense Acquisition Challenge
Programs (DACPs) with 13 different Countries

**Battery Charging
Fuel Cell with Methanol
Steam Reforming Unit**

Robotics Interface

**Future Force
Warrior**

**Collaborative Networked
Situational Understanding**

**Protective Mask &
JLIST - Joint Service
Lightweight Integrated Suit
Technology**

**RDECOM
Operates
World-wide**

★ **Over 300 International Agreements**
★ **Linkage to Combatant Commanders - FAST Teams**
★ **Engineer and Scientist Exchange Program**
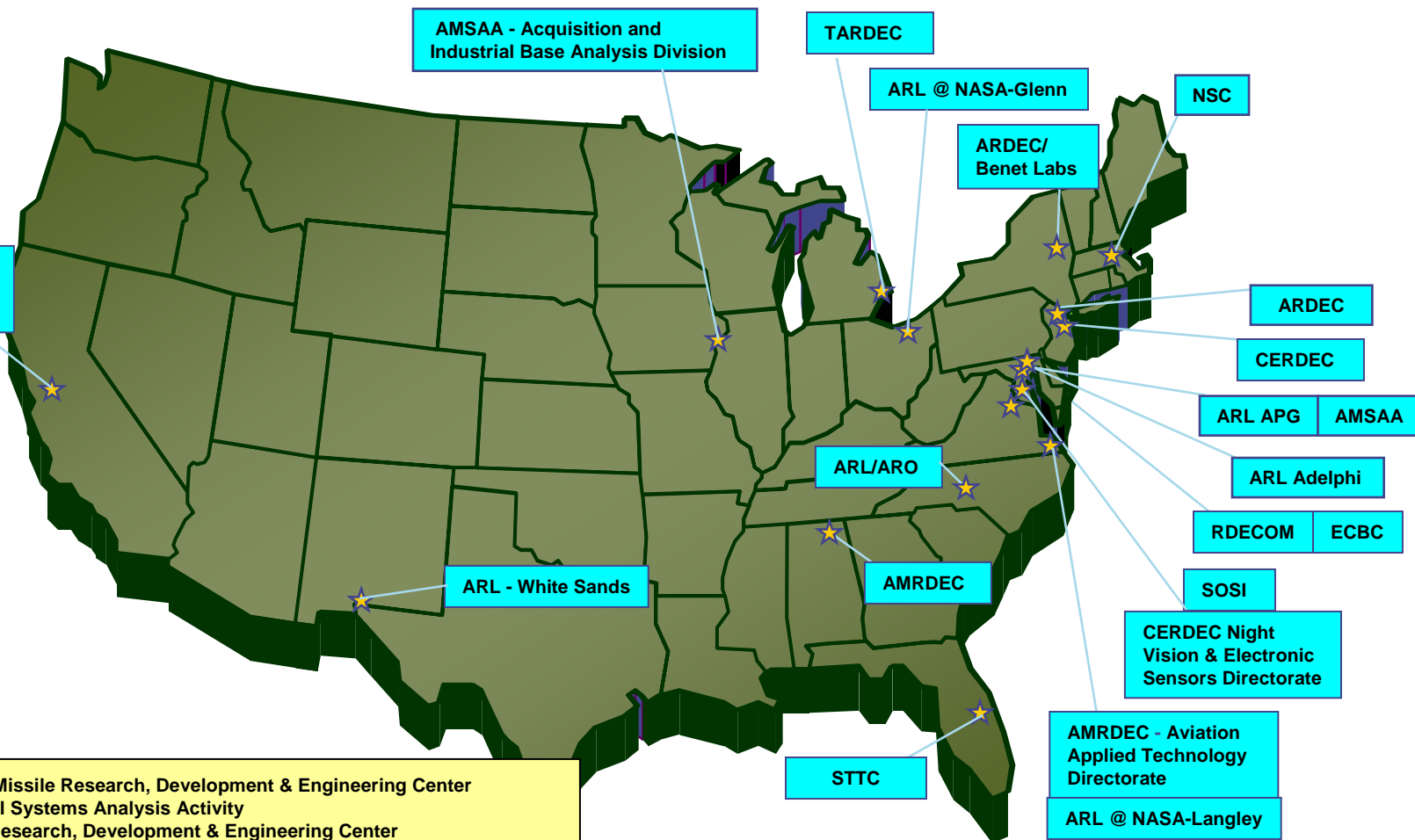
Technology to the Warfighter Quicker

Commanding General

SES Deputy ⭐⭐

DCG for SOSI ⭐

Systems of Systems Integration

Agile Development Center

Modeling & Simulation

International

Integration Divisions

Field Assistance in Science & Technology

FAST

MSC Staff

RDECOM ACQ CENTER

Army Research Laboratory

AMSAA

Army Materiel Systems Analysis Activity

ARL

ARO

Army Research Office

AMRDEC

Aviation & Missile Research, Development & Engineering Center

ARDEC

Armament Research, Development & Engineering Center

CERDEC

Communications Electronics Research, Development & Engineering Center

ECBC

Edgewood Chemical & Biological Center

Simulation & Training Technology Center

NSC

Natick Soldier Center

TARDEC

Tank Automotive Research, Development & Engineering Center

Commanding General

SES Deputy ⭐⭐

Board of Directors

Army Test & Evaluation Command

ATEC TRADOC

Training & Doctrine Command

Service Labs (AFRL, NRL)

National Labs

DARPA

SMDC MRMC COE

RDECOM Organization

AMSAA - Acquisition and Industrial Base Analysis Division

TARDEC

ARL @ NASA-Glenn

NSC

ARDEC/ Benet Labs

AMRDEC - Aeroflightdynamics Directorate

ARDEC

CERDEC

ARL APG | AMSAA

ARL Adelphi

ARL/ARO

RDECOM | ECBC

SOSI

ARL - White Sands

AMRDEC

CERDEC Night Vision & Electronic Sensors Directorate

AMRDEC - Aviation Applied Technology Directorate

STTC

ARL @ NASA-Langley

AMRDEC – Aviation & Missile Research, Development & Engineering Center
AMSAA – Army Material Systems Analysis Activity
ARDEC – Armaments Research, Development & Engineering Center
ARL – Army Research Lab
ARO – Army Research Office
CERDEC – Communication - Electronics Research, Development & Engineering Center
ECBC – Edgewood Chemical Biological Center
NSC – Natick Soldier Center
SOSI – System of Systems Integration
STTC – Simulation and Training Technology Center
TARDEC – Tank and Automotive Research, Development & Engineering Center

Support to Current Operations

HMMWV Doors

Predator Hellfire Integration

Shelf-Stable Pocket Sandwich

Tear-off Windshield Film

Armed Unmanned Weapon Platforms

Pacbot

Cooperative Defense Initiative

Omni-Directional Inspection System

Bunker Defeat Munition

40mm Thermobaric Cartridge

Zinc-Air Battery

WelCam

Phraselator

Aerial Delivery

Interceptor Body Armor & Advanced Combat Helmet: Dozens of Lives Saved During OEF/OIF

Slat (Bar) Armor

Mobile Lab

Field Expedient Protection for Ground Vehicles

Technology to the Warfighter Quicker

The Environment - "The Perfect Storm"

Army Strength
30,000 to 100,000 additional troops

GWOT
One month OPTEMPO = one year design life

Resources
Supplementals ? Return to Core Budget

Modularity
Increase from 33 to 43 (?) UAs

BRAC

Transformation
(Modernization)

QDR
Gain/Divest Missions

S&T ?
↑ → ↓
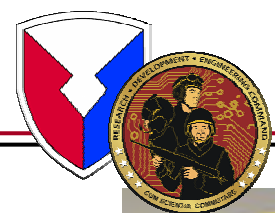
Armaments + Ammo = $194,112 M

Logistics $3792
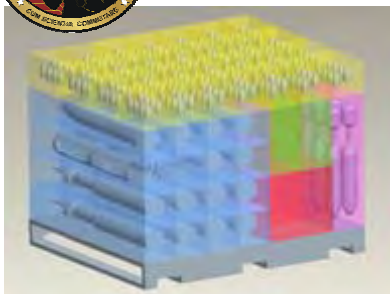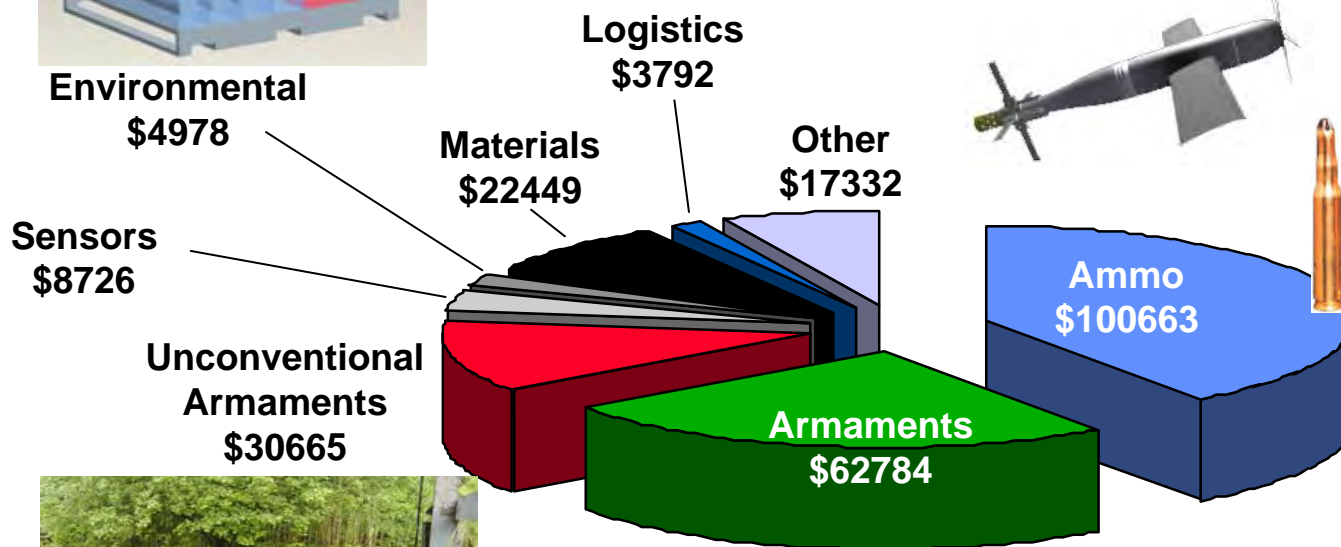
Environmental $4978

Materials $22449

Other $17332

Sensors $8726

Unconventional Armaments $30665

Ammo $100663

Armaments $62784
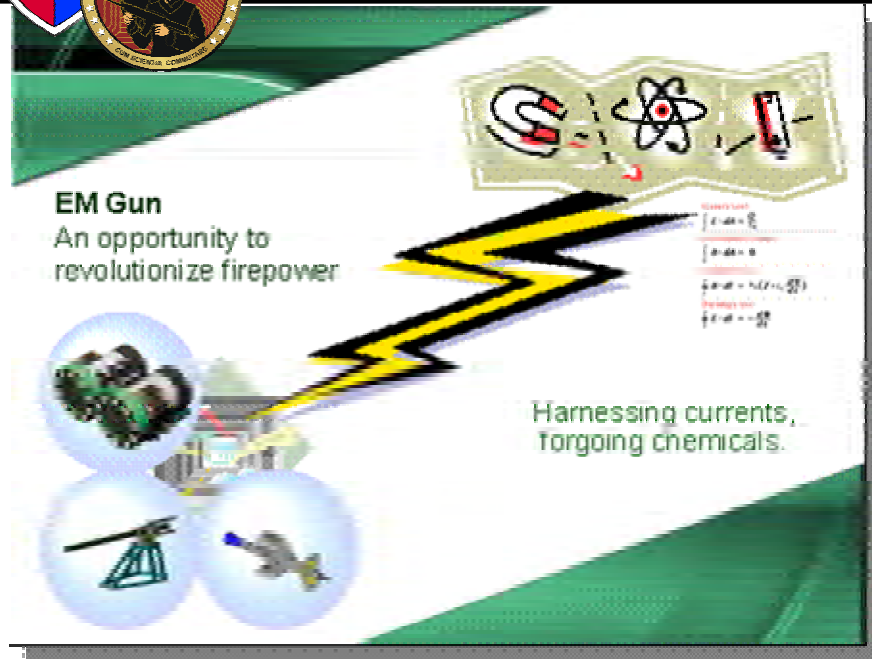
Electromagnetic Gun (EM)

Lightweight Handheld Mortar Ballistic Computer, XM32
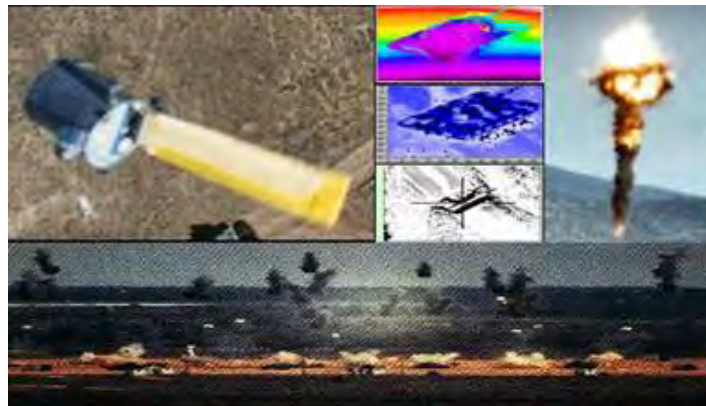
Common Smart Submunition
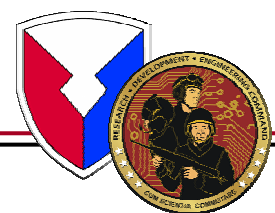
**Lightweight Machine Gun
And Ammunition**

Mortar Breech
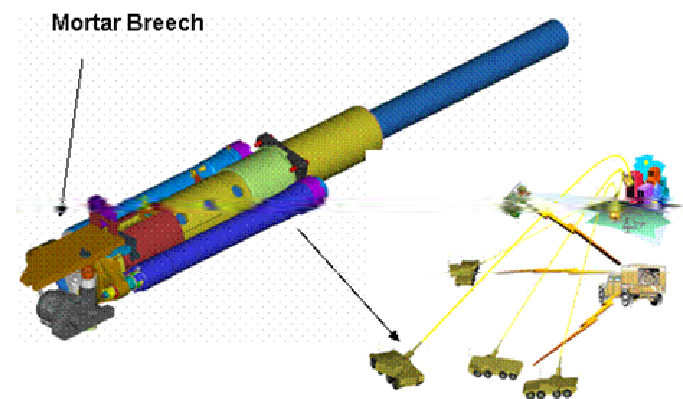
**Objective NLOS
Mortar Technology**

**Special Weapons Observation
Remote Direct Action System**

Enhanced MRM

LOS MP

*Accuracy
Enhanced KE*

MCS Ammunition System Technologies (MAST)

CROWS-Light

*MicroProcessor, I/O, &
Power Regulation*

*Accel Cluster
(shown mounted in
vibration isolator)*

*Low Cost, High-G, Micro Electro-Mechanical
Systems (MEMS), Inertial Measurement Unit (IMU)*

"Our ultimate customer is the Soldier…

My son or daughter, your son or daughter
...who will judge our efforts with their
lives and their mission accomplishment.

This is a sacred trust
which will not be compromised."

Larry G. Lehowicz
Major General (Ret.)
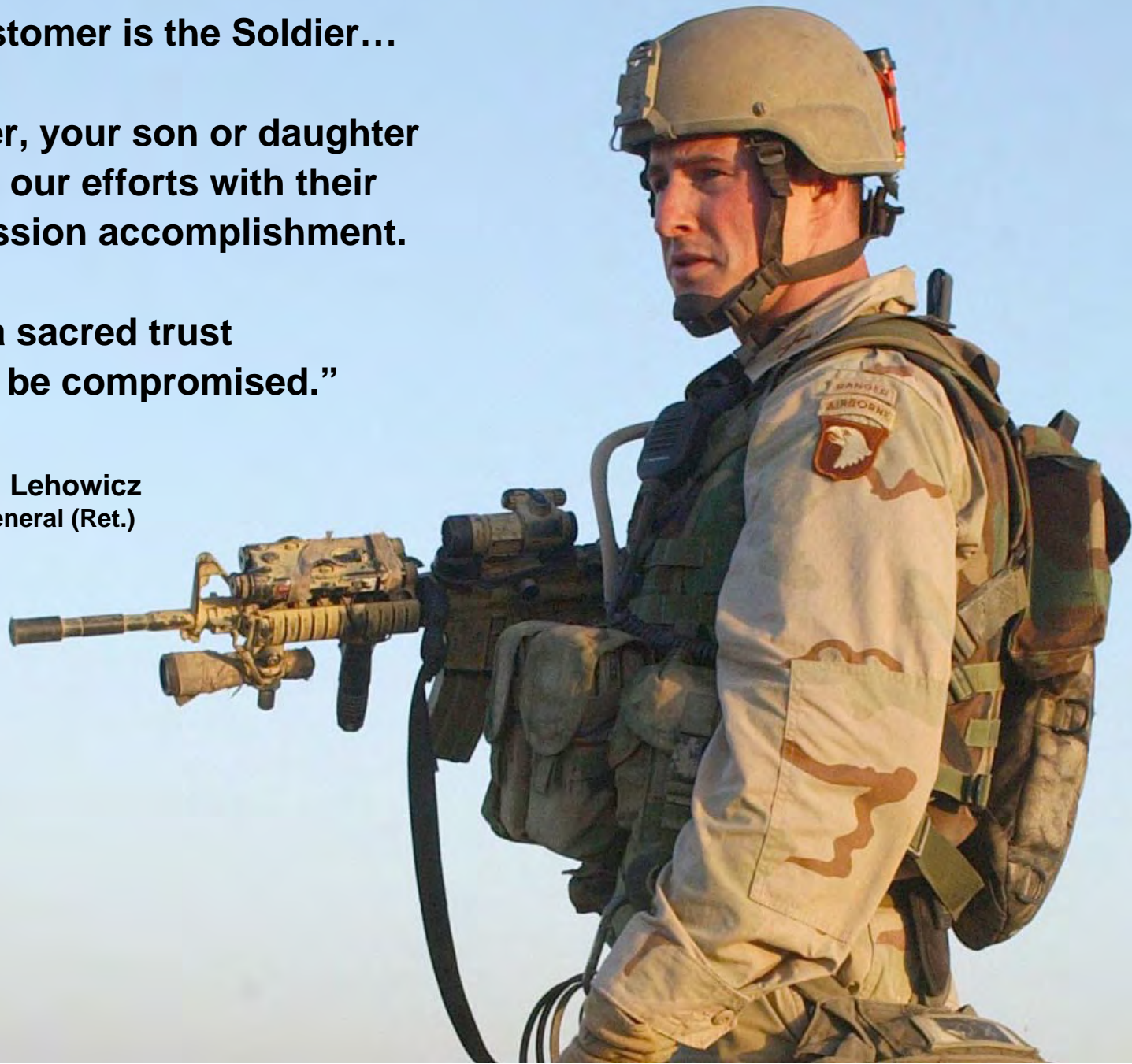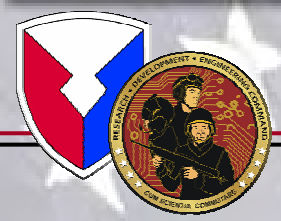
In Closing...

➢ **The Picatinny community has been extraordinary in -**
- **Supporting ammunition production**
- **Speedily re-engineering technology to meet Warfighter needs**

➢ **Challenges for us all -**
- **Taking UA perspectives balancing lethality, deployability, and life-cycle costs**
- **Aiming advancing technologies at armament's greatest obstacle: weight**

Mortar Systems Supporting The GWOT

Current and Future

Firepower Symposium

June 2005

LTC Andre C. Kirnes
Product Manager
Mortar Systems

- Provide An Overview on How Current and Future Mortar Systems Support GWOT.

- Organization

- Supporting Modularity
    - Weapons
    - Fire Control

- Precision Effects
    - Precision Guided Mortar Munition

- Summary

PEO Ammunition

**★★ Program Executive Officer
for Ammunition
BG Paul Izzo**

**Deputy PEO Ammuntion
Mr. James Sutton**

Close Combat Systems

Combat Ammunition Systems - Indirect Fire

Colonel Nathaniel Sledge
Deputy: R. Kiebler

Maneuver Ammunition System - Direct Fire

Joint Services

Mission:
Deliver Conventional and Leap-Ahead Munitions
Combat Power to Warfighters

PM Combat Ammunition Systems

Project Manager
Colonel Nathaniel Sledge, Jr.

Deputy Product Manager
Mr. Rene Kiebler

Excalibur
PM, LTC William Cole
DPM, Chris Grassano

Mortar Systems
PM, LTC André Kirnes
DPM, Dave Super

Business Management
Joe Gormley

Advanced Systems
Steve Hromnak

Conventional Ammunition
Armando Herrera
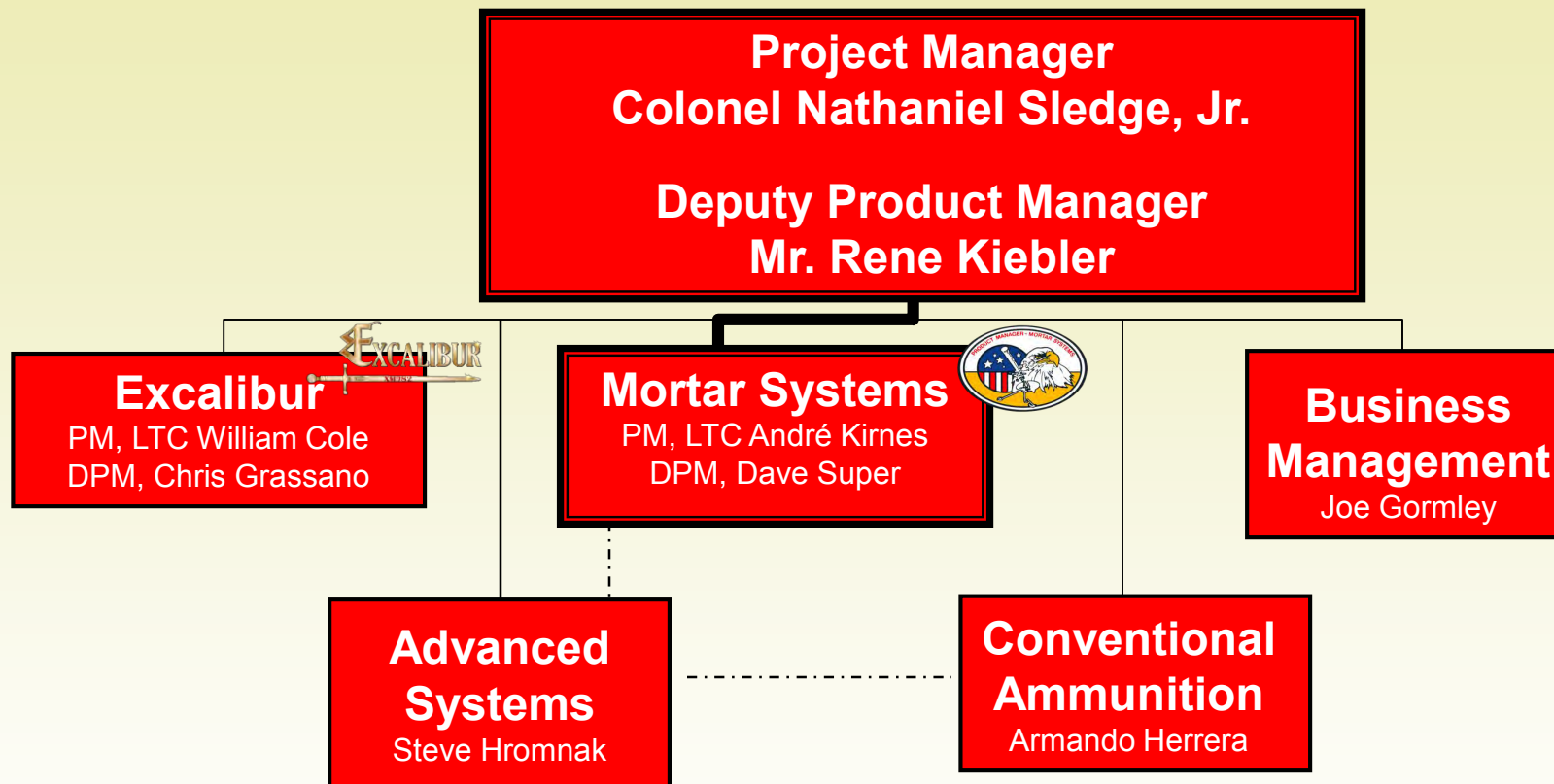
PM CAS Goals
Get Smart and Precision-Guided Munitions to the Warfighter
Improve and Sustain Conventional Munitions
Satisfy Customers and Achieve Excellence
Grow World-Class People and Teams

OPM CAS
ATTN: SFAE-AMO-CAS Building 171A
Picatinny Arsenal, NJ 07806-5000

PM Mortars Organization Chart

Product Manager
LTC Andre Kirnes

Deputy Product Manager
David Super

Configuration Management Team

SETA Support

PM CAS Business Management
Joe Gormley

PM CAS Advanced Systems
Steven Hromnak (Acting)

PM CAS Conventional Ammunition
Armando Herrera

Mortar Ammo
Kwok Cheung

Weapons & Fire Control
Edward Lewis

Precision Effects
Pete Burke

APM Weapons
Ken Hurban

APM Fire Control
Tom Bradley

APM Systems Integration
Maj Paul Shuler

Test & Evaluation

Program Planning
IPR's C/S/R

Senior Systems Engineer
Dr. Anthony Pezzano

Producibility

Platform Integration

Mission

Life Cycle Manager for the full range of mortar systems to include weapons, fire control, and advanced ammunition integrated across Current and Objective Forces.

Vision

To Be the Mortar Systems Expert who provides the Close Combat Warfighter with the World's Best Integrated Mortar Systems
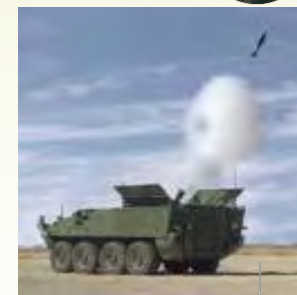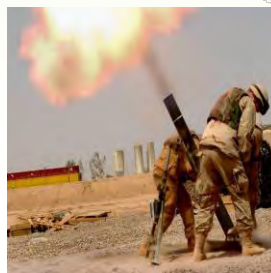
Mortar Modularity
In
Support of GWOT

Army Modularity - Mortars
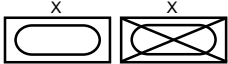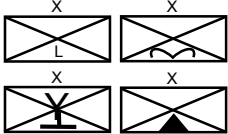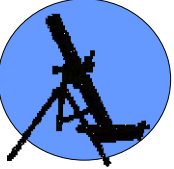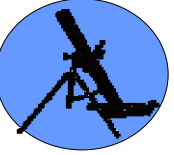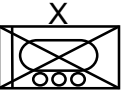
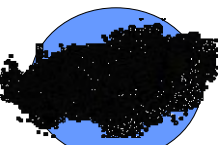- The Army has reprogrammed FY05 funds and provided $$ to OPM Mortars to procure 134 120mm Battalion Mortar Systems (BMS)
    - Includes 4th HBCT of 4ID

- Additional funding is provided in the GWOT FY05 Supplemental to procure an additional 113 120mm BMS
    - Expect receipt of funds June 2005
    - Includes 4th HBCTs of 1CD, 1ID and 1AD

- 3ID Modularity already complete

Army Mortar Modularity

Mortars Organization in Brigade Combat Teams

	Per RSTA* Squadron	Per Company	Per Battalion (Mortar Platoon)		Total
Heavy BCT	6 X 120mm (mounted)		4 X 120mm (mounted)	1 FDC	**14 - 120mm**
Infantry BCT	4 X 120mm (dismounted)	2 X 60mm per Section (3 Sections per BN)	4 X 120mm (dismounted) 4 X 81mm	1 FDC	**12 - 120mm** **8 – 81mm** **12 – 60mm**
Ranger Regiment			Mortar Arms Room 4 X 120mm 4 X 81mm 6 X 60mm	1 FDC	**4 - 120mm** **4 – 81mm** **6 – 60mm**
Stryker Brigade Combat Team	6 X 120mm (mounted)	2 X 120mm (mounted) 2 X 60mm (3 Companies per BN)	4 X 120mm (mounted) 4 X 81mm	1 FDC	**36 - 120mm** **12 – 81mm** **18 – 60mm**

* RSTA: Reconnaissance, Surveillance & Target Acquisition

U.S. Army is Modifying Current Heavy & Light Divisions
End Result: Increased Requirement for 120mm Mortars

120mm Mortar System
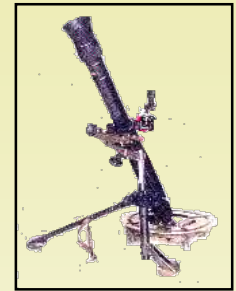# Modularity to Infantry BCTs

120mm Mortar

120mm Ammo Suite

M1101 Trailer

M67 Sight

81mm Mortar

Provide Light Forces maneuver commander with 81mm **and** 120mm mortar support

- Enhances Light Force lethality and range
- Gives Light Force ability to fire PGMM
- Flexible organic fire support tailored to mission profile

Warfighters currently using M120 120mm mortars:

75th Ranger BN	10ID (MTN)	101st AASLT	82nd ABN	173rd ABN

Mortar Fire Control System
Growth Strategy

MFCS Heavy (H)

PDA

Gunner's Display

SINCGARS Radio

Commanders Interface

Driver's Display

Pointing Devices

V2 Software

Current

LHMBC

Battery Holder

AA Battery Adapter

R-PDA (Type-B)

V2.1 Software

Objective
Future Combat System (FCS)

Objective
MFCS-Light
Dismounted

MFCS Software

Mortar Fire Control System (Heavy)
System Description

Program Summary

- Version 1 Fielded to the 1st Cav Div (May 03)
- Version 2 Successfully completed Stryker IOT (Feb 04)
- Version 3 JVMF interoperability (Oct 04) SW Block 1
- Version 4 Capabilities for full MR (FY06) SW Block 2
- FY04 Fielding to 3ID & SBCT3
- Production funded through FY07
- Ongoing product improvements

MFCS (H) Heavy

- Commander's Interface
- SINCGARS Radio
- Power Distribution Assembly
- Gunner's Display
- MFCS V2 Software
- Driver's Display
- Pointing Devices

User Payoff

- Command & Control: Interfaces with AFATDS and FBCB2
- Responsiveness: 8 versus 1.5 min for fire for effect
- Accuracy: Reduces CEP from 230 meters to 75 meters
- Survivability: Eliminates soldier dismount, Enables disbursed Operations, "Shoot and Scoot"
- More kills per combat load through improved accuracy (one round to adjust, FFE)

Qualification Program Successfully Completed, Fielding now Underway

Dismounted Mortar Fire Control

System Description

- A *modular* digitized Fire Control System suitable for a *variety of current and future dismounted mortar* weapon applications
  - *Ballistic Solutions* for all Mortars, all Missions
  - *Command and control interface* to AFATDS / FOs
  - *Weapon Location and Pointing*

Acquisition Strategy

- *Incremental Development*
- *Leveraged Development*

User Payoff

- <1 Minute to Emplace Day/Night
- <30 Sec First Shot when Emplaced
- Increases effectiveness and survivability
  - Shoot and scoot
  - Dispersed operations
- Self laying weapon (Eliminating Aim Posts/Sight)
- Increased system accuracy
- Linked to digital battlefield
- Sensor to Shooter capability
- *Low Cost / Modular Fire Control*

Incremental Development Plan

Increment I - Light Weight Hand Held Mortar Ballistic Computer (LHMBC)

- **Ballistic Solutions** for all Mortars, all Missions
- **Digital Communications** with the Fire Support Network   (AFATDS - FDC)
- **GPS** - Weapon Position Location Data

Increment II - Mortar Fire Control System – Light (MFCS-L)

- *Ballistic Solutions for all Mortars, all Missions*
- *Complete Digital Linkage with the Fire Support Network (AFATDS - FDC - **Guns**)*
- *GPS Weapon Location*
- **Weapon Pointing (Indirect)**
- **Direct Lay Day / Night Engagement**

Incremental Development

- *Ballistic Calculations*
- *Weapon Position (GPS)*
- *Digital Communication*
  - *AFATDS - FDC*
  - *AFATDS/FDC – Guns*
- *Weapon Pointing and Aiming*

Inc I LHMBC

Inc II MFCS-L

Requirement Documents
Inc I - MFCS ORD 1994 (LHMBC UFD 2003)
USMC MBC ORD 2002
Inc II - FCS ORD 2004

MFCS-L Objective

LHMBC

Weapon

FDC

Gunners Display

Light Weapon Pointing Device

Squad Leader Computer

Direct Lay Day / Night Sight

Mortar Fire Control Fielding Schedule

PHASES/FY	01/02	03	04	05	06	07	08

MFCS-H

LHMBC

MFCS-L

Software Blocking

SD&D — MS C

SBCT3 SBCT1

SBCT2 SBCT4 — SBCT5 SBCT6 — 11 ACR 218th

30th 81st 155th

116th 256th 278th 48th 1

SD&D

PQT IOT MS C

SD&D

MFCS SW Version 3.0 | MFCS SW Version 4.0 | MFCS SW Version 5.0

SWB I SWB II SWBIII

Schedule Supports Modularity

Future

XM395
Precision Guided Mortar Munition (PGMM)
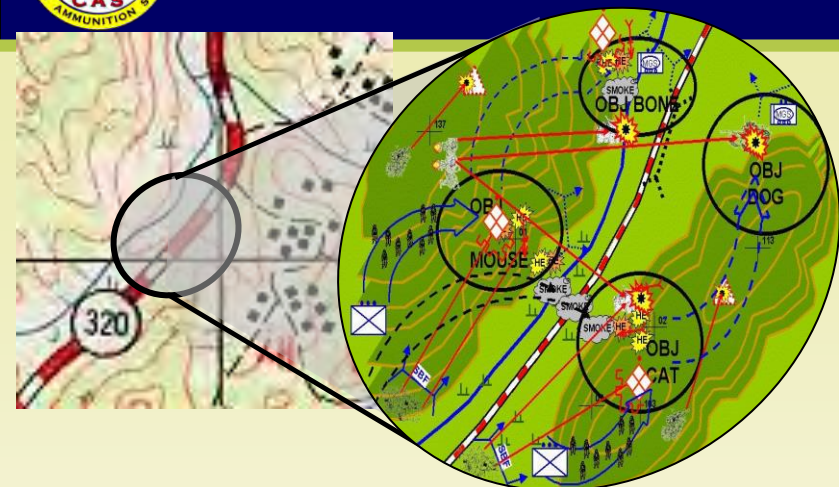
5 – 7 km

0.5 – 1.0 km

TASKS: **Destroy / Defeat threats; Influence Situation**

AREA OF OPERATIONS: **Complex terrain & vegetation that limit mounted movement, 5 – 7 KM of battlespace; Urban clutter, rubbled terrain, 0.5 – 1.0 KM of battlespace**

TARGETS: **Primarily Infantry-based, supported by mechanized/armored platforms, mortars & artillery. Hasty to deliberate fortified fighting positions. Deliberate fight when in direct fire contact**

EXISTING CAPABILITIES:
- **Limited range, primarily analog C^2 (FM voice)**
- **Limited indirect precision munitions**
- **Heavy, constrictive ballistic protection**
- **Limited, non-integrated, combat ID**
- **Manned LRS**
- **Wire-guided "heavy" AT systems**
- **Limited "fire-&-forget" AT systems**
- **Burdensome Soldier's load**
- **Limited mobility/survivability capabilities (especially in MOUT)**
- **Limited non-lethal assets**
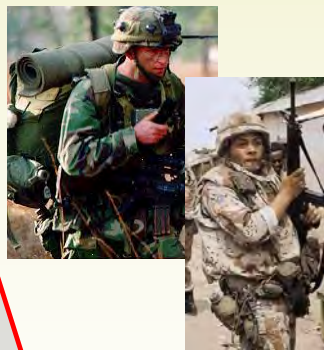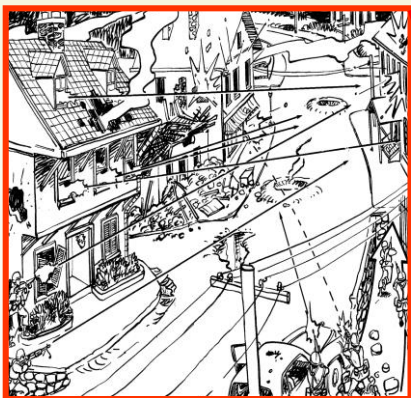
10 – 12 km

1.0 – 1.5 km

TASKS: **Destroy / Defeat threats; Influence Situation**

AREA OF OPERATIONS: **Complex terrain & vegetation that limit mounted movement, 10 – 12 KM of battlespace; Urban clutter, rubbled terrain, 1 – 1.5 KM of battlespace**

TARGETS: **Primarily Infantry-based, supported by fleeting mechanized/armored platforms, mortars & artillery. Limited deliberate fortified fighting positions. Deliberate fight when in direct fire contact**

REQUIRED CAPABILITIES:
- **Extended range, urban capable, digital data & voice C² systems**
- **Precision direct/indirect engagement capability**
- **Light, tailorable, complete ballistic protection**
- **Integrated, soldier/platform combat ID**
- **Manned and unmanned recon capabilities**
- **All AT systems "fire-&-forget"**
- **Tailorable, light-weight Soldier's load**
- **Enhanced mobility/survivability capabilities (especially in MOUT)**
- **Integrated non-lethal capabilities**
- **Bunker defeat; wall penetration**
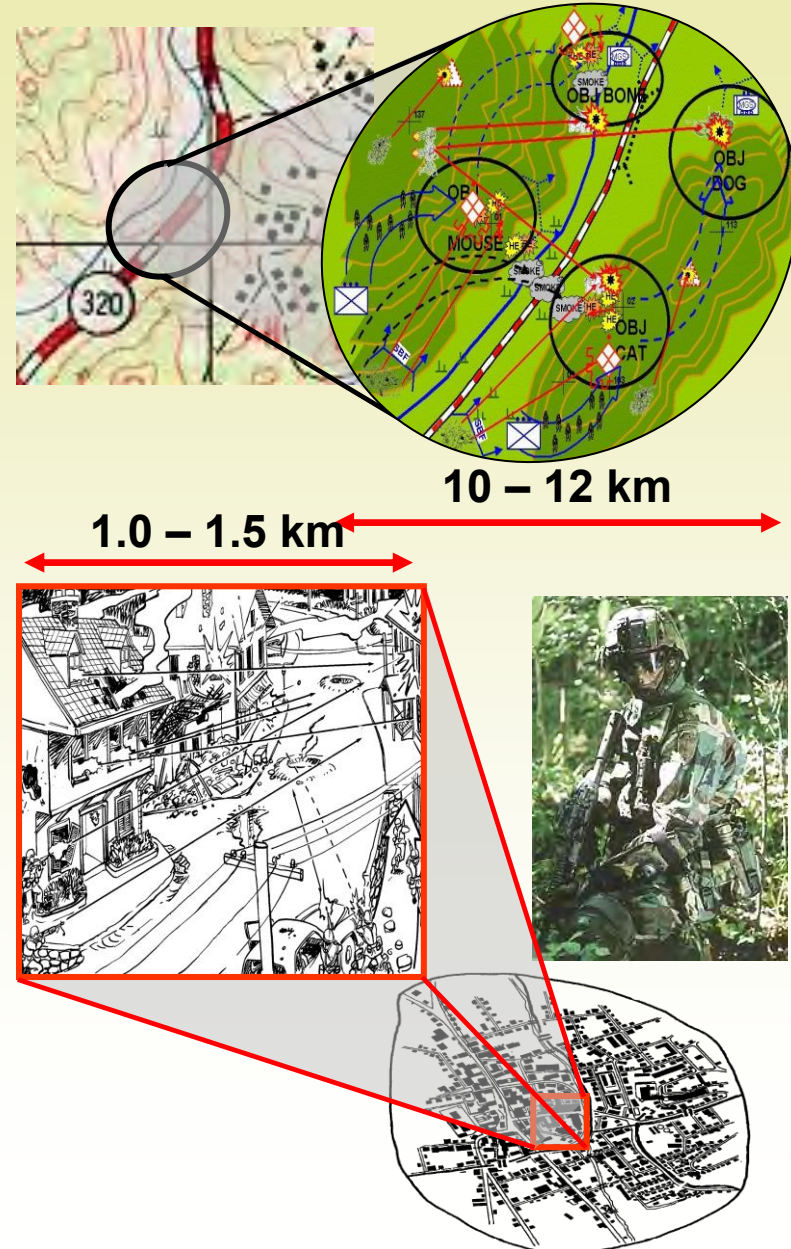
Minimize "unintentional or incidental injury or damage to persons or objects that would not be lawful military targets in the circumstances ruling at the time."

- JP 1-02 "DoD Dictionary of Military and Associated Terms"

"Danger Close" Distance (meters)	Munition
750 m	Naval Gun Fire (5 inch or smaller)
600 m	155mm Conventional Artillery
225 m	GBU-31 Joint Direct Attack Munition (JDAM)
175 m	2.75 inch Rockets
170 m	M934 120mm Mortar (HE)
100 m	M720 60mm Mortar (HE)
< 100 m	XM395 120mm PGMM
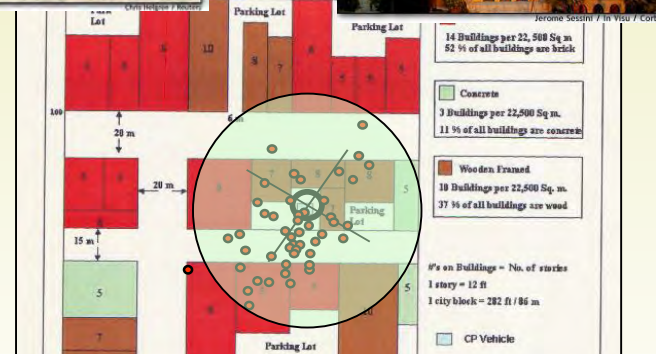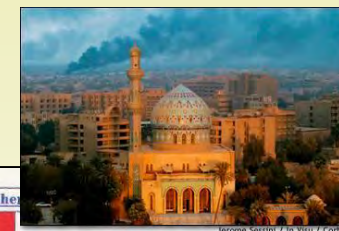
Precision Required to Effectively Engage the Enemy in the Close Fight

PGMM Enables the Maneuver Commander

What does it do?:

- Adds a special purpose "hit a target" precise round of ammunition to the family of munitions for the battalion 120mm mortar system
- Enables the maneuver commander to incapacitate/kill individuals (snipers), small groups of threat soldiers (crew–served weapons teams), or mounted squads who have taken cover within close proximity to civilians and valued infrastructure
- Reducing the number of rounds fired and time required to fire those round allows the maneuver commander to maintain his operational tempo
- Reduces the risks of collateral damage to civilians and valued infrastructure in close proximity to these individuals, teams, and squads

What does it not do?:

- Alter the traditional role of the mortar
- Replace High Explosive (HE) mortar or HE artillery fires
- Provide a more precise "area" munition

XM395
Precision Guided Mortar Munition (PGMM)

Requirements

Incremental Requirements

PGMM →

Lethality	Today	2010	TBD**	TBD**
	M934A1 **High Explosive**	XM395 PGMM	XM395A1 PGMM	XM395A2 PGMM
		Increment 1	Increment 2	Increment 3
	Area Fire*	< 2 rounds Destruction	< 2 rounds Destruction	< 2 rounds Destruction
		Troops Protected by Earth & Timber Bunkers, Masonry Structures, Lightly Armored Vehicles		
Range	7.2 km	7.2 km →	10 km →	12 km
Compatibility				

* Suppression of Enemy Troops
** Dependent on availability of funding and subject to further requirements analysis and approval

Incremental Development will Build on each Version's Successful Fielding and Employment
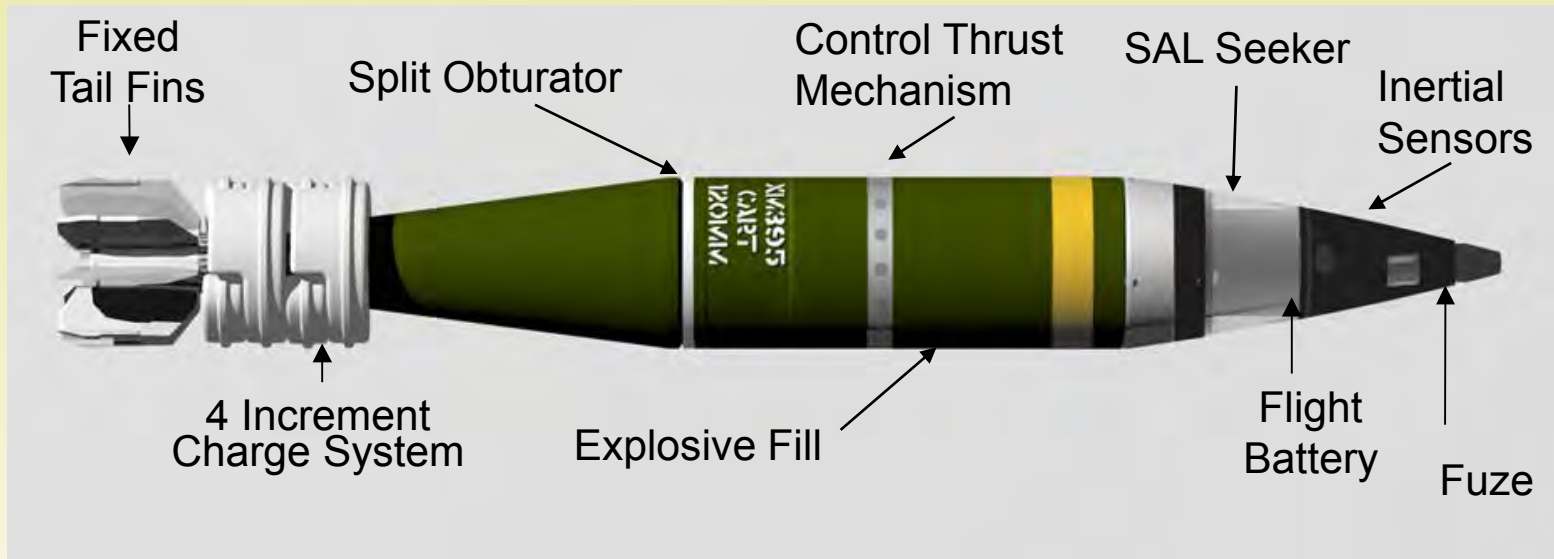
XM395
Precision Guided Mortar Munition (PGMM)

Material Solution

Fixed Tail Fins

Split Obturator

Control Thrust Mechanism

SAL Seeker

Inertial Sensors

4 Increment Charge System

Explosive Fill

Flight Battery

Fuze

- Sensor:
  - Strap-down, Semi-Active Laser
- Warhead & Fuze:
  - Unitary Charge, Modified Conventional Fuze
- Airframe:
  - No moving parts, similar to conventional round
- Guidance & Control:
  - Accelerometers, Control Thrusters
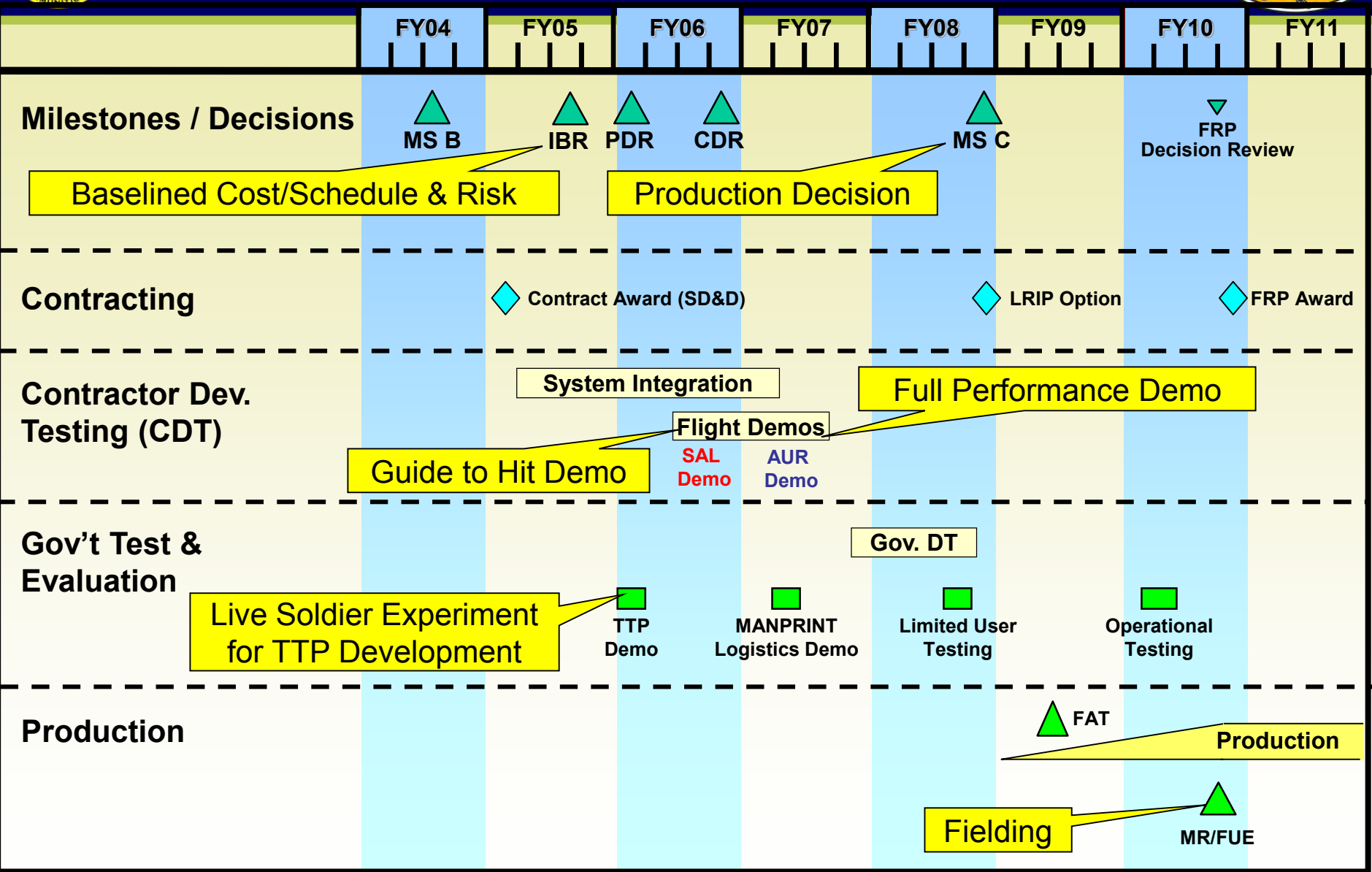
PGMM Operational Concept

RGR

Fire Support Element (FSE)

Ballistic Flight to Target Acquisition

Terminal Guidance
- SAL Seeker
- Thrusters

Acquire

Fire Direction Center (FDC)

Simple Mission Setting

Forward Observer

Mortar Squad

**Leverages Existing Fire Support Systems
Reduces Collateral Damage**

**Masonry Structures
Earth and Timber Bunkers
Light Armor Vehicles**

Precision Munitions Increase Warfighter Effectiveness

PGMM (Increment I) Program Schedule

2 June 2005

	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11

Milestones / Decisions

MS B — IBR — PDR — CDR — MS C — FRP Decision Review

Baselined Cost/Schedule & Risk

Production Decision

Contracting

Contract Award (SD&D) — LRIP Option — FRP Award

Contractor Dev. Testing (CDT)

System Integration

Full Performance Demo

Flight Demos

Guide to Hit Demo

SAL Demo — AUR Demo

Gov't Test & Evaluation

Gov. DT

Live Soldier Experiment for TTP Development

TTP Demo — MANPRINT Logistics Demo — Limited User Testing — Operational Testing

Production

FAT — Production

Fielding — MR/FUE

FRP: Full Rate Production
IBR: Integrated Baseline Review
TTP: Tactics Techniques Proc.
AUR: All Up Round
Gov. DT: Government Development Testing
FAT: First Article Test
MR: Material Release
FUE: First Unit Equipped

Summary

- Mortar Modularity Supporting GWOT

- MFCS-(Light and Heavy) being fielded to Light, Heavy and Stryker BCTs – Responsive, Accurate, Survivable

- PGMM – Precision Mortar Capability
  - Maneuver Commanders "Hip Pocket" Precision Strike Capability
  - Low Collateral Damage

**Mortars Supporting GWOT
ACCURATE – LETHAL - RESPONSIVE**

Contact Information

Material Developer:

Office of the Product Manager for Mortar Systems

Picatinny Arsenal, New Jersey 07806-5000

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Product Manager
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David Super
Deputy Product Manager
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Mr. Peter Burke
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Combat Developer:

US Army Infantry Center

Directorate of Combat Developments

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Ed Lewis
Chief, Weapons & Fire Control Branch
(973) 724-4995
elewis@pica.army.mil
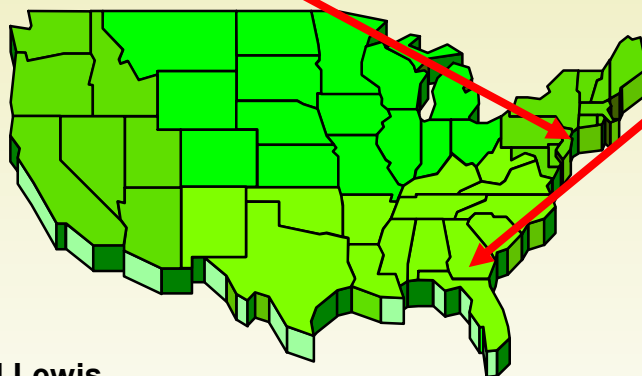
OPM Mortars will Host the 2005 Mortar Conference on 18-20 October in Morristown, New Jersey, USA.

Contact Office of the Product Manager for Mortar Systems (Mr. Lee Bickley at 973-724-7625 or lbickley@pica.army.mil) for additional information

www.NDIA.org   w4.pica.army.mil/pmmortars

U.S. AIR FORCE

Headquarters Air Combat Command

Adaptive Airpower in the Global War on Terrorism

**Col Michael Longoria
Director, Joint Air/Ground Combat Office
HQ Air Combat Command
June 2005**

Talking Points About Airpower

- **CAS is a Mission not an Airplane**

- **Air/Ground Innovation = High Tech + Low Tech**

- **Distributed Forward Air Control**

- **The Digital and Analog worlds are coming together**

- **CAS is still the hardest thing we do in joint war fighting**

- **General Vessey's challenge to airmen**

- **Shared situational awareness: cockpit to foxhole**

- **Challenges**

CAS is a Mission not an Airplane

- **A-10, F-16, F-15E, F-117, B-1, B-2, B-52, AC-130**

- **F-14, F-18, AV-8**

- **AH-1, AH-64, AH-6J, MH-53**

- **All Services and Allies**

Air/Ground Innovation: (High Tech + Low Tech) SOF and Airpower

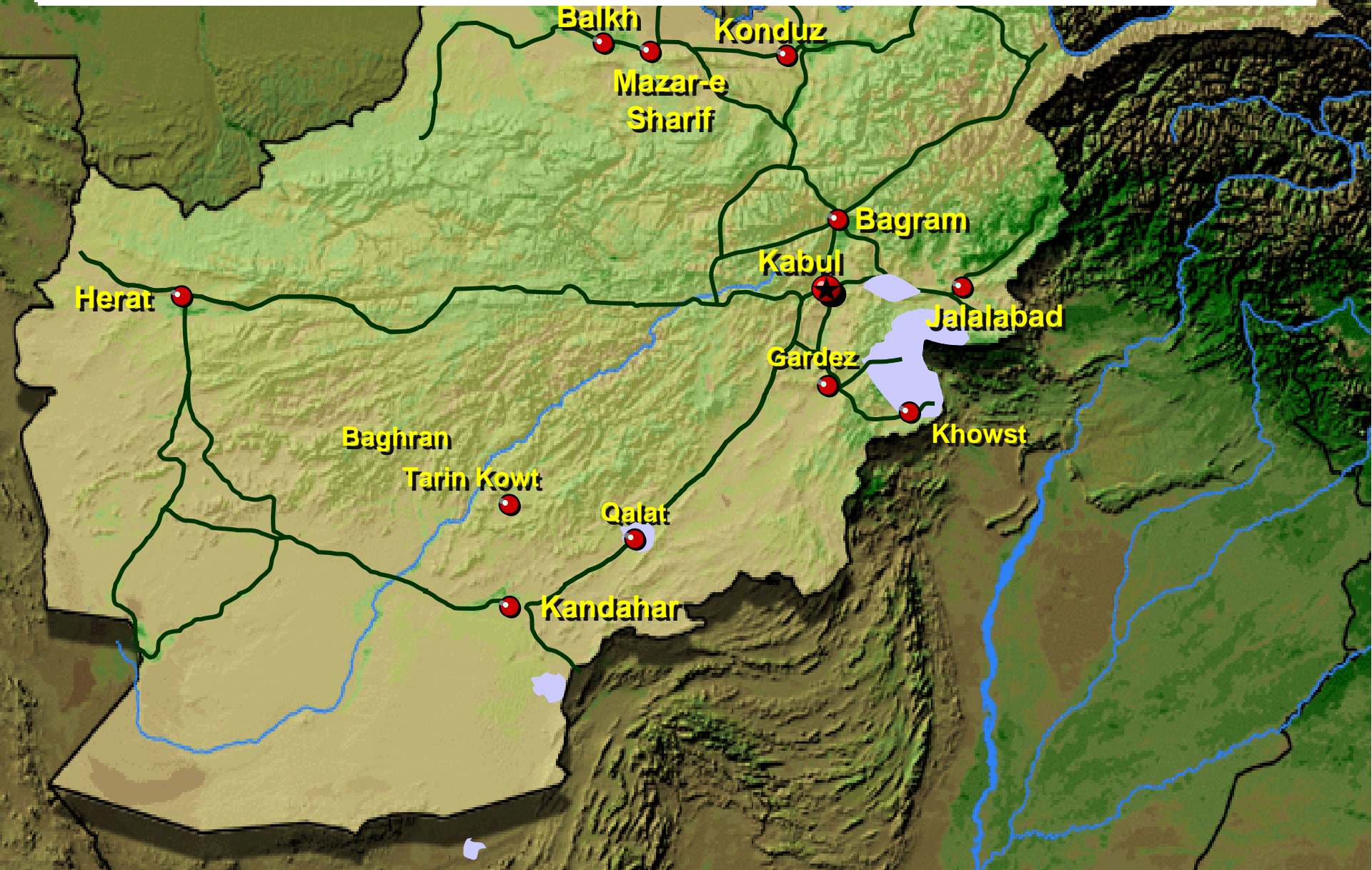# *Enduring Freedom "CAS" and Ground-Directed Interdiction*

- **Enemy Forces "Taliban" in pockets across Afghanistan**
- **99 to 1 --ratio--(soft) targets compared to fixed (structural)**
- **US friendly disposition minimal (SOF war)**
- **Non-linear, non-contiguous battlefield**
- **Air distances (significant)**
- **Almost no airspace restrictions (in the beginning)**
- **Command and control environment**
  - **Very simple at first**
  - **Increasingly became more complex**
  - **Very restrictive ROE (Restricted Tgt List)**

Karshi-Khanabad

Kabul

Al Jaber

1630 NM

Shaikh Isa

Al Udeid

Jacobabad

Al Dhafra

1155 NM

PSAB

Seeb

1370 NM

Thumrait

Carriers

Airpower Buffet: 24/7

Interdiction and Responsive CAS

2,505 NM

United States Distance Comparison

Prince Rupert
(Diego Garcia)

Bangor
(Al Dhafra)

Salt Lake City
(Shaikh Isa)

Denver
(Thumrait)

Tampa
(Kabul)

Diego Garcia

Initial Operations had Few Airspace Management Restrictions, But as Operations Progressed…

Airspace Management Became More Complex
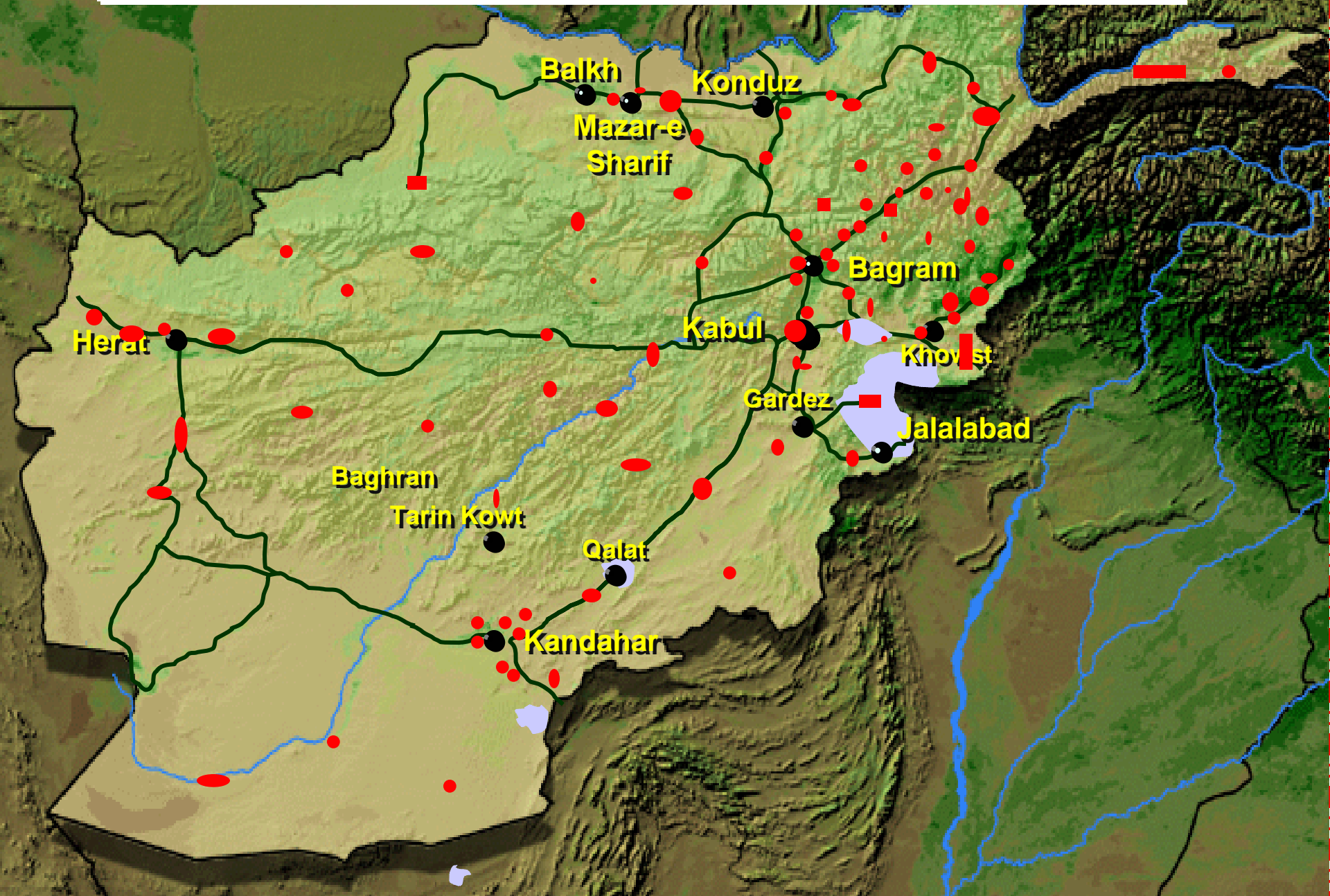
Distributed Forward Air Control

Attached USAF ground forward air controllers with SOF

Augmented airborne forward air control

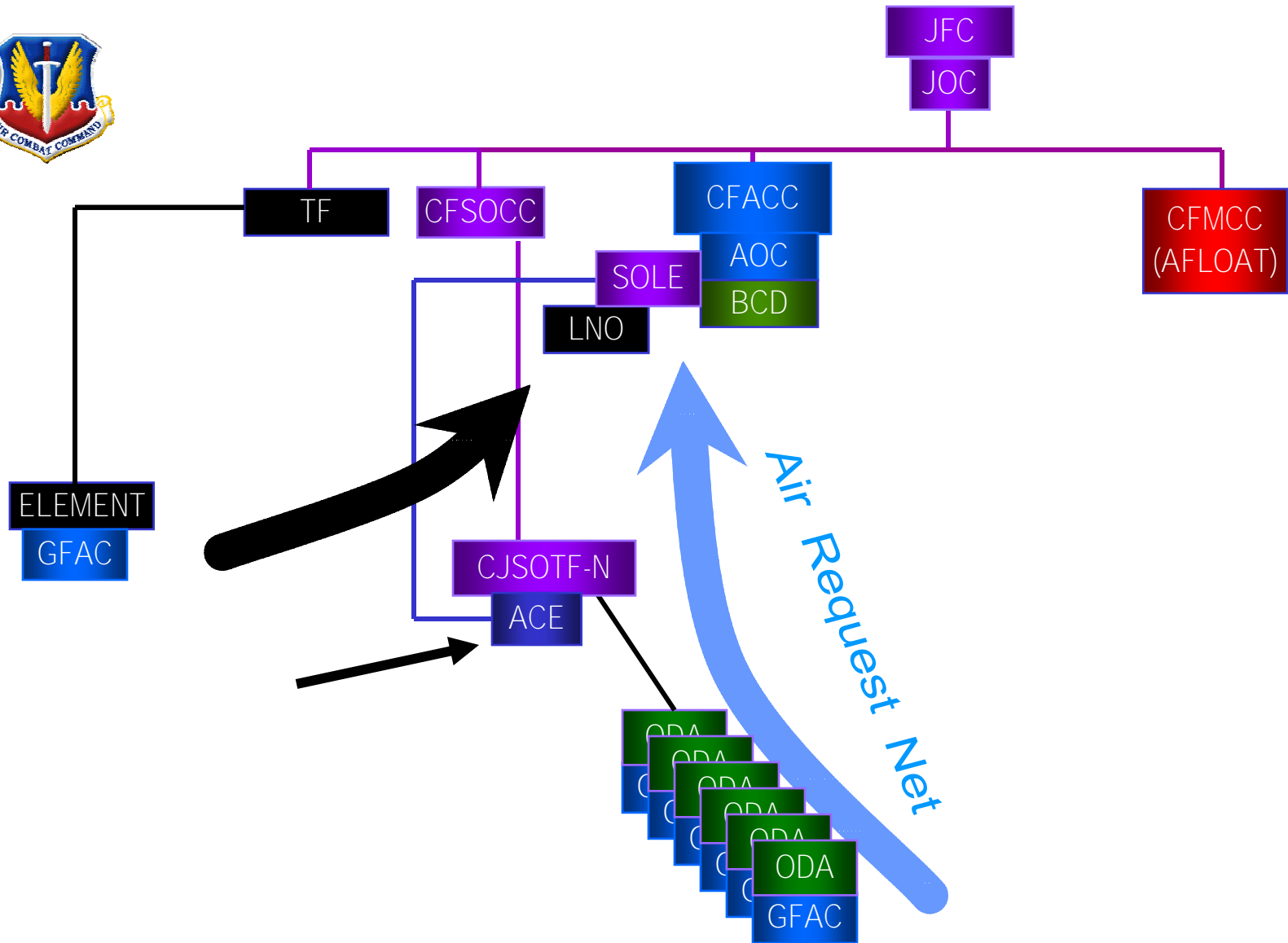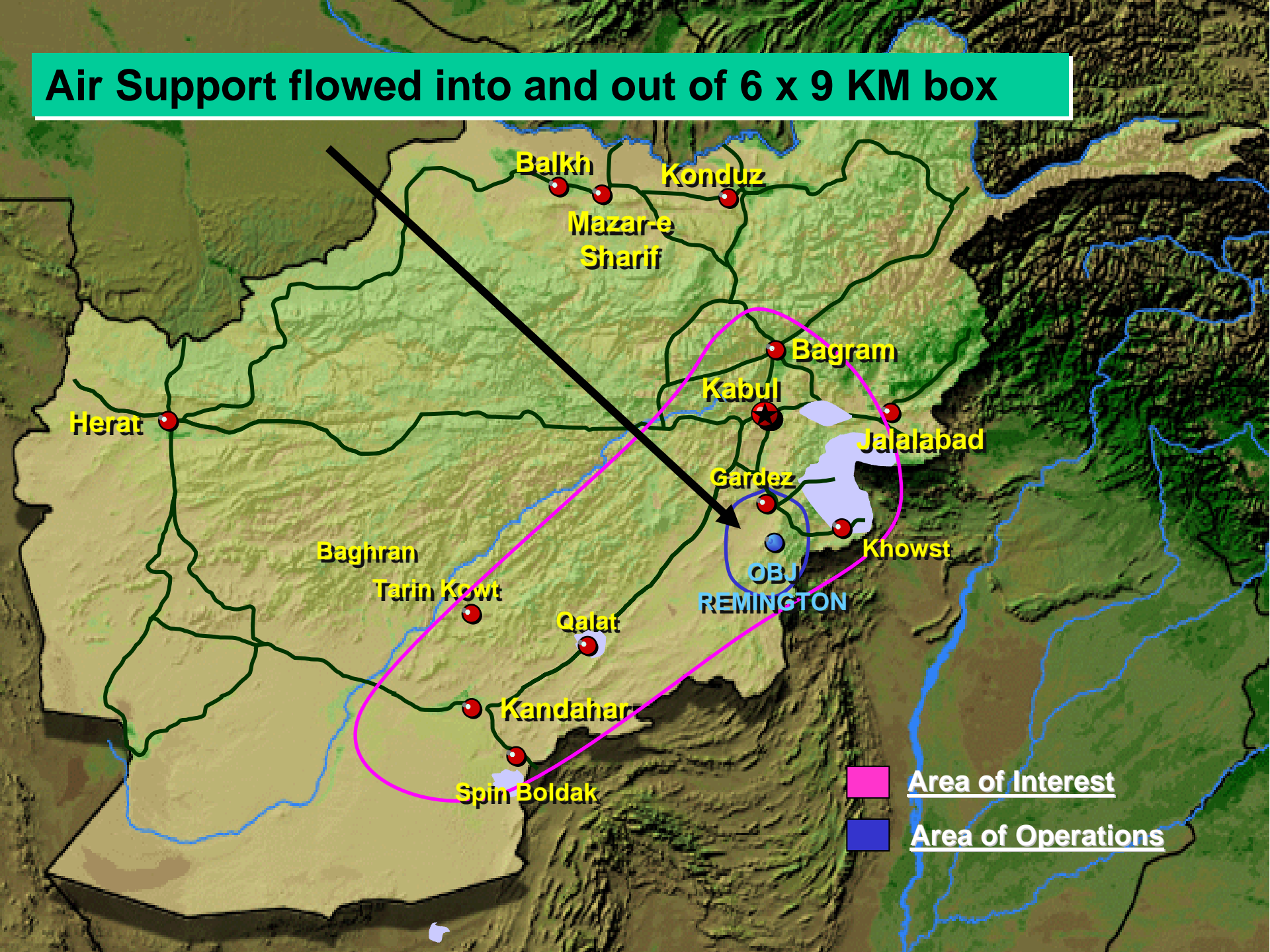Extensive use of JSTARS

Developed intermediate air control for SOF

JFC
JOC

TF

CFSOCC

CFACC
AOC
BCD

CFMCC
(AFLOAT)

SOLE

LNO

ELEMENT
GFAC

CJSOTF-N

ODA
ODA

Air Request Net

13
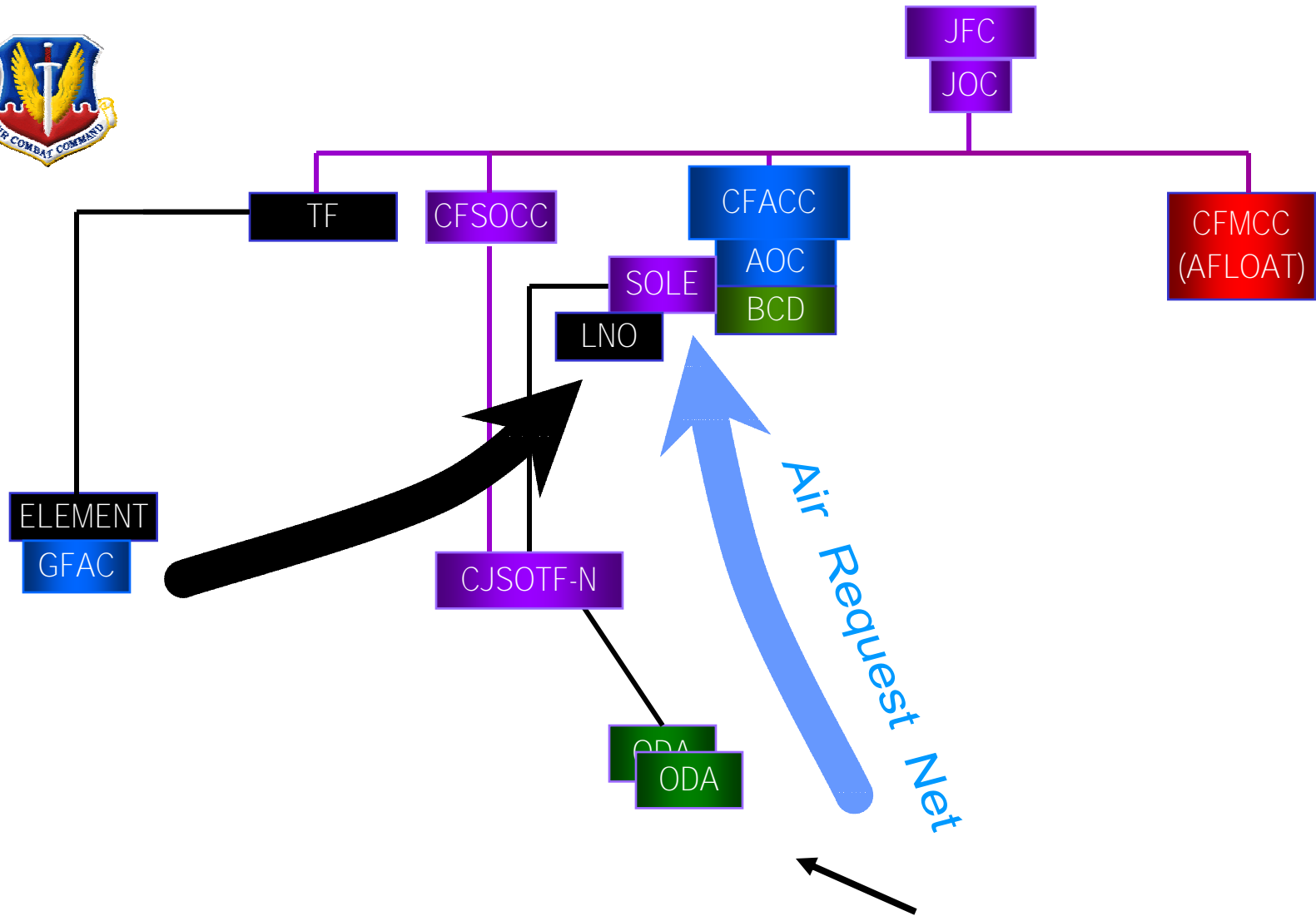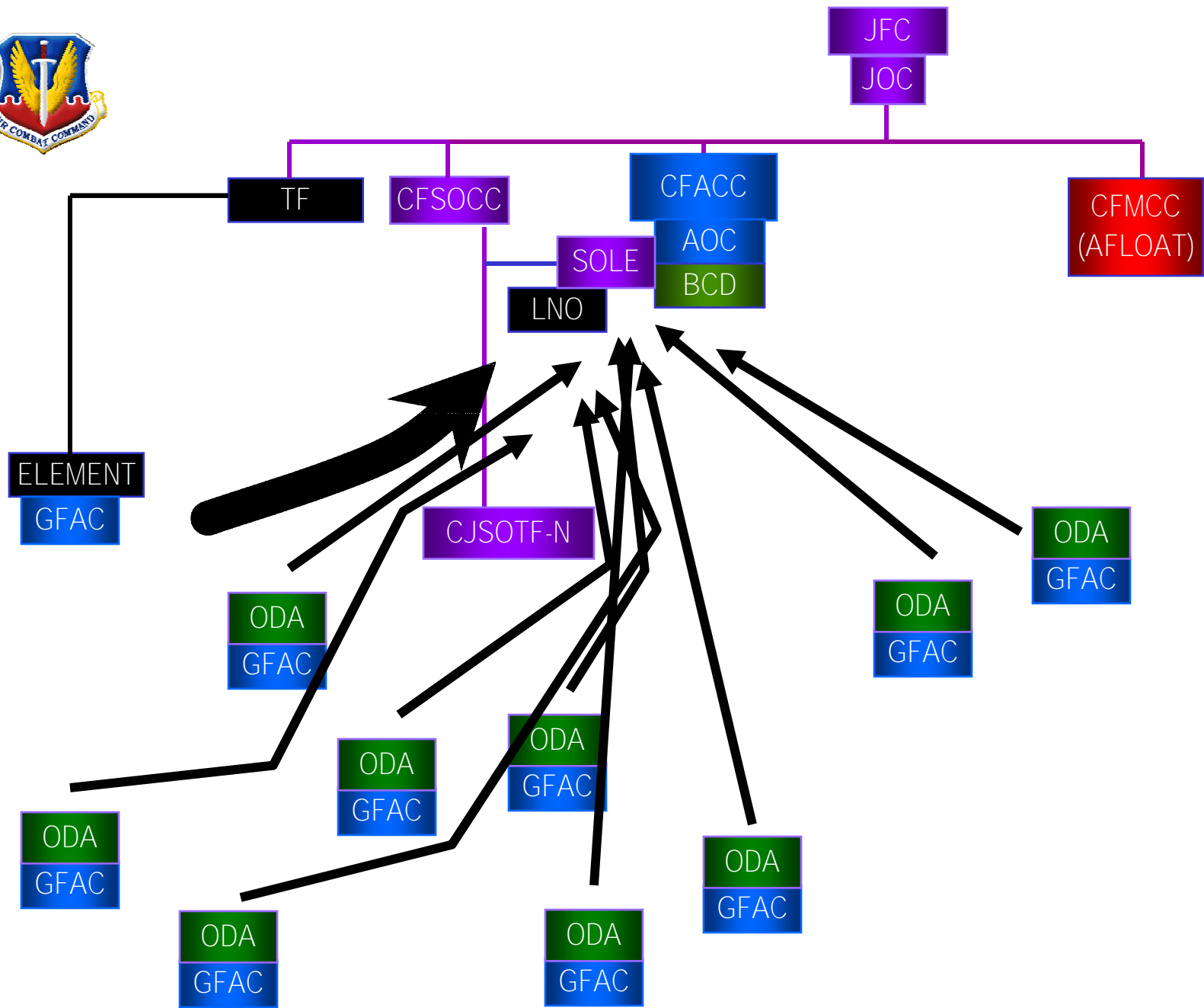
Air Support flowed into and out of 6 x 9 KM box

Balkh

Konduz

Mazar-e Sharif

Bagram

Kabul

Herat

Jalalabad

Gardez

Khowst

Baghran

OBJ REMINGTON

Tarin Kowt

Qalat

Kandahar

Spin Boldak
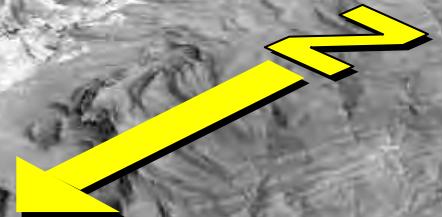
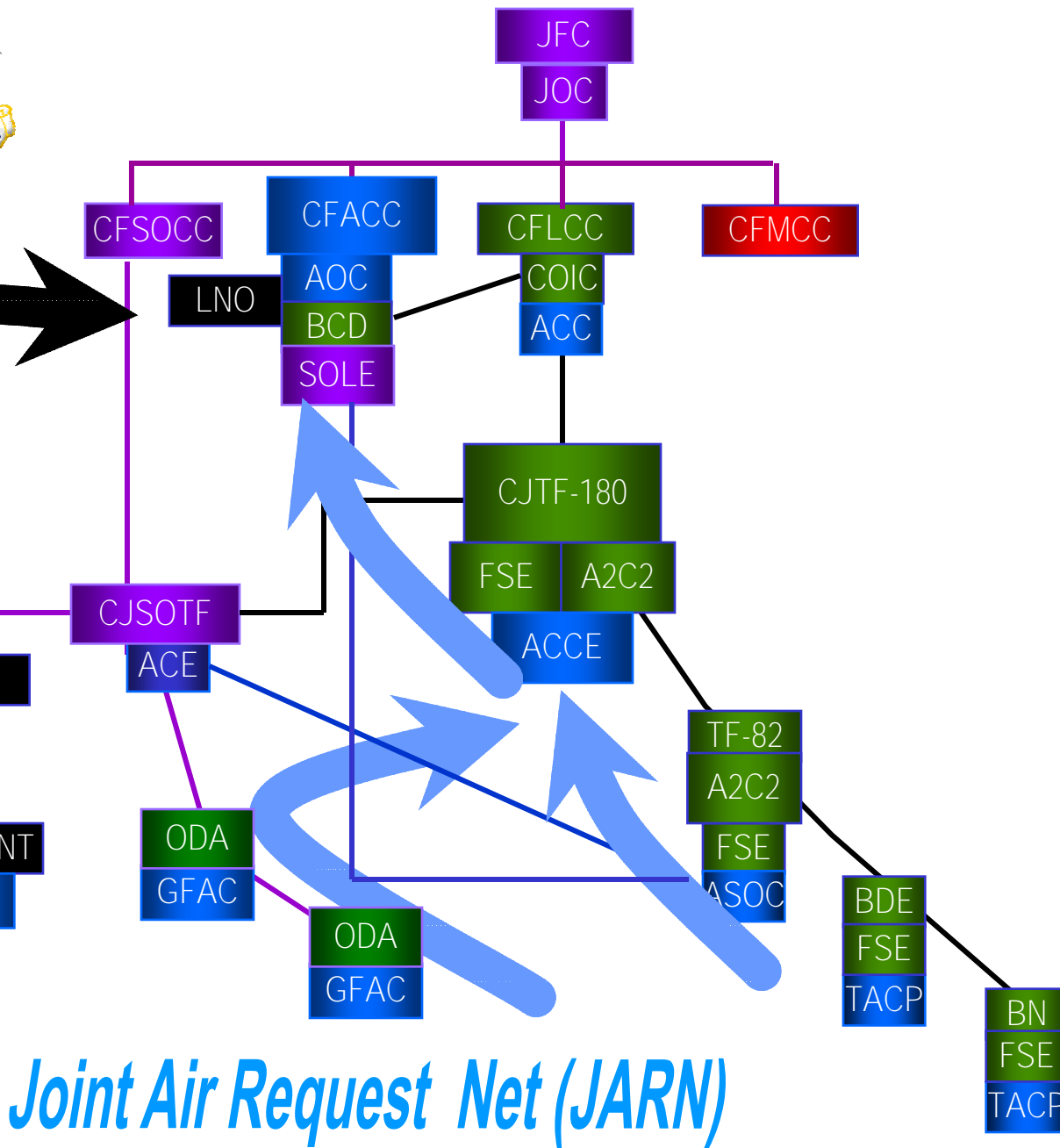**Area of Interest**

Area of Operations

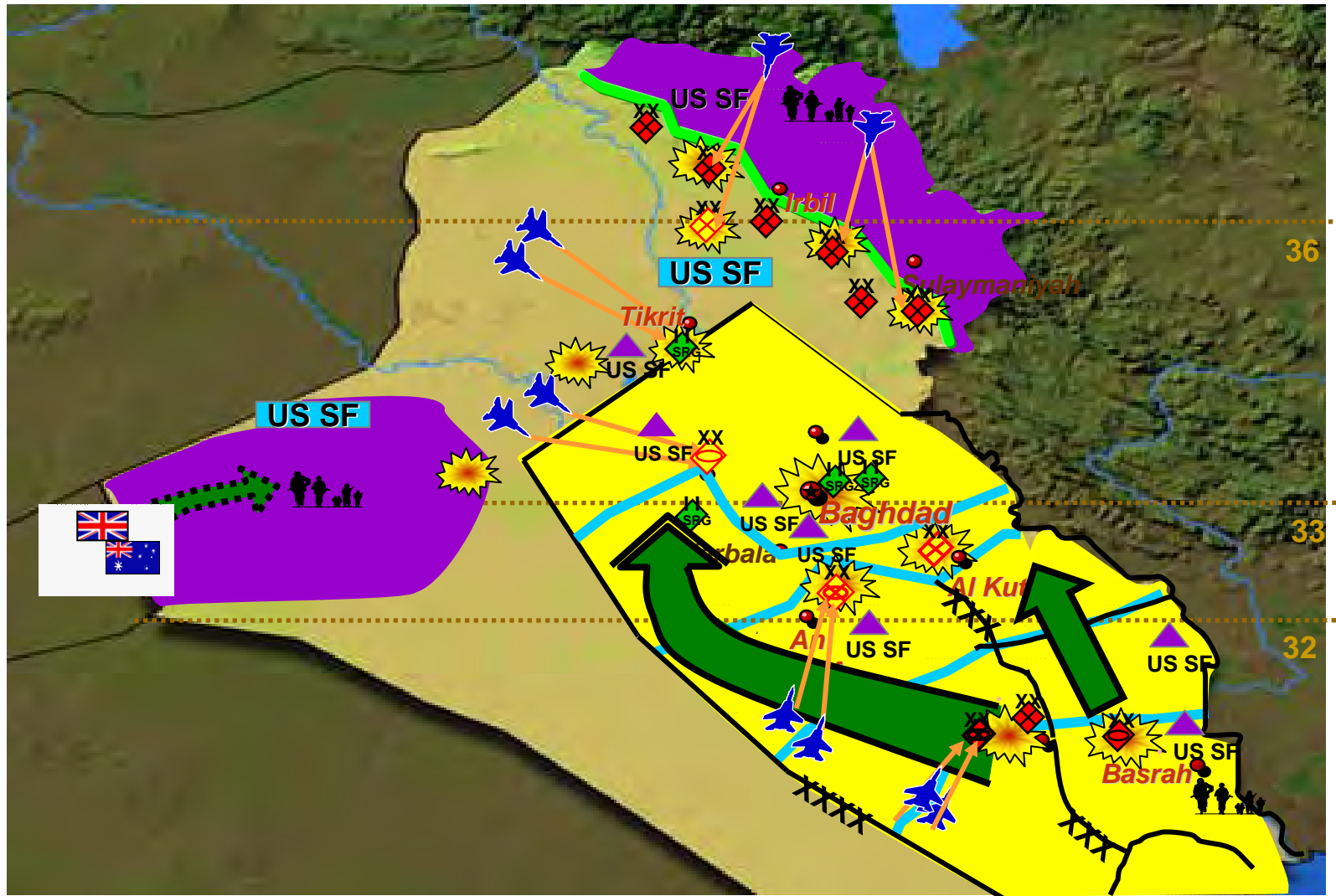**Joint Air Request Net (JARN)**

Iraqi Freedom— A Five Front War

One Team – One Fight

"I don't want to say that it would be a mistake for the services to engage in service-centric lessons learned. But to some extent I will say it. This was not a war fought by the Army or the Navy or the Air Force…or the Marines. It was a war that's been fought by joint forces under excellent leadership"

-- Defense Secretary Donald H. Rumsfeld, Pentagon News Briefing, April 15, 2003
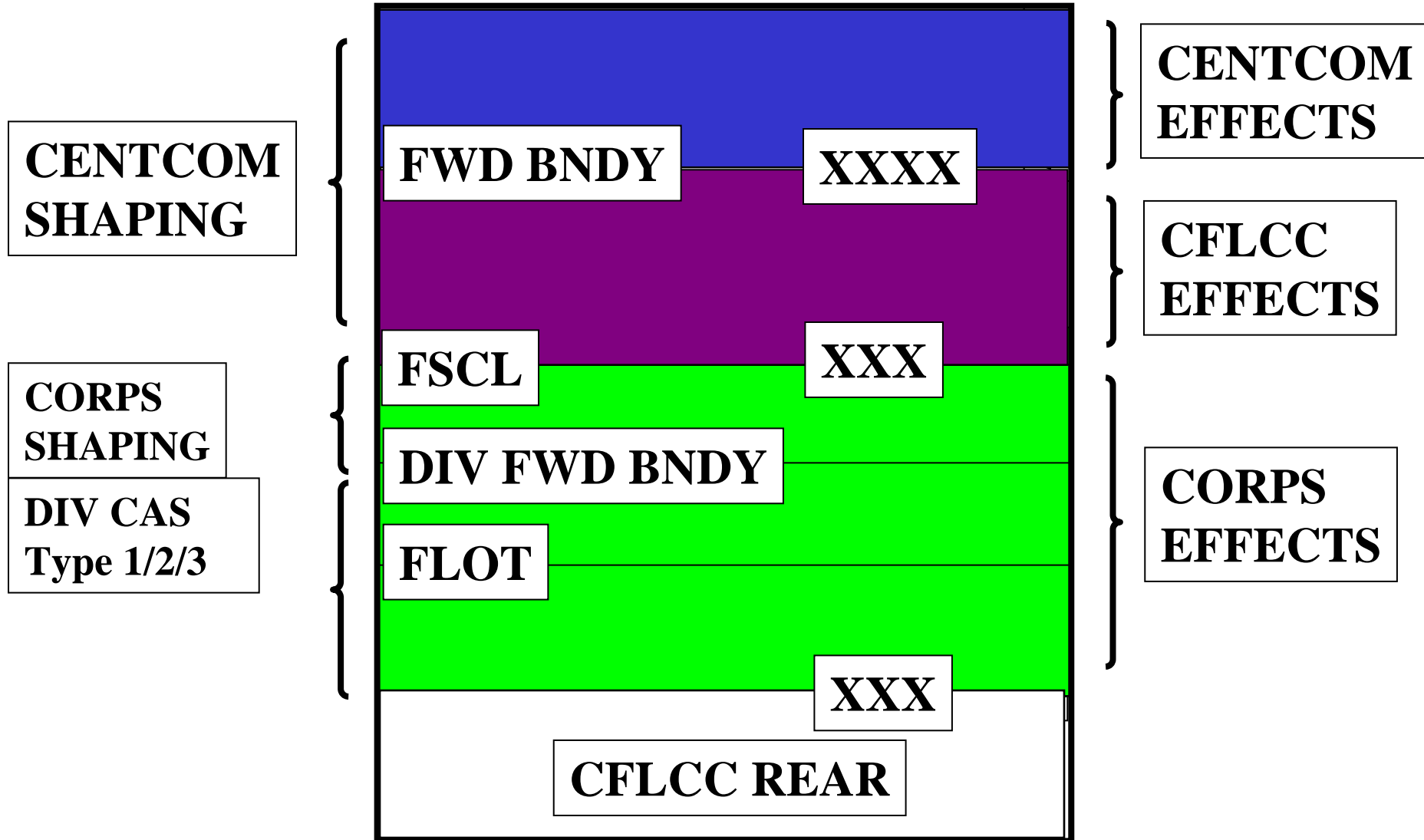
Two in the South, the West, North and Urban Baghdad
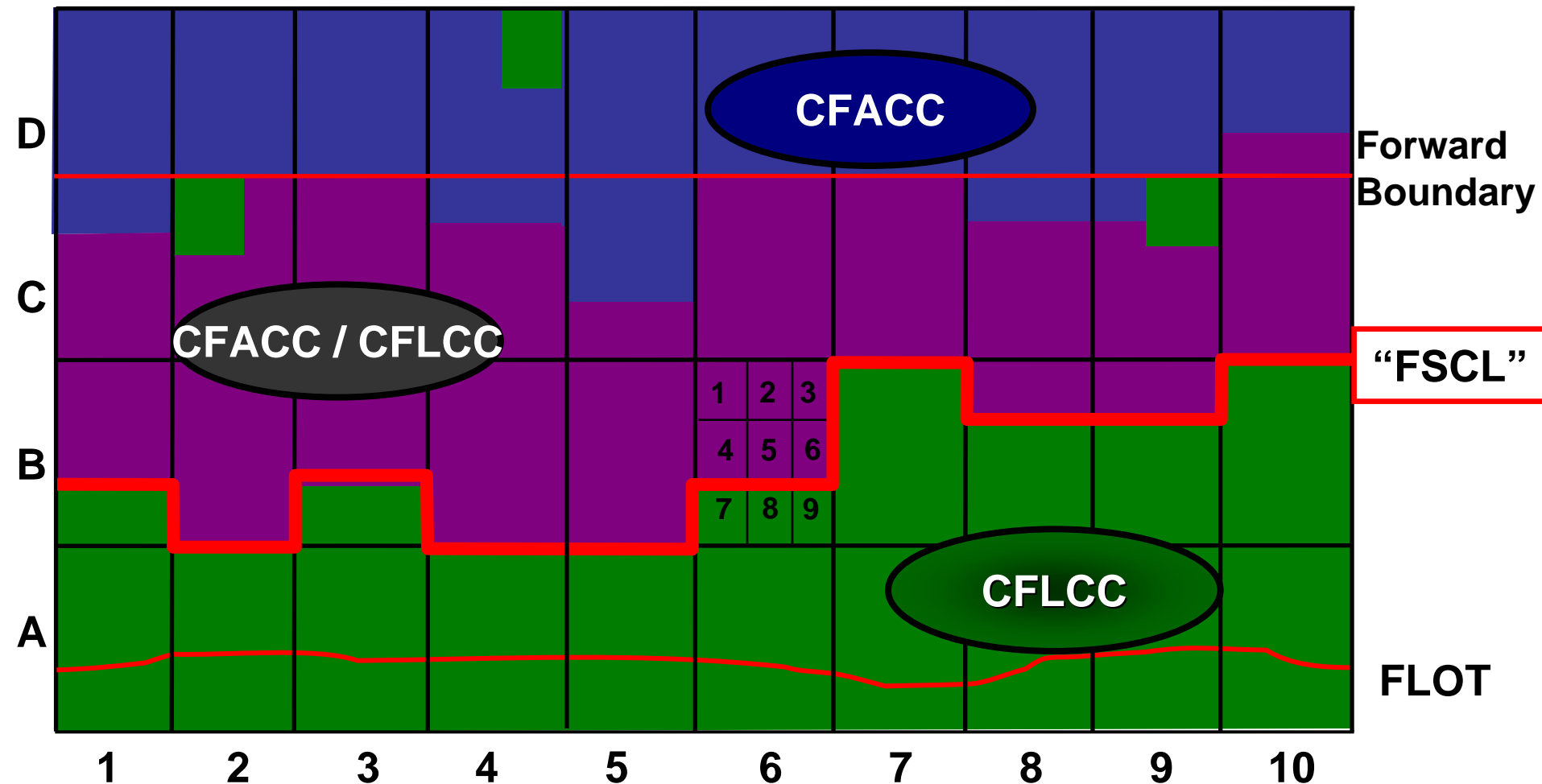
Digital and Analog Perspectives

V Corps Ground space Perspective (Analog)

CENTCOM SHAPING

CORPS SHAPING

DIV CAS Type 1/2/3

FWD BNDY   XXXX

FSCL   XXX

DIV FWD BNDY

FLOT

XXX

CFLCC REAR

CENTCOM EFFECTS

CFLCC EFFECTS

CORPS EFFECTS

CFACC Battle space Perspective (Digital)
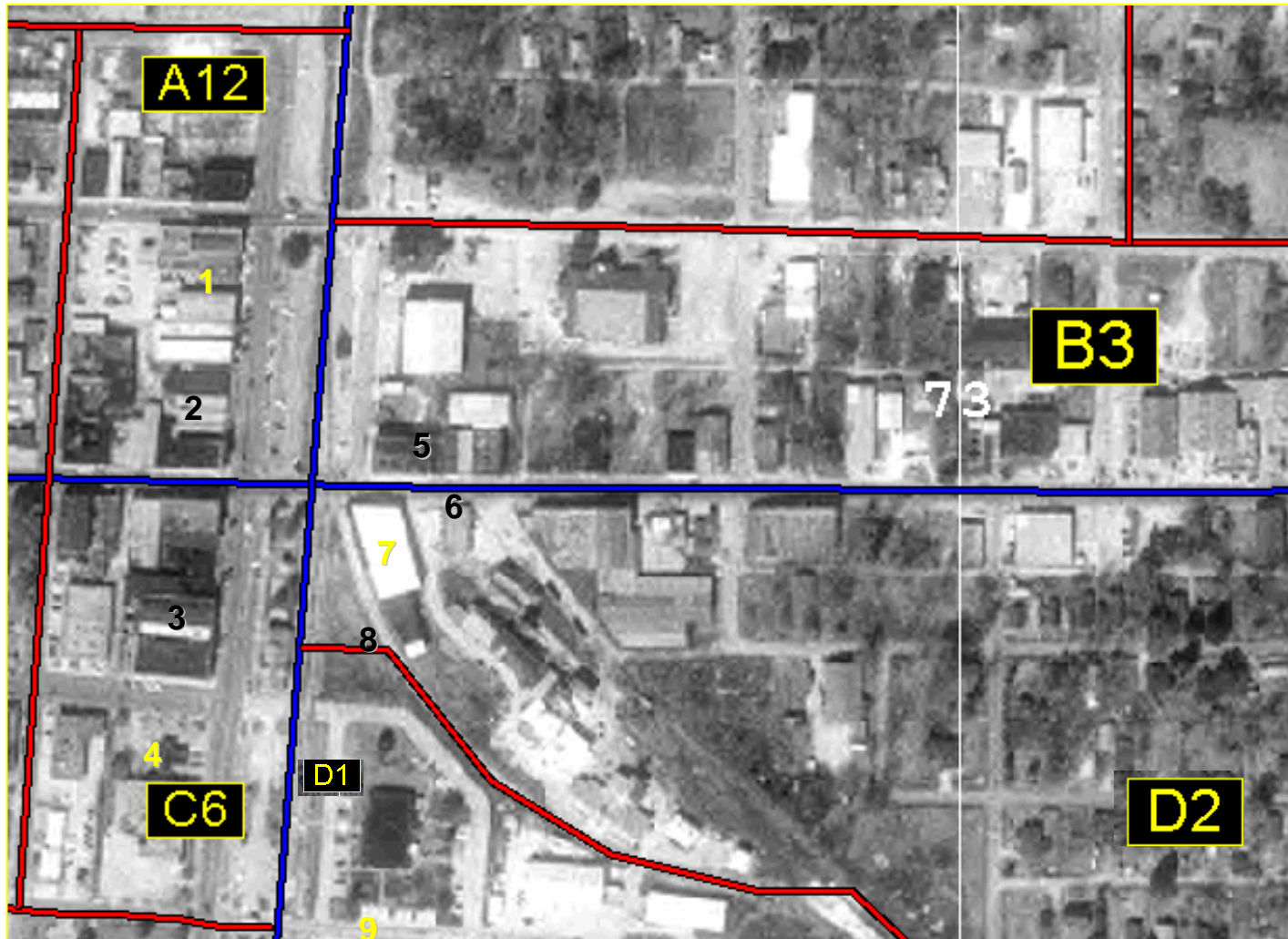
Theater Air Control Air-Ground System Elements

25
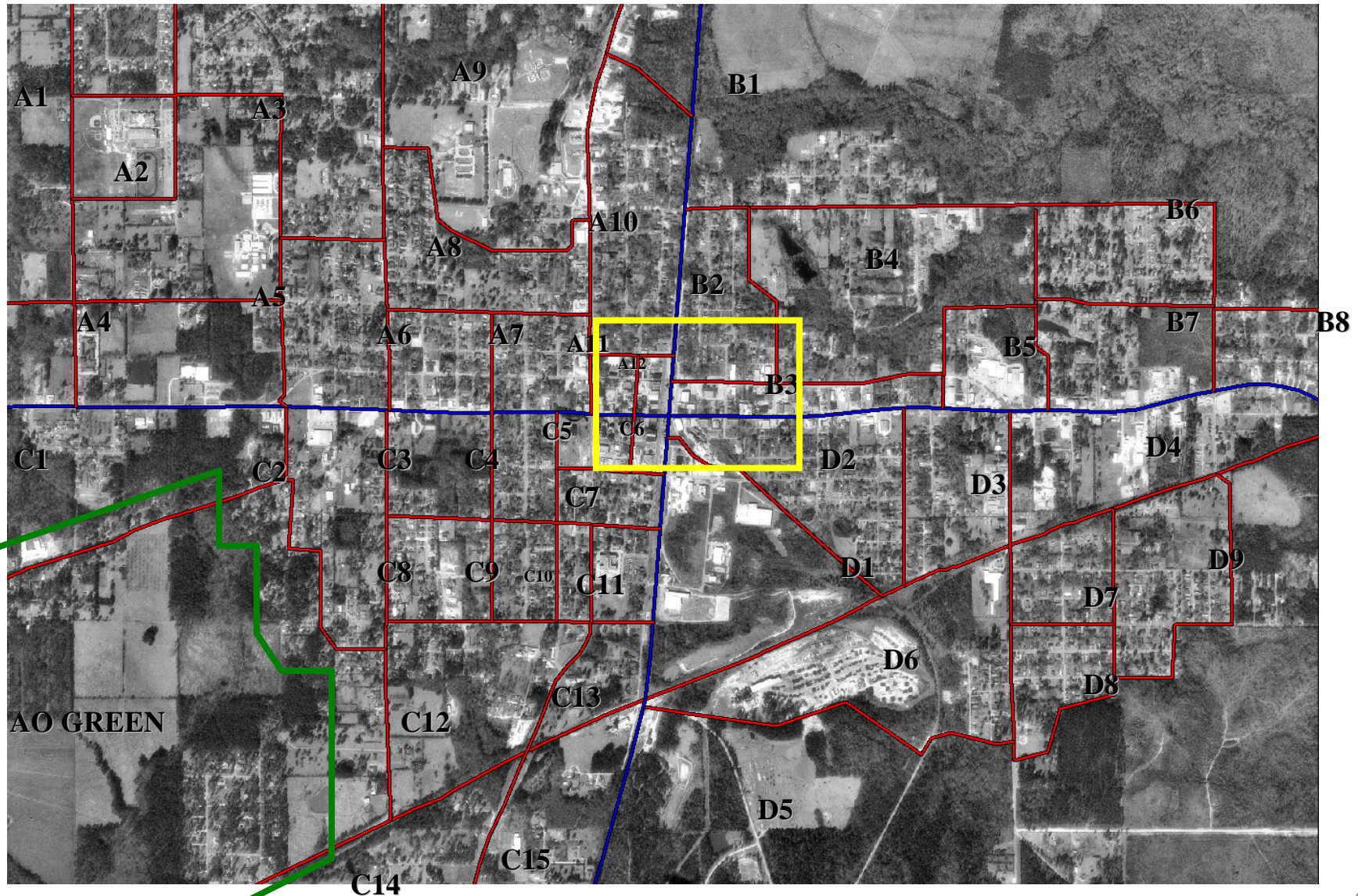
Finding It

(blown up imagery of grid box)

AIRPOWER – THE KILL CHAIN

- **ISSUE: SNIPER TAKING TOLL ON U.S. FORCES IN NAJAF; MARINE MGYSGT KILLED MINUTES EARLIER**

- **BACKGROUND: DENSE URBAN ENVIRONMENT, COLLATERAL DAMAGE LIMITED OPTIONS**

- **ACTION: RAVAGE 30 ENGAGED SNIPER WITH ONE HELLFIRE**

- **IMPACT: F2T2EA FROM A SINGLE PLATFORM**

RAVAGE 30

**Sniper in Second Floor Window
HELLFIRE Laser-Guided Missile**

AIRPOWER – PERSISTENT

- **ISSUE: PERSISTENT SURVEILLANCE LOCATES ZARQAWI ASSOCIATES**

- **BACKGROUND: PREDATOR PROVIDES ABILITY TO MAINTAIN CONSTANT SURVEILLANCE**

- **ACTION: RAPID RETARGETING – REVISED DMPI PASSED IN-FLIGHT TO STRIKE EAGLES; TGT STRUCK 3 MINS LATER**

- **IMPACT: ~12 TERRORISTS KIA; INITIATED SERIES OF STRIKES ON AMZ NETWORK IN FALLUJAH**

Captain "Dino" Murray, F-16 Pilot,
Assigned to 101st AASLT Div
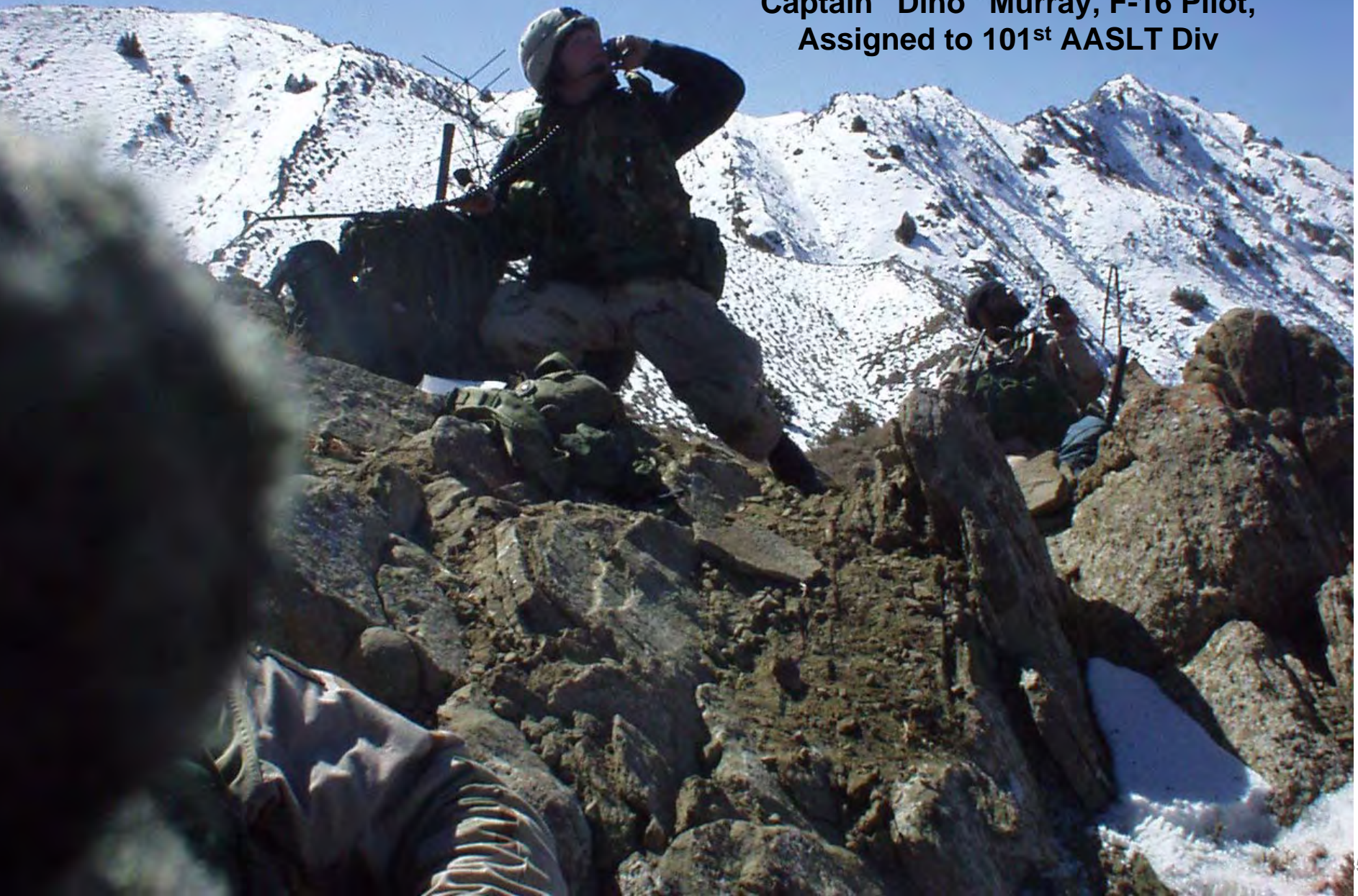
"John Madden" Video Imagery

A-10 Kneeboard

JTAC TACP-CASS & ROVER
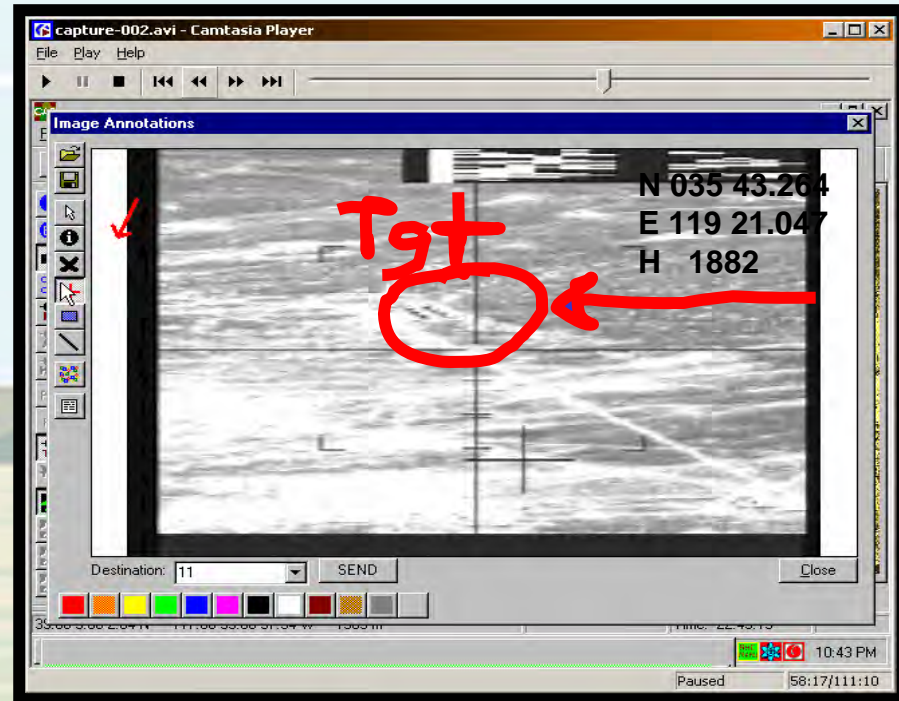
1. JTAC views video
2. JTAC "captures" still image
3. JTAC "marks up" image

"John Madden" Video Imagery

A-10
Kneeboard
&
VMF Equipped Aircraft
(F/A-18 & JSF)

JTAC
TACP-CASS
&
ROVER

Electronic Kneeboard
Pilot "opens" marked image

Tgt

N 035 43.264
E 119 21.047
H   1882

IN   OUT
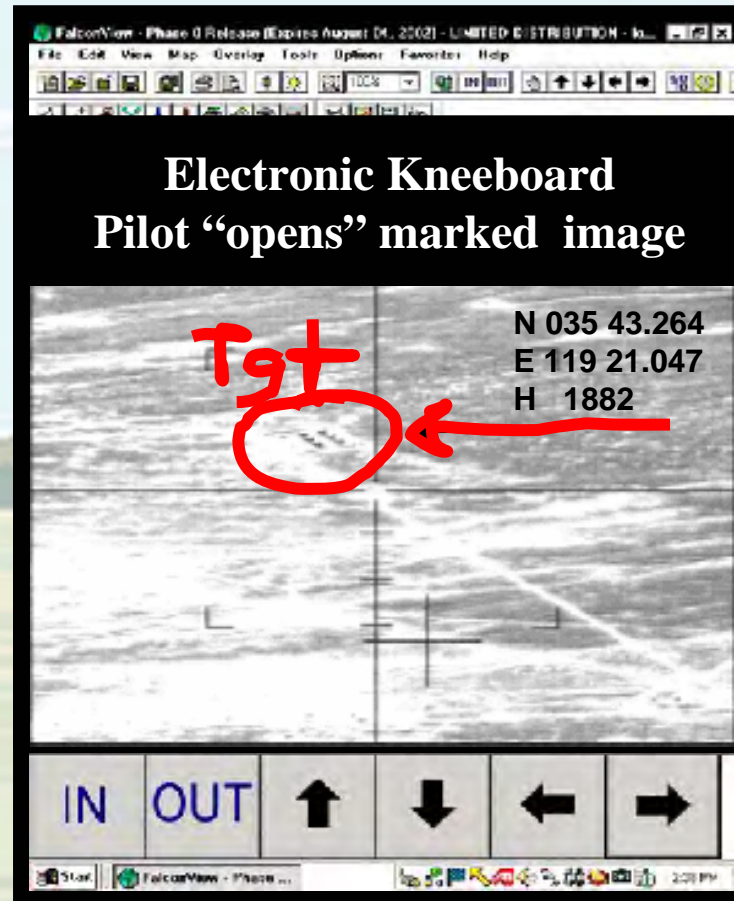
Airborne Battalion

Stryker Brigade

Special Forces TACP

Challenges

Airspace

Future Aircraft

Combat ID

Frequency Bandwidth

Urban Enemy Asymmetric Advantage

U.S. AIR FORCE

Adapting Lethality to Homeland Defense and Security

Biodefense and the Global War on Terror

Brendan McCluskey
Homeland Defense Liaison
University of Medicine and Dentistry of New Jersey
15-June-2005
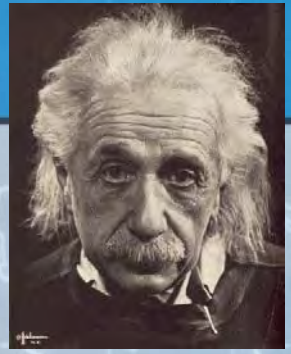
UMDNJ
UNIVERSITY OF MEDICINE &
DENTISTRY OF NEW JERSEY

UMDNJ

- **Largest independent academic institution of its kind**
- **20,000+ students, faculty, staff, and other personnel**
- **Recognized leader in health care delivery, biomedical research, medical and health education, and community service**

UMDNJ

- **Statewide institution**
- **4 major campuses plus satellite campus**
- **Integrated hospital (Newark)**
- **Network of behavioral health centers**
- **Affiliations with many health care and educational institutions**
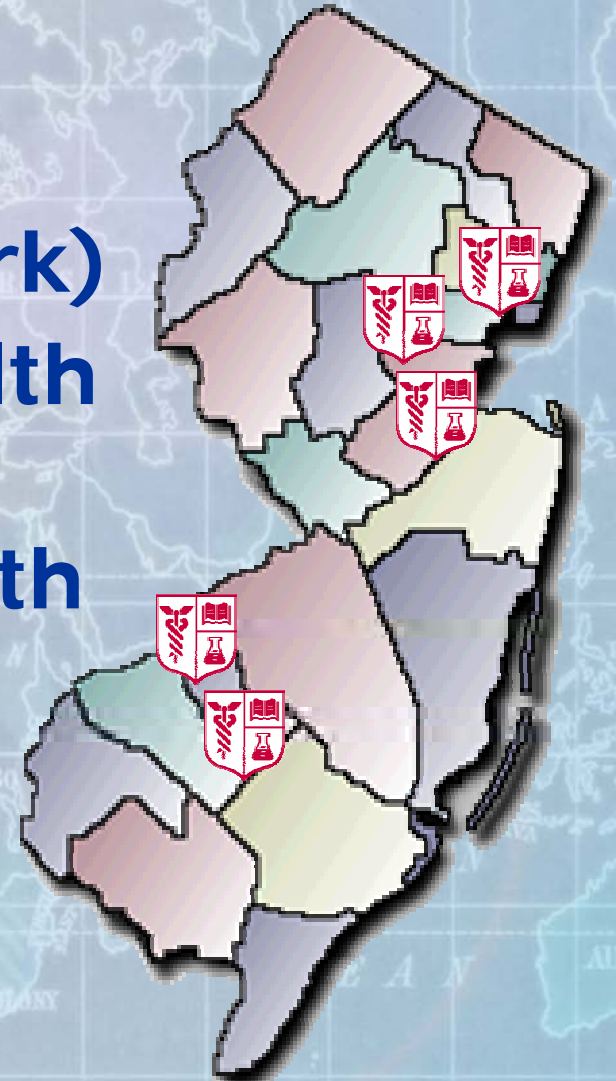
CIA: "Al Qaeda Ready to Use WMD"

- **Al Qaeda's goal is the use of chemical, biological, radiological or nuclear weapons to cause mass casualties**

"Mega Terrorism"

June 3, 2003

Source: Washington Times

Research

- **Basic Research**
  - **Blood detection assays**
  - **Human genetics of susceptibility**
  - **Plume modeling**
  - **Effects of pharmaceuticals on radiation detectors**
- **Applied Research**
  - **Tissue digestion cassette**
  - **Bioinformatics**
  - **Broad application respirators**

Preparedness

- **Standardized (off the shelf)**
  - **HazMat Emergency Response**
  - **WMD/Domestic Preparedness**
  - **Incident Command System**
  - **Forensic Epidemiology**
- **Novel (custom designed)**
  - **EMS Response to the Large Scale Incident**
  - **40-hour Terrorism Program (Public Health)**
  - **Case-based Training Institute**
  - **Graduate concentration in biodefense**

Current Projects

- **Research**
  - **Host Response to Select Agents**

- **Preparedness**
  - **Case-based Training**

"Progress occurs when courageous, skillful leaders seize the opportunity to change things for the better."

- Harry S. Truman

Biodefense research at UMDNJ

- **HOST RESPONSE**
  - **Can infection-specific signatures be detected?**
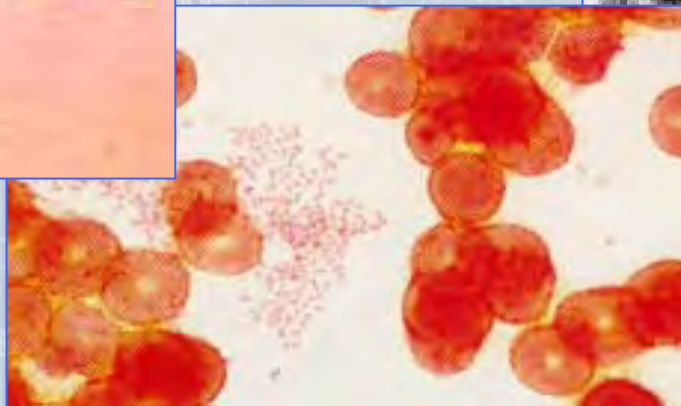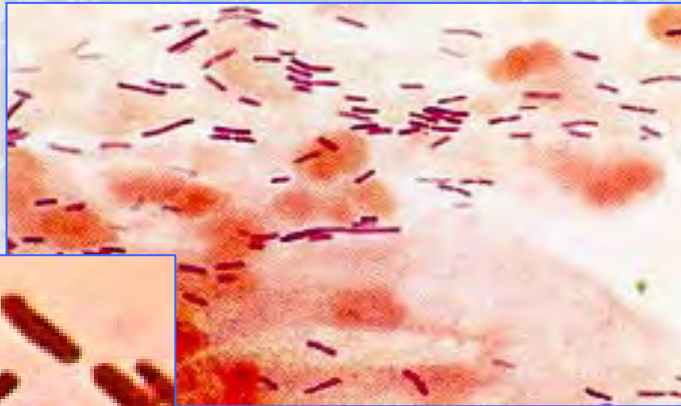
Transcriptional Profiling

Transcriptional profiling: gene expression in infected cells

- Detect host response to infection
    - Infect human blood cells with agents
    - Perform DNA microarrays
    - Determine which genes are up-regulated or down-regulated
    - Identify signature profiles of gene expression for each infection

Transcription Profiling

Transcriptional Profiling

Bacillus anthracis
(anthrax)
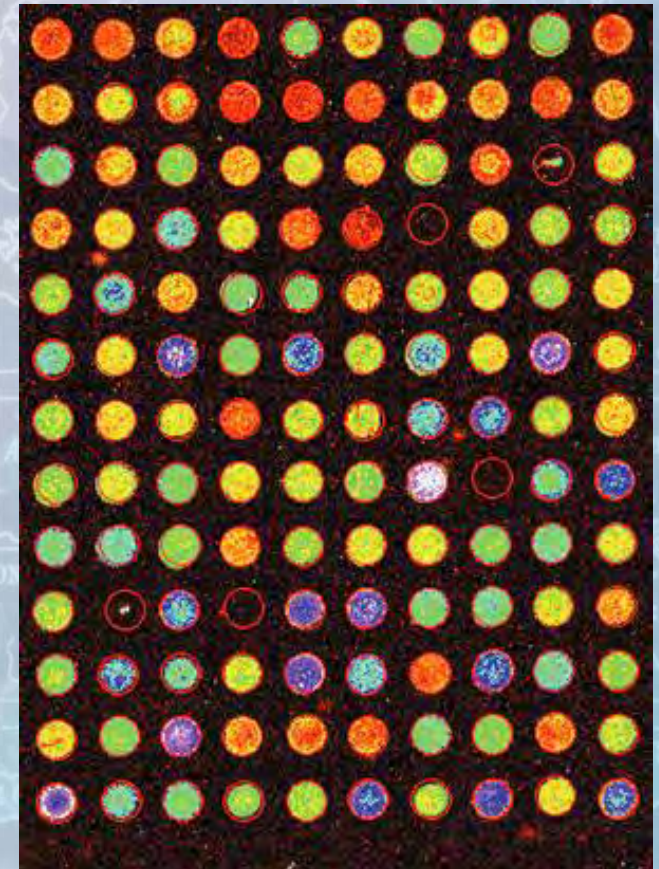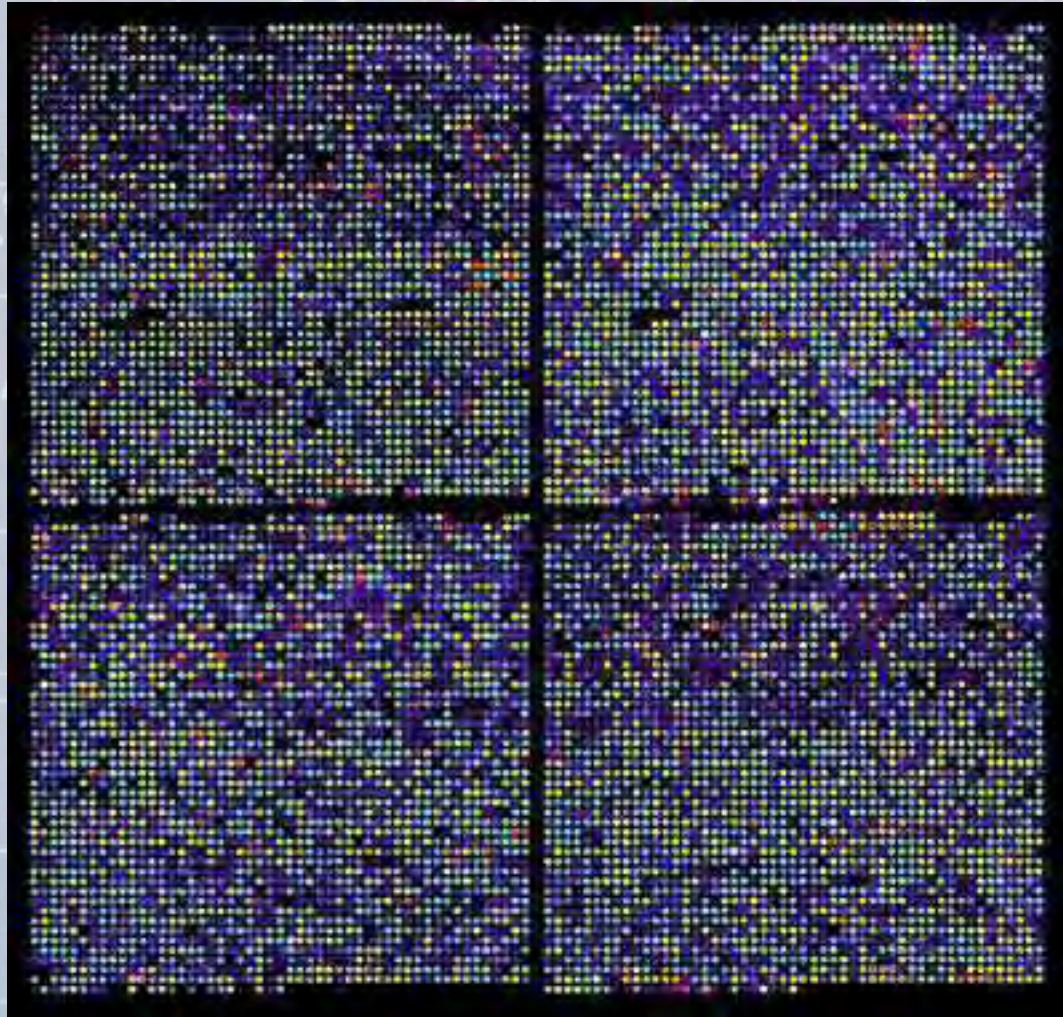
Burkholderia mallei
(glanders)
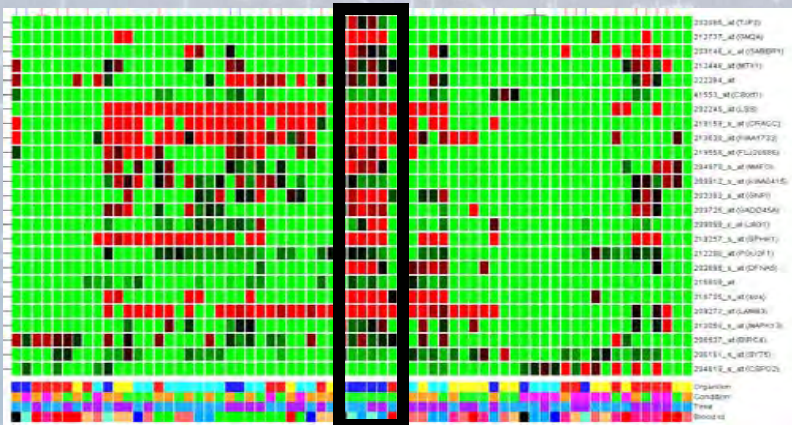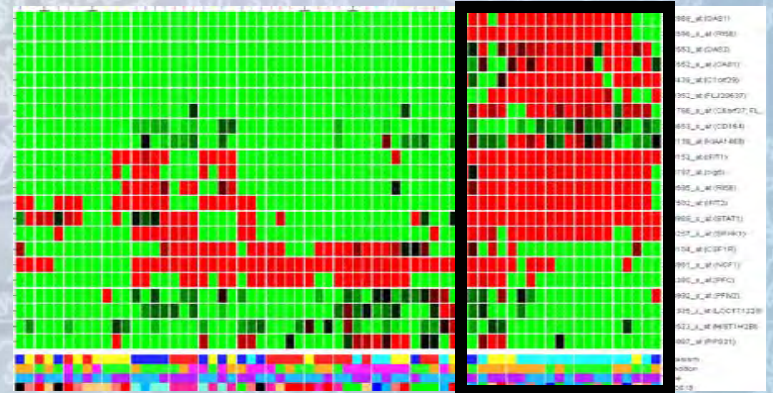
Yersinia pestis
(plague)

Transcriptional Profiling

A four-color, single-well multiplex assay
to detect select pathogens

Detects 50 molecules
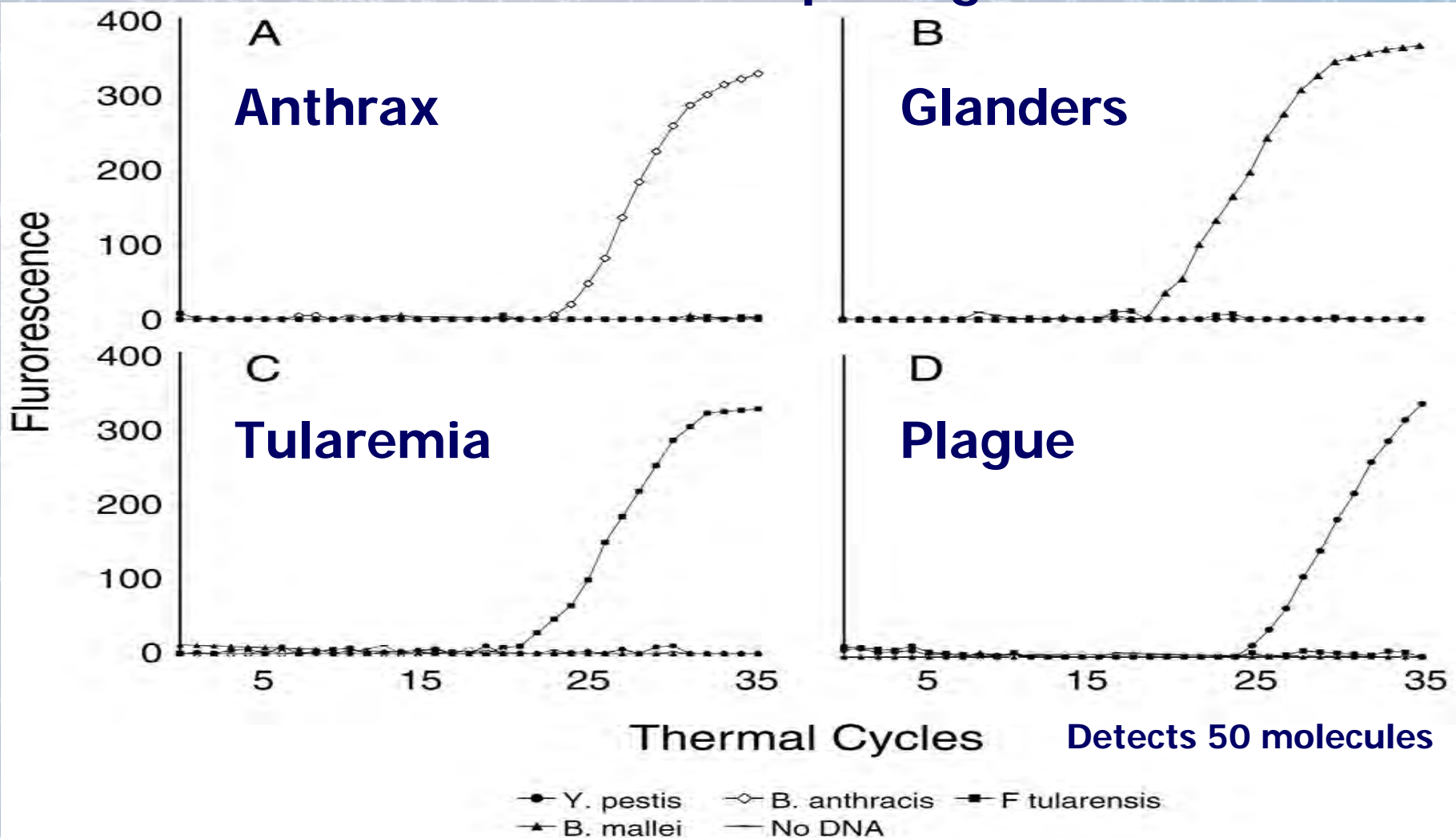
Transcriptional Profiling

Transcriptional profiles may reflect particular infection
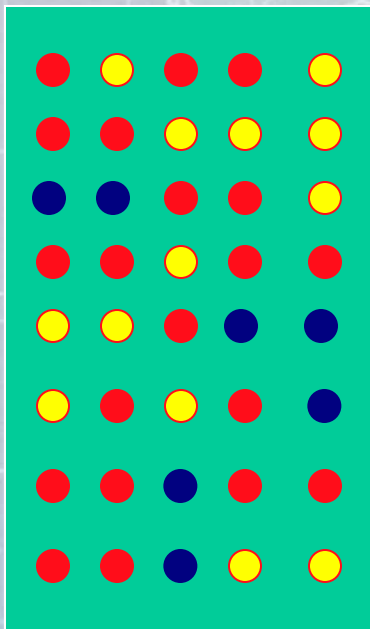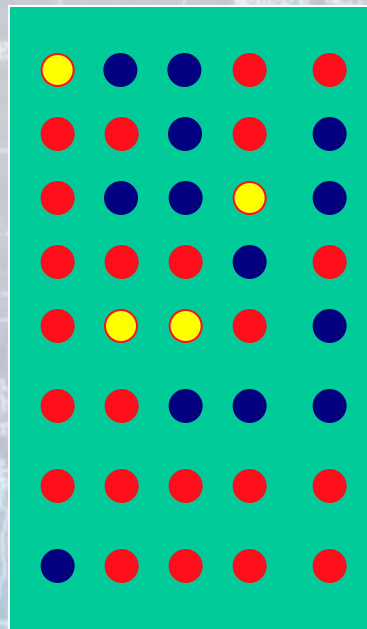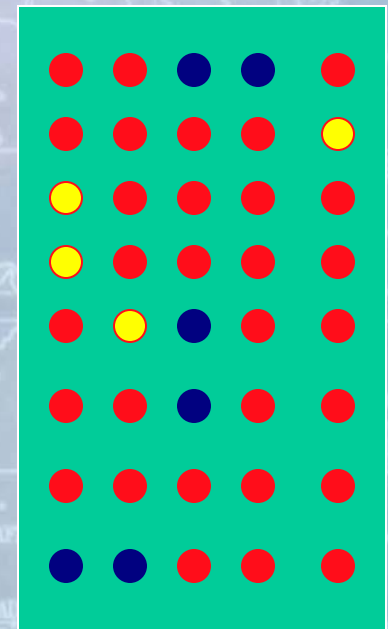
anthrax   plague   influenza
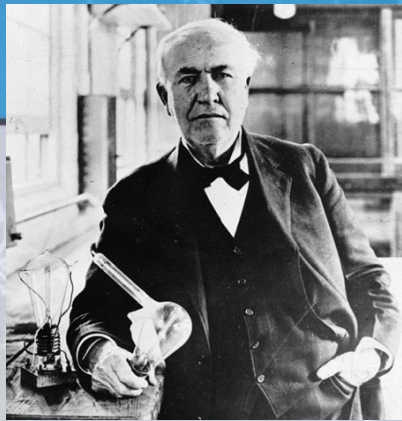
"The three great essentials to achieving anything worthwhile are: first, hard work, second, stick-to-it-iveness, and third, common sense."

- Thomas Edison

History of Case-Based Training

- **CDC Epidemic Intelligence Service**
- **Military War Colleges (Naval War College)**
- **Harvard Business School**
- **Medical Schools**

Case-based Training

- **Vicarious experience**

- **Learn what to do AND how to do it**

- **Learn multiple roles**

- **More effective at triggering memory**

- **Know what to expect when event occurs**

Case-based Training

- **A role play of an event that actually happened**
- **Based on historical events or simulated scenarios**
- **Similar to a table-top exercise**
- **Subjects:**
  - **Foodborne illness, chem/rad events, investigating infectious disease outbreaks**

The HD/HS Effort at UMDNJ

- **Multidisciplinary approach -**
  - **First responders, public health, scientists and clinicians**
  - **Microbiology/immunology/genetics/ molecular biology**
  - **In vitro and in vivo models**
  - **Training, planning, and exercising**

TOGETHER WE WIN
UNITED STATES SHIPPING BOARD — EMERGENCY FLEET CORPORATION

Homeland Defense/Security Team

- **Research**
  - **Nancy Connell**
  - **Grant Gallagher**
  - **David Alland**
  - **Liz Raveche**
  - **Jerry Ellner**
  - **Kevin Fennelly**
  - **Steve Schutzer**
  - **Nick Megjugorac**
  - **Jessica Mann**
  - **Rebeka Pestoff**
  - **Carolina Sofer**
  - **Catina Crismale**

- **Preparedness**
  - **Jason Emmel**
  - **Andrea Marcus**
  - **James Smith**
  - **Tim Phelan**
  - **Nikiesha Nicholas**
  - **Kathy Wioland**
  - **Mary Paczkowski**
  - **Jamie Steiger**
  - **Dennis Boos**
  - **Henry Cortacans**
  - **Nancy Hamstra**
  - **William Halperin**

Thank You

Brendan McCluskey

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National Defense Industrial Association (NDIA) Armaments Technology Seminar & Exhibition

Leveraging Enabling IT Technologies for "The Home and Away Game"

Panel Discussion on Adapting Lethality for Homeland Defense/Security

Presented by: Angela M. Messer

Principal, Booz Allen Hamilton

McLean, VA

June 15, 2005

Booz | Allen | Hamilton

Discussions topics on leveraging enabling IT technologies for homeland defense and homeland security

▶ The need for the 'NET' and a net-centric environment to connect systems, information and users

▶ The power of the enabling technologies for the 'home and away games'
  – Communications
  – Data and information sharing
  – Net-centric capabilities

▶ 4 Case studies
  – 'Home Game' -- National Guard
  – 'Home Game and Away Game' -- DoD Biometrics Management Office and the Biometrics Fusion Center
  – 'Away Game' efforts that have potential to impact the 'Home Game' -- DCGS-Army and JIAPC

▶ Critical success factors

Future Combat Scenario

▸ Power of the 'Net'

▸ Information sharing capabilities

▸ Could we apply this scenario to the HLS/HLD environment?

0700Z: Brigade Commander Logs Into "My GIG"

PKI Authentication

Smart Pull

Intelligence & Field Ops Communities of Interest

Brigade Commander
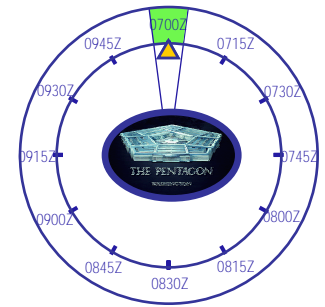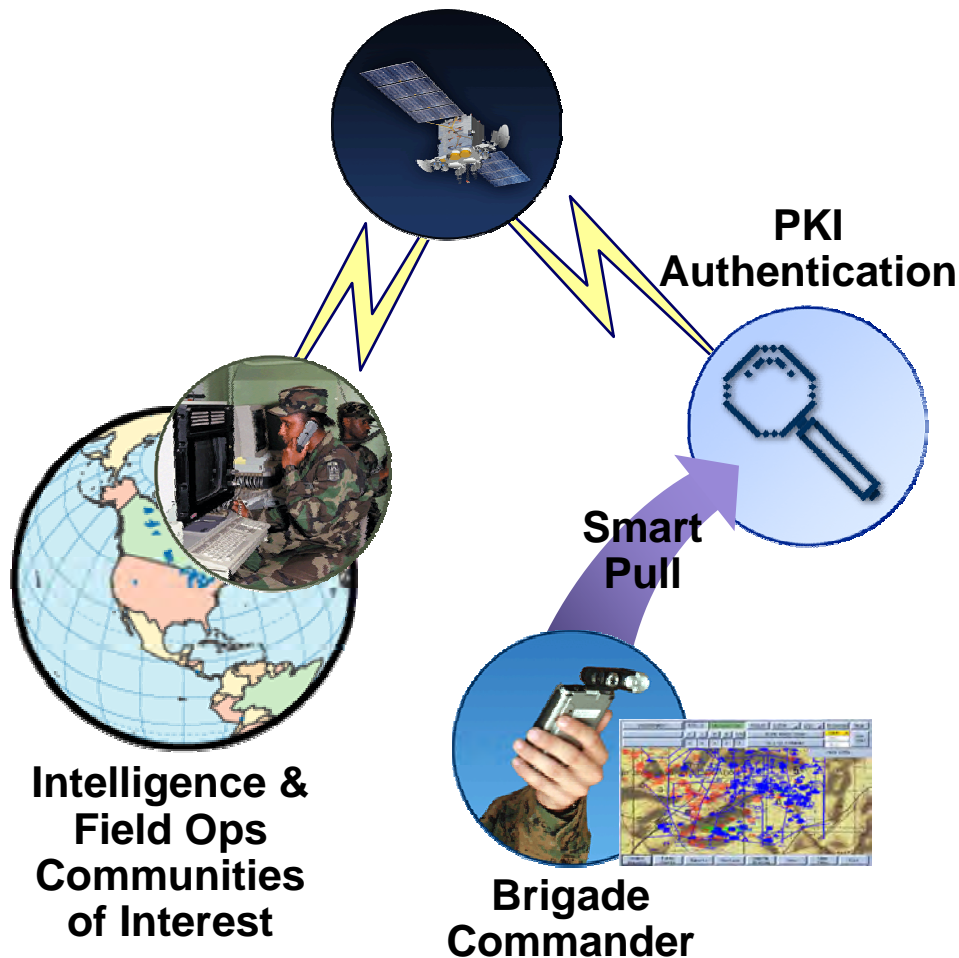
- Logs into the GIG directly via a portable device

- Commander's Identity and device are identified and registered to the GIG

- Updates Subscription services, add new COI(s) and sets up alerts.

- Reviews published reports

Afghanistan

Future Combat Scenario

0810Z: Recon Team Picks Up SIGINT

"Possible Enemy Produced Armored Vehicles"

Alert Message

Tactical Intelligence Unit

Alert Message

SIGINT

Intelligence & Field Ops Communities of Interest

Brigade Commander

Possible enemy emitter detected

Afghanistan

Booz | Allen | Hamilton

Future Combat Scenario

0845Z: Brigade commander quickly establishes task force and COI – inviting participants and including needed assets

Strike Package

"Stand By"

UAV

Establishes COI

"Eyes on target"

Intelligence & Field Ops Communities of Interest

Brigade Commander

Recon Team

Afghanistan

The possible connections between platforms, people and systems required for NCW is typical of what analysts call an "n^2" problem …
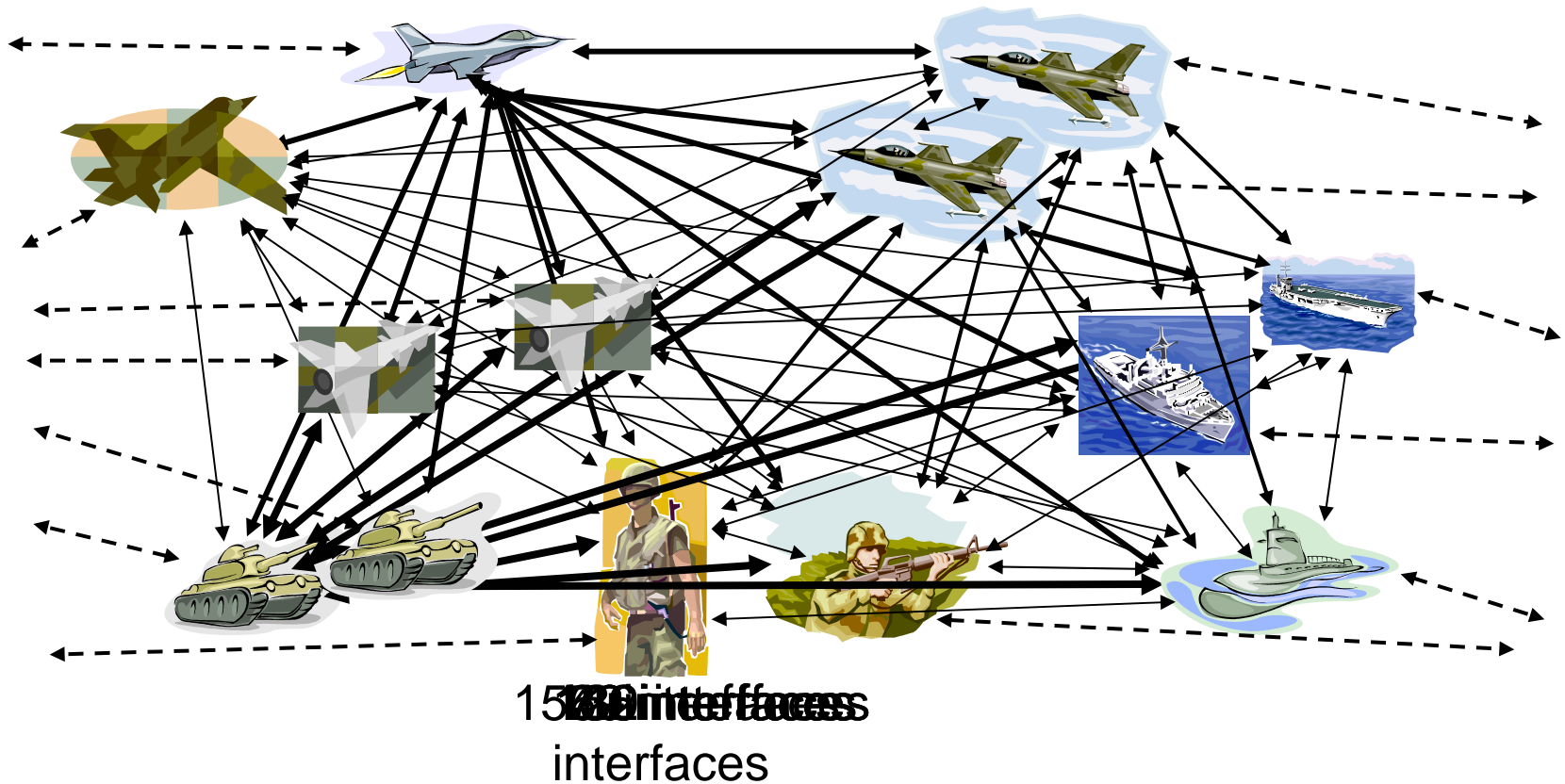
… where the difficulty climbs exponentially with each new component; "n^2" problems don't scale well

The term "net-centric" is intended to position "the network" as the source and destination of information and is critical in enabling information sharing …

Tactical Data Network

Enterprise Support Networks

Enterprise Support Networks

Enterprise Support Networks
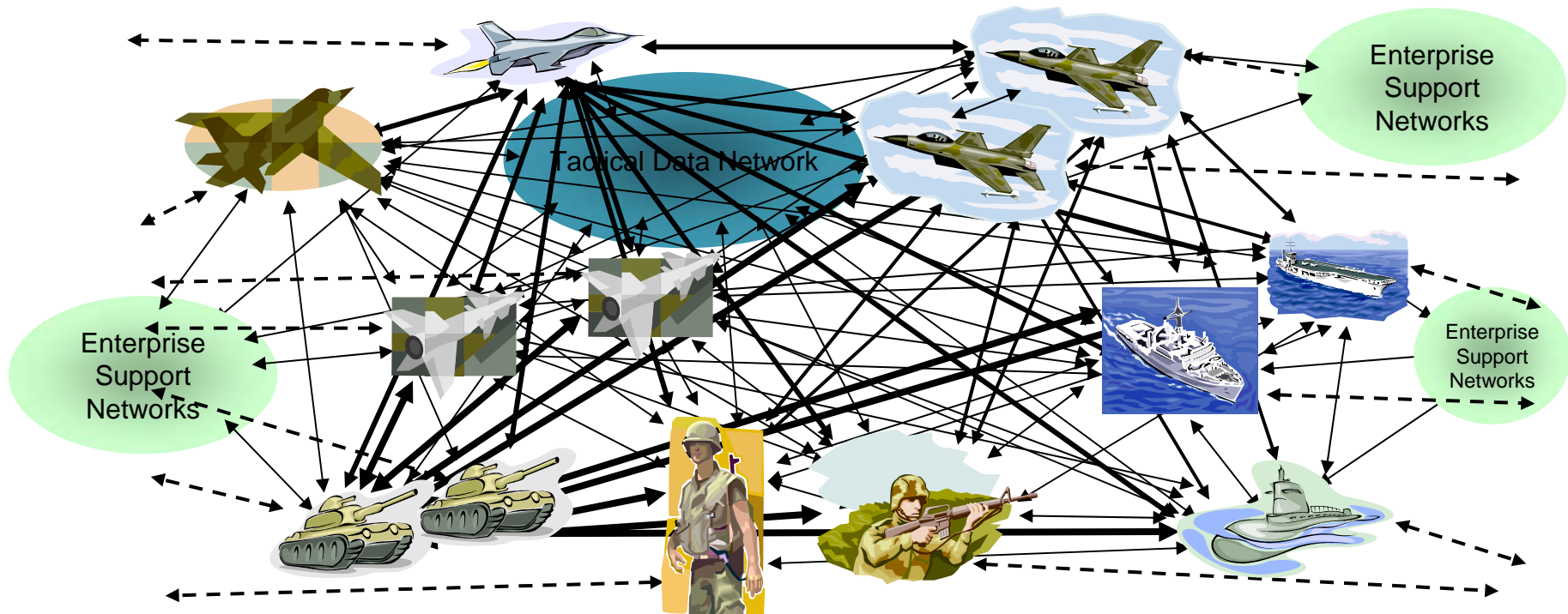
… but effecting this transformation requires wholesale changes in technology, policy, and culture

For the 'Home Game" -- the complexities in HLS/HLD are compounded by the number of stakeholders at the local, state, regional and federal level – which requires enhanced training, equipment, information exchange and sharing, and knowledge sharing capabilities

Federal-Level

State-Level

Local-Level

Incident-Level
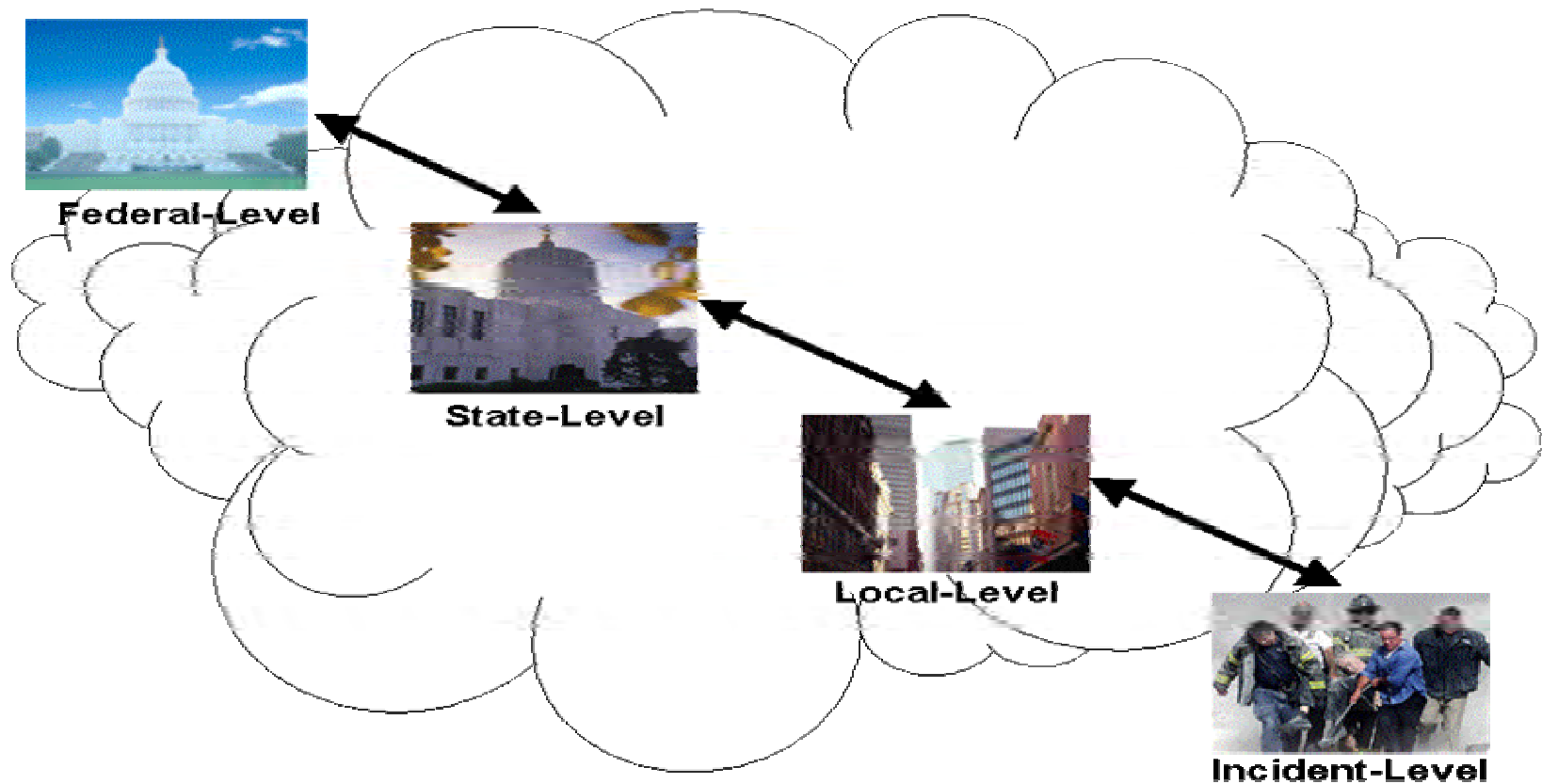
Complexity increases with regional and national scenarios

The Mega Trends in enabling technologies --- Wave One and Two initiatives are exponentially fueling information growth and access, generating the need for Wave Three products and services to exploit this information

1 **Wave One:**
Computing/Processing
(1960s-1980s)

2 **Wave Two:**
Communication/Networking
(1980s-2000s)

3 **Wave Three:**
Content & Data Management
(2000-2010s)

- ► **Technology Catalyst**
  - – Microprocessor/WINTEL

- ► **Characteristics**
  - – Standardized
  - – Commoditized

- ► **Business Benefit**
  - – Desktop applications
  - – Decentralized processing

- ► **Key Challenges**
  - – IT as largest capital expense/TCO
  - – Linkage to productivity

- ► **Technology Catalyst**
  - – TCP/IP, Ethernet
  - – HTML

- ► **Characteristics**
  - – Distributed
  - – Open

- ► **Business Benefit**
  - – Increased collaboration
  - – Greater information access

- ► **Key Challenges**
  - – Security
  - – Impact on business model

- ► **Technology Catalyst**
  - – XML

- ► **Characteristics**
  - – Standardized
  - – Integrated

- ► **Business Benefit**
  - – Real-Time Integrated Enterprise
  - – Turing Data into Actionable Knowledge

- ► **Key Challenges**
  - – Information Management
  - – Cost and Complexity
  - – Impact on business model
  - – Security

SOA and web service technologies are becoming the next IT revolution, helping organizations align their software applications with business and mission requirements

Technology Evolution

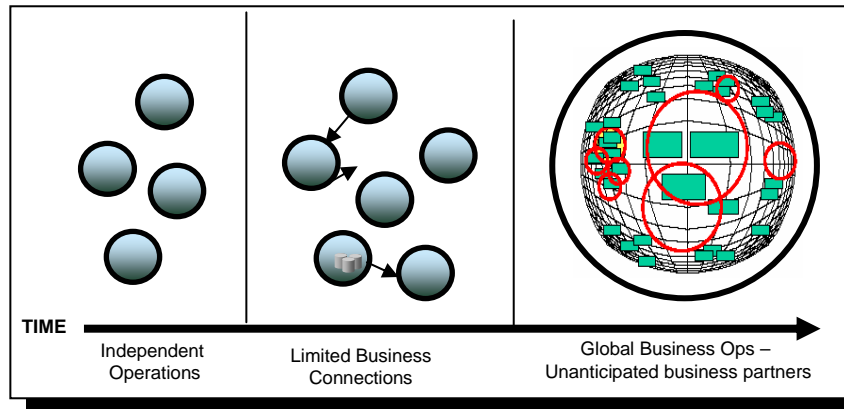|	1960's - 1980's	1980's	Early 1990's	Mid 1990's	2000's
Approach	Mainframe	Mainframe	Client Server	Web	SOA
Architecture	1 Tier	1 Tier	2 Tier (Server, Application)	3 Tier (Database, Server, Client)	Service Oriented
Business Motivation	Initial Automation	Initial Desktop Computing Power	Greater Desktop Computing Power	eBusiness	Business Agility

Business Model Evolution

TIME

Independent Operations

Limited Business Connections

Global Business Ops – Unanticipated business partners

Terminology Evolution

▸ Microsoft coined the term "Web services" in June 2000, when the company introduced Web services as a key component of its .Net initiative, a broad new vision for embracing the Internet in the development, engineering and use of software.

▸ Gartner coined the term "Service Oriented Architecture" in the late 90's to describe a component-based distributed computing environment

▸ Developers use XML tags to describe individual pieces of data, forming XML text-based documents that can be processed on any platform

▸ Web services take advantage of object-oriented programming by enabling developers to build applications from existing software components using a modular approach

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Case Study #1
Joint CONUS Communications and Support Environment (JCCSE)

"Trusted Information Sharing, Collaboration, and a COP for Homeland Defense and Civil Support (HLD/CS) Missions"

NG Operational Scope (OV-1)

Principal Partners: Combatant Commanders

Federal Defense Missions: Deployed as part of Joint Task Force

Mobilization

The National Guard

NGB JOC JCCSE

"Away Game"

"Home Game"

Civil Support
Local Response
Homeland Defense

54 Joint Force Headquarters

Federal Missions
Long & Short Term Plans
War Planning

Actions

Coordination
Common Operating Picture
Situational Awareness

Parent Military Services

State Missions
Unit Status & Training
HD/MACA Planning

Actions

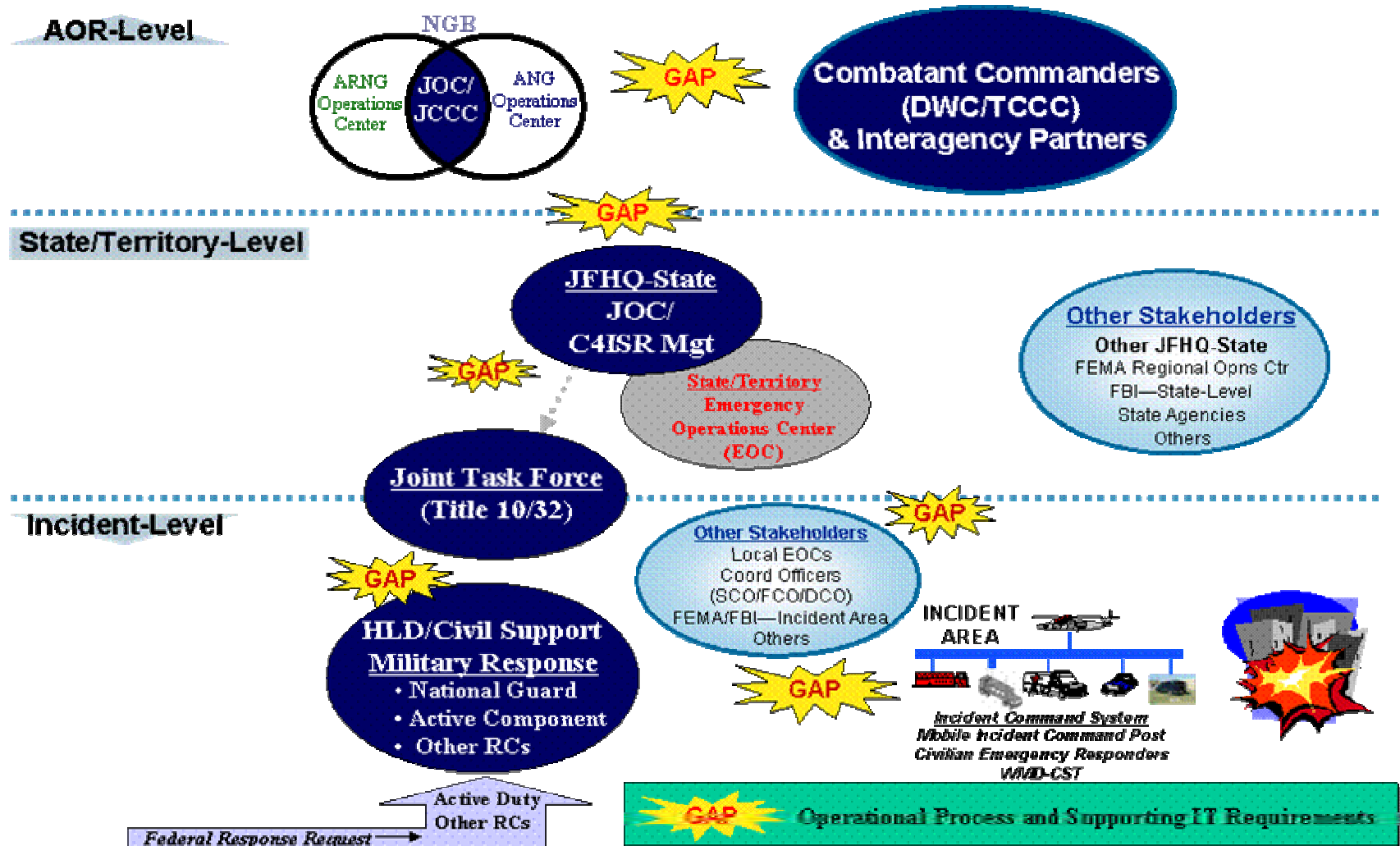| Coordination |
| :---: |
| Common Operating Picture |
| Situational Awareness |

Principal Federal Partners

Information Technology Infrastructure based on the Global Information Grid

'The Home Game' -- IT Support for Homeland Defense & Civil Support

- Need for a *collaborative information exchange environment* for support of inter-agency situational awareness, information sharing, and collaboration requirements, and supported by *IT capabilities that are simple to deploy and use*

- Need for a *deployable incident area communications organizations throughout the 54 States/Territories* with specified capabilities, response times, and readiness standards to *extend collaborative information exchange capabilities to any incident site*

- Need to develop IT capabilities for *Title 10/32 dual-hatted Joint Task Force commanders* and other possible C2 structures employed for Homeland Defense & Security missions

- Need for a *continuous situational awareness of our IT resources* so they can be more effectively employed to support users at the National- and State/Territory levels, and incident site

The Joint CONUS Communications Support Environment (JCCSE) construct provides the vision for supporting these requirements

JCCSE Mission Environment leverages wireline and wireless networking, Ka and Ku band satellite, land mobile radio, VPNs, and incident management collaboration/intelligence analysis tools

AOR-Level

NGB

ARNG Operations Center

JOC/ JCCC

ANG Operations Center

GAP

Combatant Commanders (DWC/TCCC) & Interagency Partners

GAP

State/Territory-Level

JFHQ-State JOC/ C4ISR Mgt

GAP

State/Territory Emergency Operations Center (EOC)

Other Stakeholders
Other JFHQ-State
FEMA Regional Opns Ctr
FBI—State-Level
State Agencies
Others

Joint Task Force (Title 10/32)

Incident-Level

GAP

Other Stakeholders
Local EOCs
Coord Officers
(SCO/FCO/DCO)
FEMA/FBI—Incident Area
Others

GAP

HLD/Civil Support Military Response
• National Guard
• Active Component
• Other RCs

GAP

INCIDENT AREA

Incident Command System
Mobile Incident Command Post
Civilian Emergency Responders
WMD-CST

Active Duty Other RCs

Federal Response Request

GAP Operational Process and Supporting IT Requirements

JCCSE provides information sharing, collaboration, and COP development and sustainment capabilities supporting all levels, including to/from any incident site

JCCSE Definition and Way Ahead

▸ The JCCSE is an "umbrella" term for the National Guard's (NG's) information technology (IT) support for Homeland Defense and Civil Support (HLD/CS) missions

▸ JCCSE provides multiple, inter-dependent <u>organizational</u> as well as <u>technology</u> components – both C4ISR and commercial technologies, tailored to support National Guard HLD/CS mission requirements

<u>JCCSE Organizational Components</u>	<u>JCCSE Infrastructure Components</u>
• **Operations Centers** -- NGB JOC -- JFHQ-State JOCs • **C4ISR Management** -- NGB Joint C4ISR Coord Ctr (JCCC) -- JFHQ-State J-6 IT Environment Mgt • **Incident Area Communications** -- JTF Communications Element	• **Network and Net-Centric IT Services** -- Leverage GuardNet & ANG Enterprise Net -- Migrate toward DoD Enterprise (e.g., GIG-BE) • **Incident Area IT Capabilities** -- First Responder Interoperability -- Deployed NG Forces Support -- Reach Back Capabilities -- Other Validated HLD/CS Mission Support

▸ JCCSE extends inter-agency trusted information sharing and collaboration capabilities to and from the National-level, the 54 States and Territories, and local incident sites

▸ NGB, in collaboration with COCOMS(s) and all JFHQ-State, takes lead and stands up JCCSE

▸ JCCSE evolves as part of the larger DoD enterprise, leveraging the GIG and the current infrastructure/infostructure
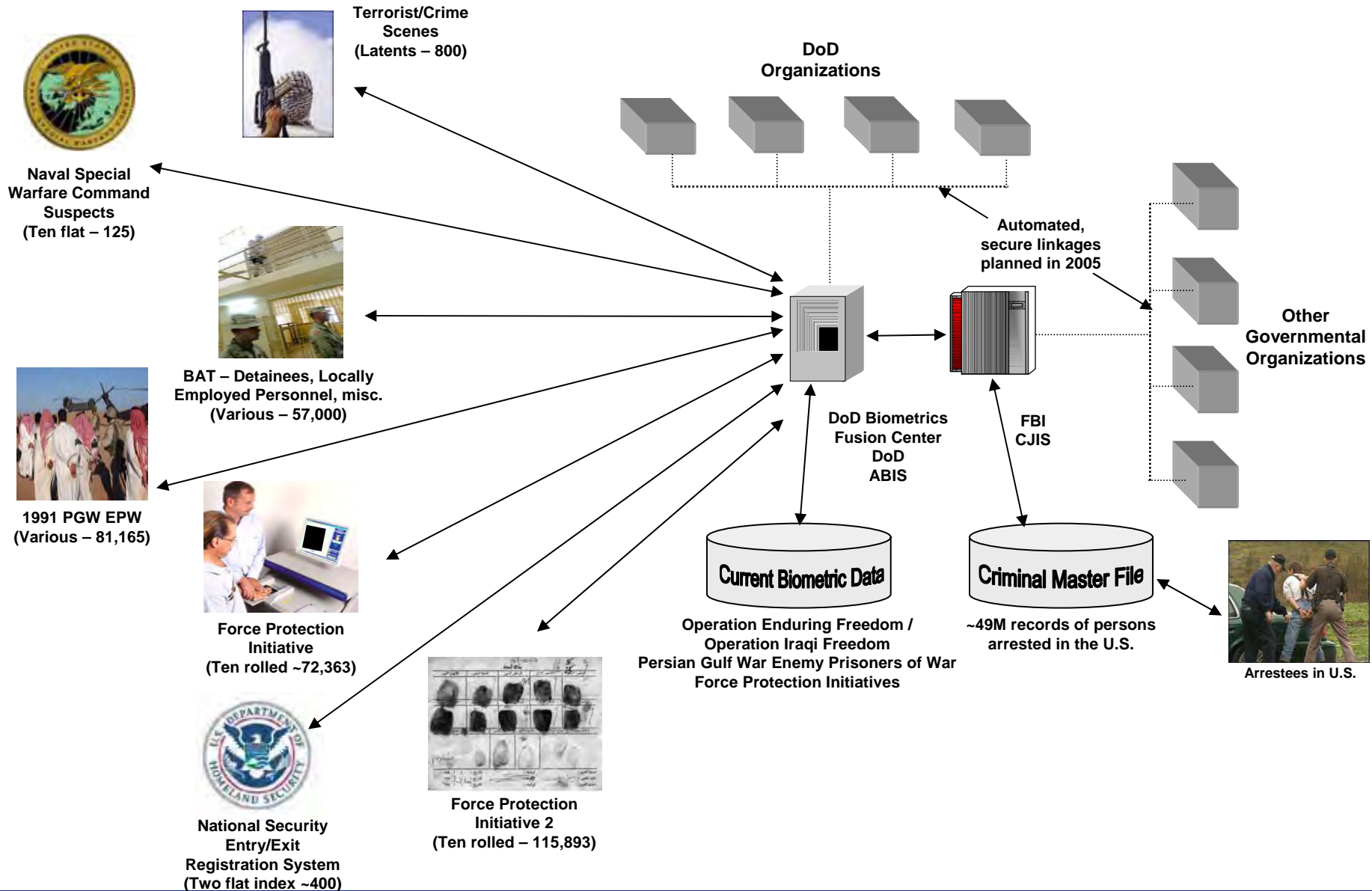
Case Study #2
DoD
Biometrics Management Office (BMO) and Biometrics Fusion Center (BFC) --

Protecting the Homeland

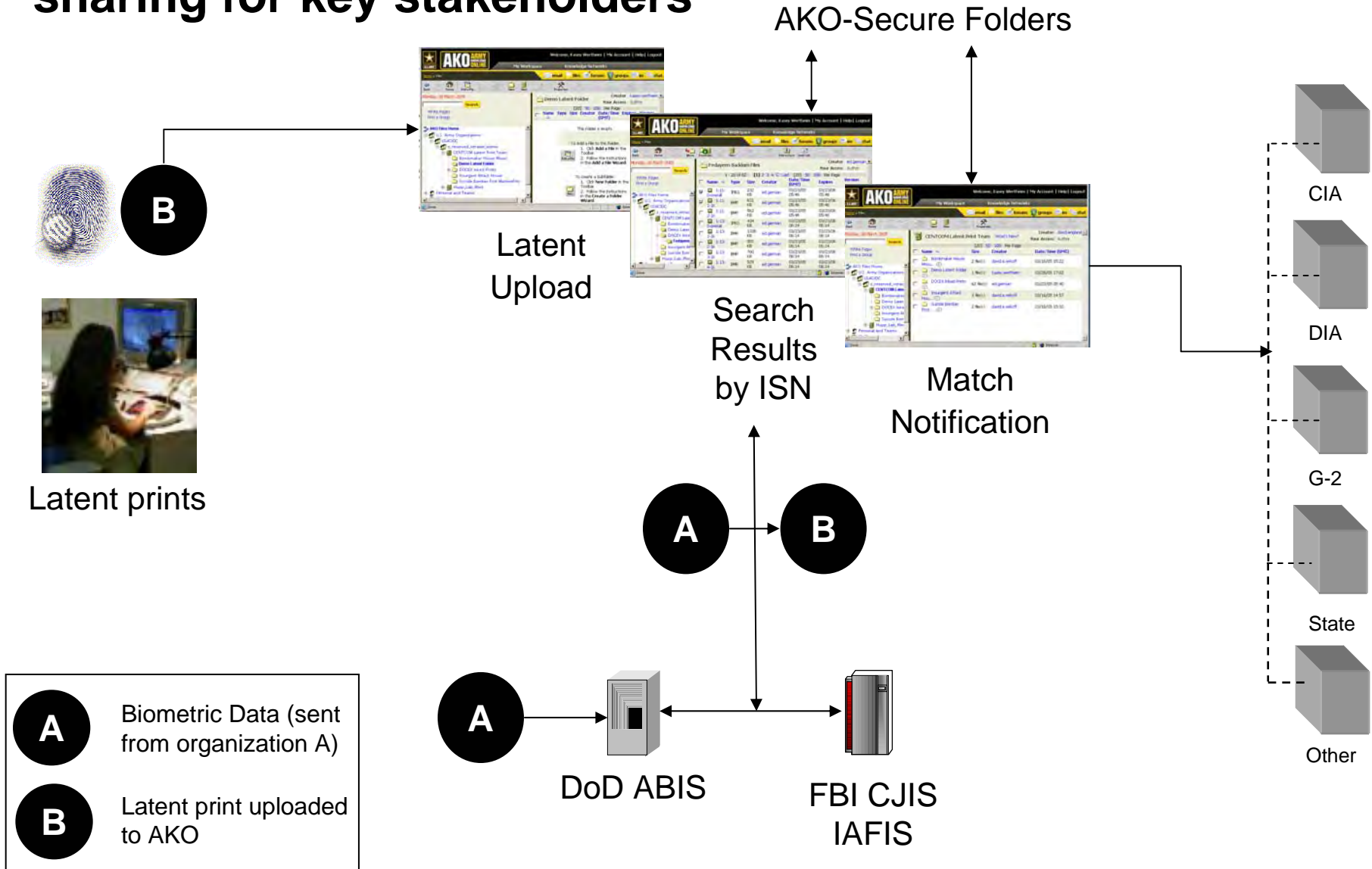# Protecting the Homeland -- Background on DoD BMO and BFC

▸ Army CIO/G-6 is DoD Executive Agent for Biometrics and the key architect of DoD biometrics guidance (pursuant to Public Law 106-246 (13 Jul 00))

▸ DoD Biometrics Management Office (BMO) focus on Policy and Standards has led to significant progress in the DoD biometrics community

▸ Since 21 Jul 04, the DoD Biometrics Fusion Center (BFC), under the Army CIO/G-6, has been processing, searching, and matching biometric data, primarily fingerprints, to identify national security threats.

▸ This biometric effort has received extensive support from the Office of the DepSecDef, ASD (HD), ASD (NII), NORTHCOM, National Detainee Reporting Center, Army G-2, Army CIO/G-6, National Ground Intelligence Center, CENTCOM, U.S. Force Protection Initiative, Terrorist Explosives Device Analytical Center, the FBI Criminal Justice Information Services Division, and the FBI Lab.

▸ As of 9 May 05, the BFC has made 1884 significant matches.

▸ Elements of the DoD Biometrics enterprise solution, including the DoD Automated Biometric Identification System (ABIS) and Biometric Identification System for Access (BISA), are examples of how biometrics has identified potential national security threats to protect the homeland.

DoD Automated Biometric Identification System (ABIS)

Terrorist/Crime Scenes
(Latents – 800)

DoD Organizations

Naval Special Warfare Command Suspects
(Ten flat – 125)

Automated, secure linkages planned in 2005

Other Governmental Organizations

BAT – Detainees, Locally Employed Personnel, misc.
(Various – 57,000)

DoD Biometrics Fusion Center
DoD ABIS

FBI CJIS

1991 PGW EPW
(Various – 81,165)

Current Biometric Data

Criminal Master File

Force Protection Initiative
(Ten rolled ~72,363)

Operation Enduring Freedom / Operation Iraqi Freedom Persian Gulf War Enemy Prisoners of War Force Protection Initiatives

~49M records of persons arrested in the U.S.

Arrestees in U.S.

National Security Entry/Exit Registration System
(Two flat index ~400)

Force Protection Initiative 2
(Ten rolled – 115,893)

Latent Fingerprints – uploaded to AKO for information sharing for key stakeholders

AKO-Secure Folders

Latent Upload

Search Results by ISN

Match Notification

Latent prints

CIA

DIA

G-2

State

Other

A	Biometric Data (sent from organization A)
B	Latent print uploaded to AKO

DoD ABIS

FBI CJIS IAFIS

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Impact of these enabling IT technologies for HLD/HLS

▸ DoD ABIS has directly aided the warfighter and law enforcement since its inception in Jul 04

  – ABIS has made 1884 significant biometric matches to date (21 Jul 04 – 9 May 05)

  – Matches include suspected bombmakers, passport forger

▸ ABIS & BISA initiatives will significantly enhance force protection efforts at U.S. installations – at home and abroad

▸ DoD Biometrics plays a central role for the DoD and USG in identifying potential national security threats

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Case Study #3
Distributed Common Ground System Army (DCGS-A)
Situational Awareness for the Warfighter and possibly the HLD/HLS community

DCGS-A Mission and Operational View

▸ DCGS-A Enables Situation Awareness, Identification and Location of Enemy and Estimates of his Intentions to the Warfighter at All Echelons

▸ DCGS-A Enables Exploitation and Fusion of Data From Army, Joint, National and Allied Sensors and Sources to Provide the Information Needed by the Warfighter

  – If applied to HLD/HLS, law enforcement and other stakeholders could be sensors and sources of information for the COP

▸ DCGS-A is the Army component of the DoD DCGS Family of Systems

DCGS-A ACR

Joint Operating Concepts:
- Joint Command and Control
- Battlespace Awareness

• Increases access to ISR data
• Reduces forward footprint
• Improves Joint interoperability

Theater, JTF & UE...

Fixed

Mobile

UE & UA...

Embedded

UA...

Joint ISR for the Army
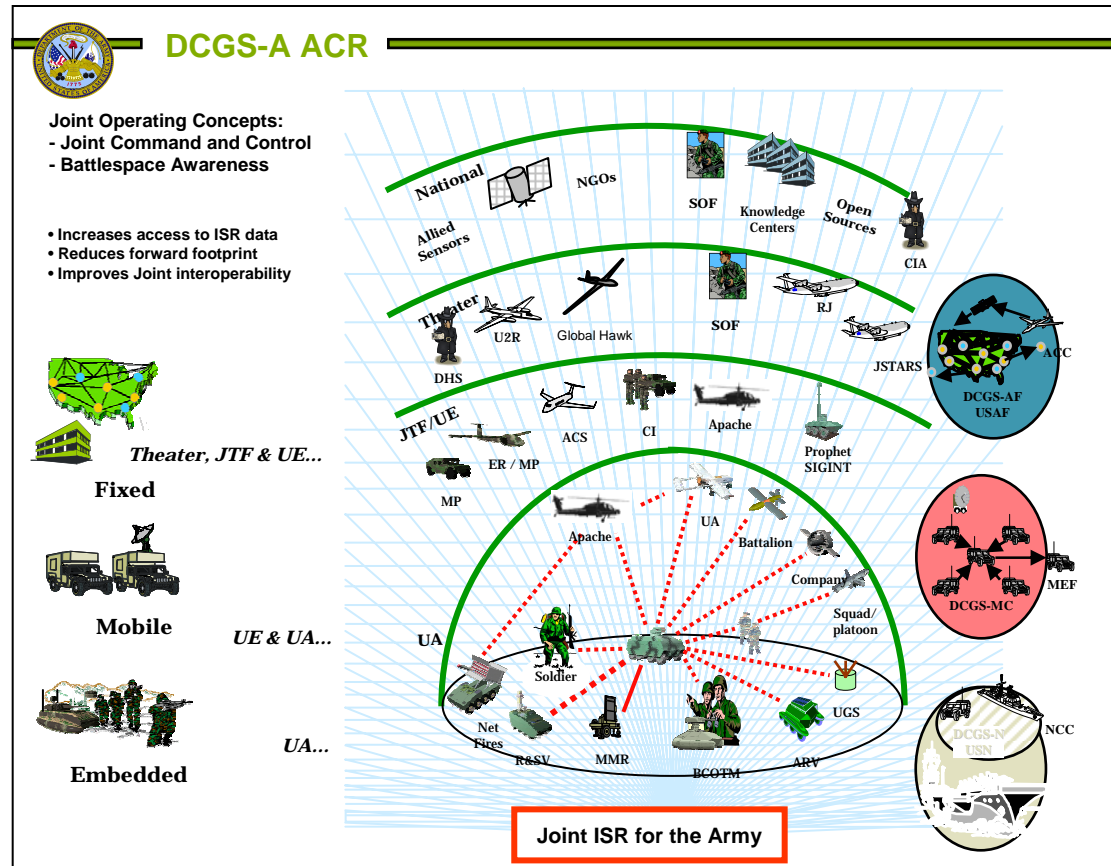
KPP	Threshold	Objective
Net Ready	Designated as Enterprise-Level or Critical to the Joint Integrated Architecture	In the Joint Integrated Architecture Values
Fusion	Automated Fusion: Level 0, Level 1 and correlate reports from all intelligence disciplines	Automated Level 3 Fusion
Reliability	90% for 72 hours	99% for 72 hours

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Realizing Net-Centricity - Service Oriented Architecture (SOA)

- ▸ Common perspective that Web services will do for system-to-system communications what HTTP/HTML did for the browser-based web

- ▸ Web Services are a set of XML based standards and technologies for distributed computing that characterize SOA
  - Defined in a WSDL
  - Published in UDDI registries
  - Invoked via SOAP messages

Subscribe

Service Producer

Data and applications available for use accessible via services. Metadata added to services based on producer's format.

- **Describes** content using metadata
- **Posts** metadata in catalogs for discovery
- **Exposes** data and applications as services

Service Consumer

Automated search of data services using metadata. Pulls data of interest. Based on producer registered format and definitions, translates into needed structure.

- **Searches** metadata catalogs to find data services
- **Analyzes** metadata search results found
- **Pulls** selected data based on metadata understanding

Publish

Service Enabled Infrastructure

Discover

Security Services

Monitoring Services

Discovery Services

Messaging Services

Data Services

Translation Services

DCGS-A Spiral 5 Architecture Reference Model
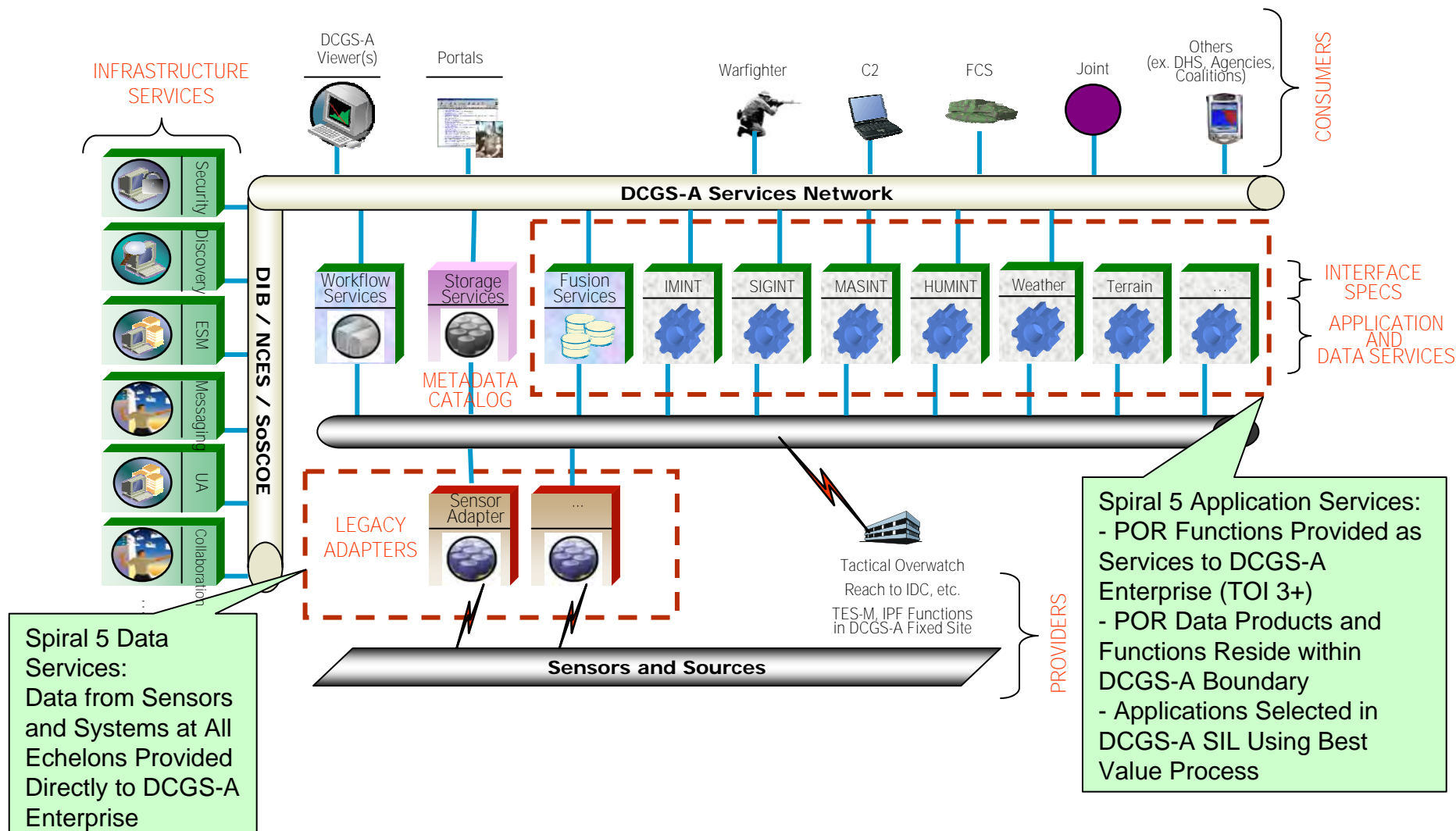
Case Study #4
Joint Integrative Analysis and Planning Capability (JIAPC)

An IO capability that could be applied to the home game in a non-kenetic, non-destructive way

Joint Integrative Analysis and Planning Capability (JIAPC) Description and Overview

▸ JIAPC is a large scale Systems Delivery effort to provide Effects Based Transformational IO Capabilities

▸ JIAPC will provide a collaborative environment to facilitate fully integrated nodal and network analysis for effects based operational support with standardized processes, enhanced analysis and planning capabilities, seamless target characterization, and timely response to planning requirements for lethal and non-lethal options for courses of action

▸ JIAPC will provide the following capabilities:
  – Connect with Stakeholders to access Intel & other IO Information sources
  – Support "Integrative Analysis" through Knowledge Management, Visualization and Decision Aids
  – Provide the results of Integrative Analysis to the Joint IO Planning Capability   (IOPC-J) in a tightly integrated and iterative manner in support of both IO Planning and IO BDA
  – Support effective collaboration across the entire process

▸ HLD/HLS potential application involves USD(I), STRATCOM, and DHS

Holistic Target Characterization (HTC) Process Definition

HTC Process

INFORMATION
DESIRED EFFECTS

Problem Statements
- Actions
- Actions
- Actions
- Actions

REFINED INFORMATION

P.M.E.S.I.I.

COA Development / Assessment

PLANNERS

feedback

VULNERABILITIES

5) Vulnerability Relationship Map
- Desired Effects
- Problem Statements
- Node Identification
- Vulnerability Characterization

1) Problem Definition
- Desired Effect Refinement
- Problem Statements Development & Vetting
- Action Assignments

2) Focused Data Integration
- Knowledge Discovery
- Info Search/Query
- Info Retrieval
- RFI Dev/Refinement
- Node Analysis
- Populate PMESII Templates

4) Vulnerability Characterization
- Specific Nodal System Evaluation
- Potential Vulnerability Estimates

3) HTC Node Identification
- Knowledge Discovery
- Layered Analysis
- Cross Domain Analysis
- Center of Gravity Identification
- Pattern Recognition
- Non-Obvious Node-Relationship Validation

NATIONAL DEFENSE INDUSTRIAL ASSOCIATION

Booz | Allen | Hamilton

ESRI GIS Tools 1

ESRI ArcGIS 9.1 is a collection of software products that enables users to analyze and visualize geographic information

3D Analyst: Manipulate and visualize extremely large datasets in three dimensions

Publisher: Create rich interactive maps that usable without an ESRI license

Data Interoperability: Enables quick integration of various types of datasets

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COA Development / Assessment

PLANNERS

HTC Process

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Netviz

Netviz:

– Supports data exchanges with multiple standard interfaces (SQL, ODBC, etc.)

– Ability to visualize complex relationships in an intuitive manner

– Leverages existing disparate data and knowledge bases to build consolidated visual representations of their complex networks and systems

HTC Process

5) Vulnerability Relationship Map
- Desired Effects
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- Vulnerability Characterization

COA Development / Assessment

PLANNERS

INFORMATION
DESIRED EFFECTS
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VULNERABILITIES
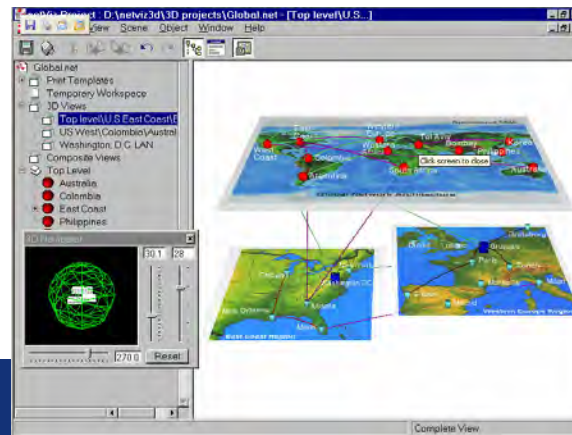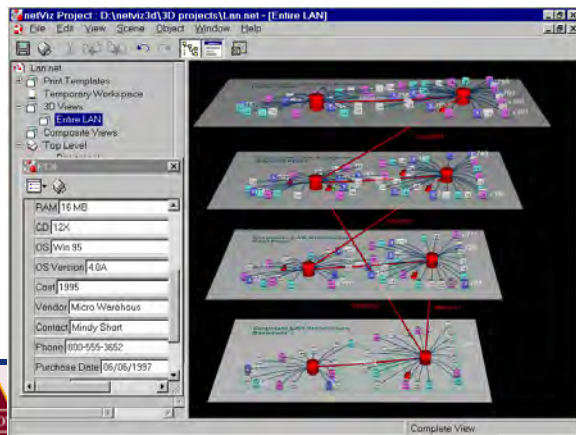
Critical Success Factors for applying proven enabling technologies to HLD/HLS missions

▸ Develop the **operational processes and procedures** to apply these IT technologies to the HLS/HLD environment – and then **train and rehearse**!

▸ Develop **policy** to mandate the use of **standards** and address the **legal issues**
  – Continue to develop interagency sharing
  – Frame the enterprise architecture
  – Address the complexities of the CONUS AOR and the impact to citizens

▸ Appropriately implement the **standards and specifications** to enable interoperability means that Standards will be crucial to the process
  – National Technology Transfer and Advancement Act (NTTAA) of 1995 – Public Law 104-113 (1996)
    • Requires U.S. Government organizations to explain failures to use commercial standards when such standards meet their needs
    • Requires U.S. Government organizations to adopt commercial standards wherever possible – particularly those that standards developing organizations have developed – in lieu of creating proprietary, non-consensus standards

Questions and Answers

Booz Allen Contact Information

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US Army Field Support Command and Joint Munitions Life Cycle Management Command

Brian C. Newman
Deputy for Logistics, G4
Army Field Support Command

June 2005

Agenda

✓ **AFSC Core Mission Areas**

    ➢ **Army Prepositioned Stocks**

    ➢ **Field Support**

    ➢ **Logistics Civil Augmentation Program**

    ➢ **Joint Munitions**

✓ **Current Operations**

Army Field Support Command

Mission: AFSC integrates AMC logistics and provides joint munitions essential to the Combatant Commanders' (COCOM) ability to conduct peacetime and wartime operations.

CORE FOCUS AREAS

Army Prepositioned Stocks: Provides power projection platforms for Combat, Disaster Relief and Humanitarian Aid.

Afloat *and* *Land-Based*

Field Support: Assists Combatant Commanders in identifying and resolving technical problems and issues affecting unit and materiel readiness.

Logistics Assistance Officer (LTC/CWO)
AMC Commodity LARs, AFSC Log Mgt Spec & Supply LAR

Horizontal coordinator & integrator of national capabilities

Logistics Civil Augmentation Program (LOGCAP)

Construction

Subsistence
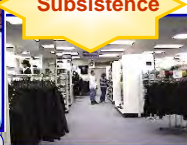
"Using contractors in place of military force structure"

Maintenance

Supply & Distribution

Joint Munitions: Ensure munitions readiness through dedicated professionals providing acquisition support, industrial capability, and logistics support to the joint services and allies. We manufacture, procure, store, distribute, and demilitarize munitions.

The Global Magnitude: AFSC's global logistics mission is located in 17 Countries, 24 States, Diego Garcia, & Guam/Saipan. It has a diverse workforce of 169 military, 5796 civilians, 59.7K contractor personnel

AFSC Global Presence

Legend:
- ☆☆ HQ AFSC
- ◆ Army Field Support Brigade
- ◎ Log Asst Office
- ◉ Stryker Log Spt Element
- ✚ Combat Equipment Group
- ✚ Army Field Support Battalion
- ◆ LOGCAP
- ▼ Army Strategic Flotilla

- ☆ HQ JMC
- ★ Production
- ★ Depot
- ★ Both Production & Depot
- ★ Munitions Center (Tenant)
- △ Defense Ammo Center
- ● Ammo Log Asst Reps

Kuwait:
- ◆ AFSB SWA
- ◎ Log Asst Ofc
- ✚ AFSBn-Kuwait
- ◆ LOGCAP
- ● Ammo Log Asst Rep

Note: LOGCAP also located in Djibouti, Republic of Georgia, and Philippines
Log Asst Ofcs also located in Bosnia and Kosovo

APS Configuration (2005)

APS-2 (Europe)

Italy: 1x1 Brigade Set
Combat Support
Netherlands: OP Project Stocks
Germany: Immediate Ready Force
Israel: Ammo – Stocks for Allies

APS- 1 (CONUS)

OP Project Stocks
Sustainment Stocks

APS-4 (Pacific)

Korea: 2x2 Brigade Set*
Theater Opening Package
OP Project Stocks
Sustainment Stocks
Ammo – Stocks for Allies
1 Hospital Set
Japan: OP Project Stocks
Watercraft
Sustainment Stocks
Theater Opening Package
4 Hospital Sets
Hawaii: OP Project & Sust Stocks

APS-5 (Southwest Asia)

Kuwait: 2x2 Brigade Set*
Watercraft
Qatar: Theater Opening Package
OP Project Stocks
Sustainment Stocks
2 Hospital Sets

Supporting OIF

APS-3 (Afloat)

15 Ships End State –
Indian Ocean / Pacific / Med
3 1x1 BCTs*
3 Combat Support
3 Humanitarian Aid/Disaster Relief
3 Sustainment Stocks
3 Ammunition

**On Station
1x1 BCT Guam/Saipan
1x1 BCT Diego Garcia (D/G)
Ammo Sust 1 / D/G
Ammo Sust 2 / D/G**

* Includes ammo combat loads & ASL/PLL

APS Support to OIF

APS supported Combatant Commander's combat operations….

Build Combat Power

✓ **APS Issued – 218 UIC sets (data as of 29 May 03)**
  ➢ *10,581 Pieces of Rolling Stock*
  ➢ *2,552 Sets, Kits, and Outfits*
  ➢ *63,321 Medical CL VIII Items*
  ➢ *671,021 Repair Parts CL IX Items*
  ➢ *3,090 Containers*
  ➢ *1,500 Supplemental and Sustainment Issues*
  ➢ *OP Projects… IPDS, WSS, EPW, Mortuary Affairs, Force Provider, Special Operations, Aircraft Matting, LAMS, Bridging*

Since 29 May 03 . . 30K plus . . . additional eaches issued

…we did well but we can do better!

✓ **Way Ahead for APS ~ What needs to be done**
  ➢ *Fully fund sets: Sustainment, OPROJ, ASL / PLL*
  ➢ *Modernize: To the level of the deploying force*
  ➢ *Build complete sets: To minimize airlift, require no sealift*
  ➢ *Target Sustainment Stocks: To meet theater mission requirement*
  ➢ *Create a single maintenance contractor: For flexibility and speed*
  ➢ *Train/exercise equipment: To expose program shortfalls*

Army Field Support

Commander (06)

XO

Special Staff

S3/4
Integration
DLA
DCMA
ENGINEERS
Operations
Plans/Exercises
PBO
LOGCAP

6 AFSBs

| S1 Human Resources | S2 Intel/ Security | Acquisition Logistics & Technology | | S5 Information | S6 Commo | S8 Resource Mgmt | FAST |

GENERAL MANAGER FIELD SERVICES

CONTINGENCY CONTRACTING

SUSTAINMENT DIRECTORATE (LAP)

TMDE	LAOs
LSEs	NLCO
FRA	MSF

AFSBn   **AFSBn**   **AFSBn**

STRATEGIC   OPERATIONAL   TACTICAL

… Bridging Acquisition, Logistics & Technology at the Tactical Level

Logistics Assistance Program

AMC's program which has the mission of assisting Combat Commanders in identifying and resolving technical problems and issues affecting unit and materiel readiness.

Horizontal Integrator

AMC Commodity LARs

Logistics Assistance Officer (LTC/CWO)

AFSC Log Mgt Spec and Supply LAR

Logistics Assistance Officer serves as forward deployed Logistics Element Commander responsible for all assigned AMC capabilities.

Logistics Assistance Representatives (LARs) are highly trained technicians who provide on site maintenance, supply, and readiness assistance to soldiers worldwide.

Horizontal coordinator & integrator of national capabilities

LOGCAP
Logistics Civil Augmentation Program

"Using contractors in place of military force structure"

Construction

Subsistence

Maintenance

Supply & Distribution

Logistics Civil Augmentation Program (LOGCAP)

What is LOGCAP…

> The Army's Contingency Contracting Vehicle that Leverages Worldwide Corporate Resources to Bridge the Gap between Logistics Force Structure and Theater Logistics Requirements

✓ *Pre 9/11…*

> Plan Development ISO Army Service Component Command
> East Timor: Base Camp / Medical Services
> Balkans: Base Camp / TMDE / AOAP
> Haiti: Medical Support for Dept of State
> Colombian Army: Aviation Support / Training
> Fort Polk, LA: Force Provider Support

✓ *Post 9/11…*

> Support All Combined and Joint Forces: Operation Enduring Freedom / Operation Iraqi Freedom
> Base Camp Operation and Maintenance: Kuwait, Afghanistan, Iraq, Djibouti, Georgia, & Philippines
> SWA Theater Distribution Center
> Transportation: Kuwait, Iraq
> Life Support: Multi-National Forces-Iraq, Iraqi Survey Group – Defense Intelligence Agency (ISG-DIA), Multinational Division (MND)
> Quality of Life: SWA DFAC's, Billeting, & MWR

$13M in Requirements & 90 Contractor Personnel

$16.5B in Requirements & 49K Contractor Personnel

LOGCAP Theater Support

- ✓ **Prepared more than 180M meals**
- ✓ **Washed more than 6.7M bundles of laundry**
- ✓ **Hosted more than 23M patrons at MWR (Morale, Welfare & Recreation) facilities**
- ✓ **Produced more than 1.3B gallons of potable water**
- ✓ **Transported more than 300M gallons of fuel**
- ✓ **Delivered more than 1M bags of mail**
- ✓ **Logged more than 50M miles transporting supplies and equipment for the military (with more than 900 trucks on the road on any given day)**

Joint Munitions Life Cycle Management Command

LCMC Commander
MG Jerome Johnson

Integration of Life Cycle Management
Supporting Joint Requirements

RDECOM

SERVICES

ARDEC

ECBC

Implementation plan to be completed NLT 15 May 2005

PEO AMMO
BG Paul S. Izzo

CG JMC
BG Robert M. Radin

JMC Lean Six Sigma teams enabling continuous Centralized Ammunition Management (CAM) process improvements; supply chain analyses, regional sourcing, forecasted ammo prepositioning, depot hours of shipping/receiving ops., etc.

Strategic Goals

1. Grow world class people, teams & partnerships
2. Leverage and integrate Joint Service activities
3. Improve integrated Life-Cycle Management
4. Communicate effectively with Stakeholders

Executing LCMC

✓ Joint Warfighter Readiness
  ➢ Current Fight
  ➢ Training Requirement
  ➢ Future Fight
✓ Requirements Determination Integrator
✓ Ammunition Life Cycle Management
✓ Single Manager for Conventional Ammunition Executor and Field Operating Activity

Technology Development

Develop Ammunition

Acquisition of Ammunition

Production of Ammunition

Stockpile Management

Maintenance Of Stockpile

Demilitarization Of Ammunition

K-Line production has returned $667M back to inventory

Manage Joint Conventional Ammunition

Field Operating Activity for the Single Manager

Conventional Ammo Value $ 20.9B

We:

Manufacture

Procure
Operate the Industrial Base

Store
Train
Maintain
Inventory
Surveillance

Distribute
Training
War Reserve

Demil
All Services
393K STONS
= 20%
of Storage

To Do That There Are:

Army Ammunition Plants/ Depots And Commercial Facilities

Storage/Supply Depot Operations

2.744 M STONS

OCONUS
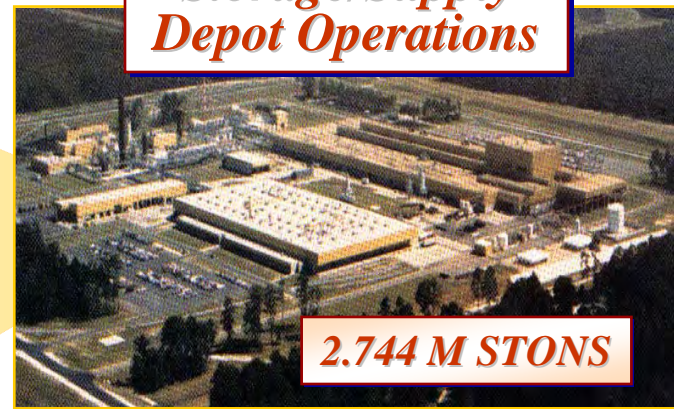
- ❖ Direct Support to All Combatant Commanders
- ❖ 702K STONS War Reserve
- ❖ Army Prepositioned Stocks

FY2004 Examples:

- ❖ Maintenance Performed on 12.4K tons
- ❖ Demilitarized 41.4K tons
- ❖ Shipped 162K tons
- ❖ Received 208K tons

Centralized Ammunition Management
Concept of Operations

CSA LTTF INITIATIVE

Training Authorizations

Basic Load Requirements

Stock On Hand

Installation Ammo Manager

HQDA G3/G4, MACOM Training & Deployment Requirements

Regional Defense Munitions Center

Ammo Supply Point

Joint Munitions Command

Determine Delta/ Optimize Inventory

Consolidated Resupply

Pick up Ammo

Process begins and ends with the soldier

★ **Enhance** strategic mobility/deployability
★ **Reduce** the sustainment footprint
★ **Reduce** cost of logistics while maintaining warfighting capability and readiness

Long Term Benefits

Increased Readiness

Reduced Cost

Support to Operation Iraqi Freedom
JMC Supported Combatant Commander's Combat Operations

✓ **Ammunition issued for all Services (Nov 2002–Dec 2004)**
- ➢ **Air/Surface movements: 173,334 s-tons**
- ➢ **CONUS Mobilization training: 21,000 s-tons**

✓ **Arifjan Theater Maintenance Facility**
- ➢ **Repacked/reissued to field: 6,750 s-tons**
  - • **52M Small Arms, 1.1M 25mm, 173K 40mm**
- ➢ **K-Line process reclaimed $667M in munitions assets**

✓ **AFSC/JMC Operations Center (manned 24 hours)**
- ➢ **Improved Communication with Customers**
- ➢ **Provided Critical Logistics Info to SWA**

✓ **Met urgent contingency requirements:**
- ➢ **Expedited award of 105mm artillery round to meet AF urgent need (AC-130 Gunship) -- delivered *6 months* early**
- ➢ **Expedited production of CXM-7 to support critical Navy bombs**
- ➢ **Awarded urgent procurements for all Services to meet 2X/3X increase in small arms requirements**

Air & Sea lift ammo status for deploying divisions

Current Major Actions

- ✓ **Support Current Operations**
  - ➤ **Theater Augmentation Set (29K pieces of equipment)**
  - ➤ **Coalition Military Assistance Training Team (CMATT) (Trucks for Iraqi Army)**
  - ➤ **Up-Armored HMMWVs**
- ✓ **Support Reset**
- ✓ **Theater Refurbishment**
- ✓ **AFSB Standup**
- ✓ **Establish Equipment Support Activity – Iraq (ESA-IZ)**
  - ✓ **Accountability / Visibility**
  - ✓ **Maintenance Support**
- ✓ **Establish Equipment Support Activity – Afghanistan (ESA-AF)**
  - ✓ **Accountability / Visibility**
  - ✓ **Maintenance Support**
- ✓ **LCMC Implementation**
- ✓ **GMASS**
- ✓ **Building UA for Kuwait**
- ✓ **Systems Contracts**
- ✓ **LARs Augmentation**

ESA-IZ Today: From 49 acres of sand …
To a National Maintenance Provider

Developing Adaptive, Agile Leaders for the GWOT

COL Tony Puckett

Commander, 30th Field Artillery Regiment

Fort Sill, Oklahoma

Developing Adaptive, Agile Leaders for the GWOT

- ARTILLERYMEN ARE CONDUCTING NON-STANDARD TACTICAL MISSIONS (FULL SPECTRUM OPS)

- A NEW PLANNING METHODOLOGY – LOOs VICE FINITE MISSIONS

- EFFECTS BASED OPERATIONS (EBO) AND INFORMATION OPERATIONS (IO)

- SASO TRAINING

- MOUT

- ADAPTIVE LEADER TRAINING

- ISSUE – RFI PASSES BY THE TRAINING BASE

- ISSUE – NO $ FOR DOCTRINE DEVELOPMENT, AND NO LSI FOR LESSONS LEARNED, TTPs, WHITE PAPERS

STANDARD TACTICAL MISSIONS FOR ARTILLERY

"Communicate, Shoot, and Move!"

- DIRECT SUPPORT

- GENERAL SUPPORT

- GENERAL SUPPORT – REINFORCING

- REINFORCING

NON-STANDARD TACTICAL MISSIONS FOR ARTILLERY

- ASSIGNED UNIT SECTORS

- AREA SUPPORT GROUP FUNCTIONS

- CAPTURED ENEMY AMMUNITION (CAE) OPERATIONS

- CORDON AND SEARCH

- CIVIL-MILITARY OPERATIONS

- INFORMATION OPERATIONS

FULL SPECTRUM OPERATIONS
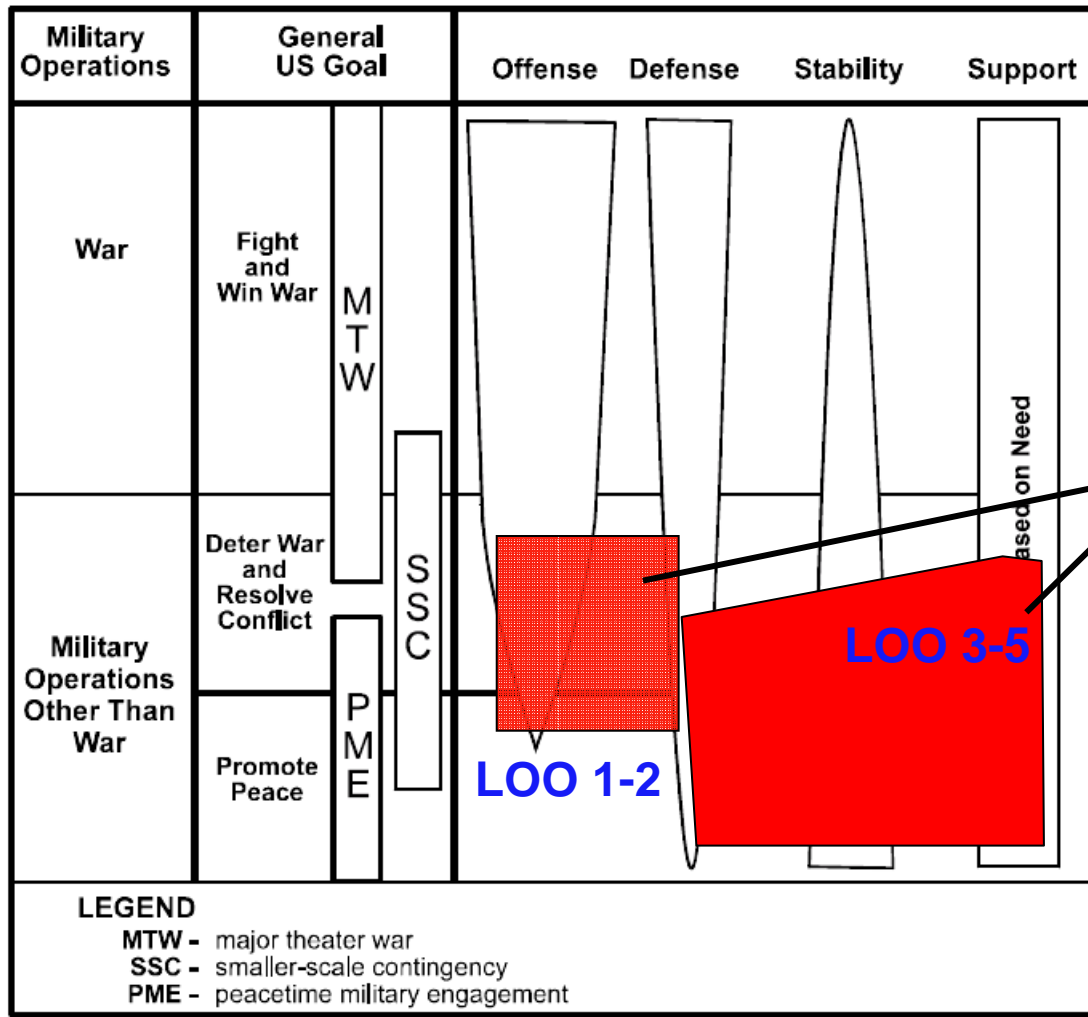
"**Full spectrum operations** are the range of operations Army forces conduct in war and military operations other than war [*SOSO*]." (*FM 3.0*)

5 BCT routinely operated across the full spectrum of operations by executing LOOs 1-5 simultaneously

"**Lines of Operations**. *Lines of operations* define the directional orientation of the force in time and space in relation to the enemy. They connect the force with its base of operations and its objectives." (*FM 3.0*)

From Figure 1.1 – The Range of Army Operations (FM 3.0)

5 BCT LINES OF OPERATION

Full Spectrum Information Operations

COMBAT OPERATIONS

TRAIN & EMPLOY IRAQI SECURITY FORCES

ESSENTIAL SERVICES

PROMOTE GOVERNANCE

ECONOMIC PLURALISM

Force Protection

End State: Force protection maintained throughout Al Rashid and conditions are set to conduct elections in a secure environment. Al-Rashid transitions to a stable, free society governed, policed, and lead by a democratic system.

6

Information Operations Elements

- **IO Elements**
  - OPSEC
  - PSYOP
  - Counterpropaganda
  - Military Deception
  - Counterdeception
  - EW
  - Computer Network Attack
  - Physical Destruction
  - Information Assurance
  - Physical Security
  - Counterintelligence
  - Special Information Operations

- **Related Activities**
  - Public Affairs
  - Civil Military Operations

- **Information Management**

- **ISR**
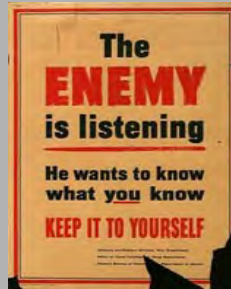
Ensure that IO is fully coordinated and integrated into the assigned operation.

The ENEMY is listening

He wants to know what you know

KEEP IT TO YOURSELF

Campaign Plan Methodology

➢ **Goal** **– Long Term achievements required to achieve a desired end state (i.e. 1 year) and set the conditions required for implementation of an exit strategy**

➢ **Objectives – A measurable achievement that supports achievement of the goal**

➢ **Measures of Effectiveness . IO achievements that support achievement of the objective.**

➢ **Measure of Effectiveness Indicators– Quantifiable data (i.e. statistical) that indicate the effectiveness of IO actions in achieving the MOE/Supporting IO tasks**

How do we know the status of our IO tasks?
MOE Indicators

" . . . quantifiable signs that measure the progress towards achieving an objective"
". . . is the Behavior we want being exhibited?"

- **Essentially equate to Intelligence Requirements (IRs)**

- **A baseline of activity against which progress can be measured**

- **Physically quantifiable- number of inter-ethnic crimes per time period, number of anti-tolerance responses to polling questions**

MEASURES OF EFFECTIVENESS

Obj: Monitor and enforce UNSCR 1244

	JUN	JUL	AUG	SEP	OCT	NOV
Number of weapons turned in legally	2	3	1			
*Number of weapons seized during searches	9	8	7			
*Number of weapon violations per month	4	5	6			
*Number of weapon searches per month	6	6	25			
Number of incidents at sites or escorts we have "unfixed"	0	0	0			
*Number of KFOR operations hindered by actions of the Kosovo populace	0	1	0			
*Number of minority activities MNB(E) cancels because of security concerns	0	0	0			
Number of threats against UNMIK based upon indictments for historical crimes	N/A	0	0			

* Indicates KFOR Measure of Progress (MOP)

TARGETING SYNCHRONIZATION MATRIX

UNIT: TF 1-7		PHASE: II		FRAGO NO. 2			AS OF: 070700JUL03		
DECIDE				**DETECT**		**DELIVER**			**ASSESS**	
PRI	CATEGORY	HPTs	EFFECTS	AGENCY	ASSET	AGENCY	ASSET	WHEN	AGENCY	ASSET
1	LAWTON	Mayor	Coop	TF 1-7	JMC	TF 1-8	Bi-Lat	090800	TF 1-8	PSYOPS/ CA
2	MEDICINE PARK	Political Groups	Disorganize	TF 1-7	JMC	TF 1-6	1 Patrols 2 CPs 3 AH-64	100700	TF 1-6	PSYOPS/ CA
3	STERLING	Local Populace	Influence	TF 1-7	PSYOP	TF 1-7	Radio Broadcast	090900	TF 1-7	PSYOPS/ CA
4	Fire Support	81 MM 006786	Destroy	TF 1-7 Q36	Man	TF 1-8 FA	Man 105 MM	(P) (I)	TF 1-8	TF 1-8
5	Maneuver	BMP 986439	Neutralize	TM A	Man	TF 1-7	1 M1 2 BFV	(P)	TF 1-7	TF 1-8
6	ADA	SA 8	Destroy	TM B	Man	TF 2-5	1 M1 2 Mtrs	(P)	TF 2-5	TF 2-5

Fires & Effects Capstone (OBC)

CAS: Live CAS supported by USAF JTACs

Dismounted Lanes:

Force-on-Force exercise integrating Offensive/ Defensive Scenarios as well as STRO

Mounted Lanes: Live Fire Exercise that integrates Bradley/ Stryker/ Knight as part of TF Offensive Ops

MISSION: 3-30 FA conducts Fires and Effects Capstone Exercise over a 48-Hour Period to prepare new officers to be effective Company Effects Coordinators and Forward Observers in the Force and in the Fleet (USA/ USMC)

105mm Btry: Provides all Live Fire support for Mounted Lanes

OPERATION AUSTRALUS COMFORT-SOSO Lanes

Battery Commander Exercise in a SOSO environment.
  Students must:
• **Develop troop to task based on guidance and intent from higher HQ**
• **Consider cultural differences**
• **Engage the local populous and leaders**
• **Deal with multiple non-state enemies using unconventional tactics.**

OPERATION AUSTRALUS COMFORT-SOSO Lanes
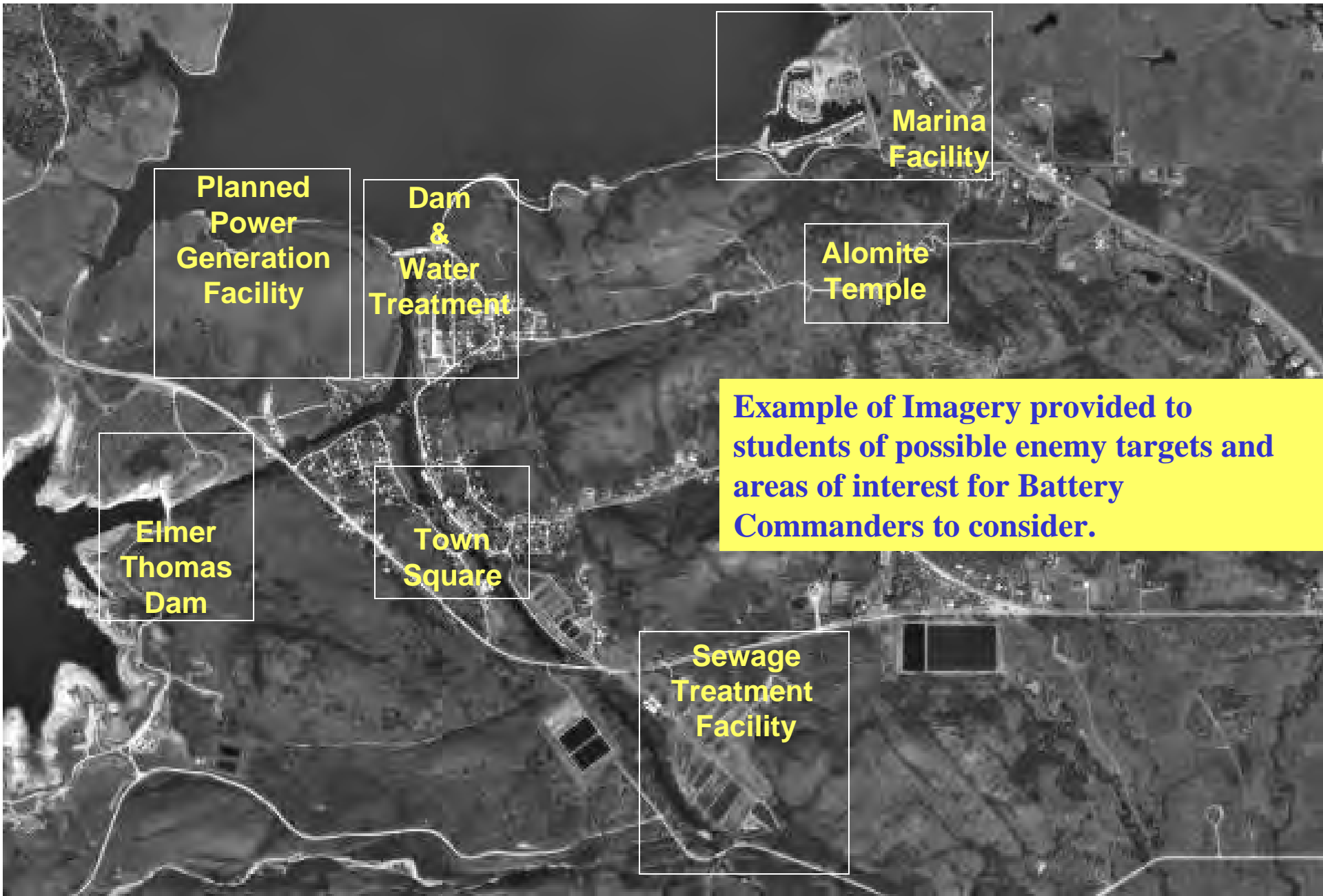
GATOR SIX ELO: Formulate decisions based on immersive and interactive scenario as a Battery Commander.

Focus Topics:
- Know the Battery
- Mission vs. Morale
- Stress management
- Training Priorities
- Leadership Style
- Communication
- Creating Success Mindset

Disk 1:
Deploying Battery Commander of a M109A6 Paladin unit to a combat zone. Covers pre-deployment. arrival in theater and combat operations.

Disk 2:
Deployed Battery Commander of a M109A6 Paladin unit in a post combat environment conducting components of Stability Operations and Support Operations.
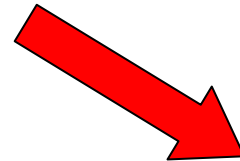
Focus Topics:
- OPSEC
- SOSO
- Security/ Force Protection
- Morale
- ISR
- Family Readiness

GATOR SIX

loading...

WILL Interactive, Inc.

MADE WITH macromedia®

Discover what it takes to transform this mission into a success. You have to go back in time one month and make different decisions as the Battery Commander. To win, you must make decisions on five different days.

1st Day Predeployment

2nd Day Predeployment

14th Day Predeployment

Arriving in Country

Going to War

The Agile Fires and Effects Leader

Discerns/ Integrates →
Identifies Problems
Collects New & Relevant Information
Anticipates/ prepare for both likely and unlikely events

Decides/ Synchronizes →
Gives the maneuver commander best recommendation without waiting for 'perfect' SA.
Synchronizes the Fires & Effects Team

Detects/ Ensures Focus →
Proactive Targeting. Hit the enemy before he can hit us.
Focus the Targeting Effort– cannot strike everywhere

Delivers/ Effects the Tgt →
Acts quickly without waiting for a 100% solution.
Maneuvers past obstacles.

Measures Effectiveness →
Fully assesses the impact of decisions/ methods used to effect the target. Asks: Did we achieve the commander's intent?

- AND coordinates critical Information to maximize the potential of all Fires and Effects Team Members!

RFI Passes By The Training Base

- The first time soldiers see this equipment is in theater
- This often happens to BOIP of systems of record
- Soldiers are down-trained, or not trained on relevant equipment
  - Individual equipment and uniforms
  - Sensor equipment
  - Up-armored vehicles
  - Weapon systems
  - Munitions
  - Communications equipment

Guided MLRS Rocket

Requirements

- Maximum Range: 60-70 Km

- Minimum Range: 10-15 Km

- Improved Effectiveness

- Changed dud rate to <2% @ 20-60km and <4% @ <20 and >60km

- Objective is < 1%

Schedule / Milestones

99   00   01   02   03   04   05   06

EMD

MS C

OT

IOC
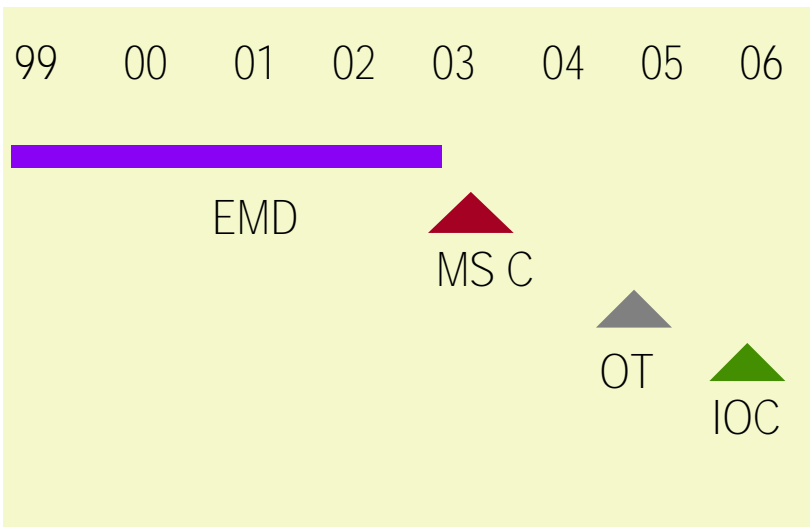
Description

- Inertial Guidance with Canards for Control

- GPS-Augmented

- Long Burn Motor
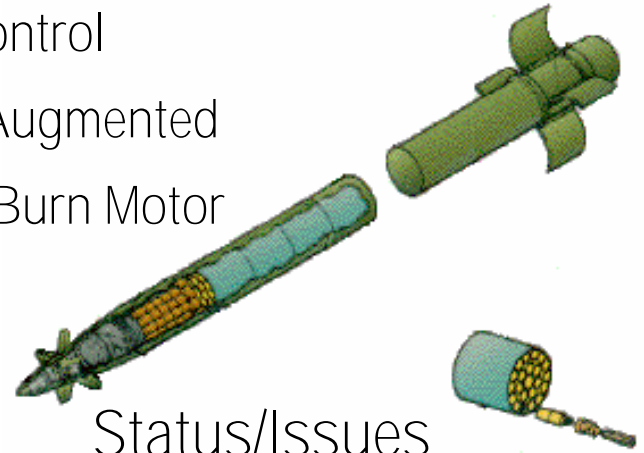
Status/Issues

- Demonstrated Ranges of 16.8 – 74.5 KM
- Self-Destruct Fuze Tests Continuing
- OT Firings Completed Nov 04

Light Weight Counter Mortar Radar

LCMR

- L-Band
- 360° (6400 mils) Azimuth Coverage
- Range Coverage
  - Max Rg 6km Mortars
  - Min Rg 1 km

NO $ FOR DOCTRINE DEVELOPMENT AND NO LSI FOR LESSONS LEARNED, TTPs, WHITE PAPERS

- TRADOC Spending Moratorium on DD
- No LSI to capture LL and quickly turn around TTP Manuals (CALL, branch magazines, COPs (FKN), returning unit briefs)
- Schools institute LL and updates in a haphazard method
- Mobilization training is conducted via unofficial POIs and White Papers

Picatinny's
Armament Research, Development & Engineering Center (ARDEC)

Homeland Defense Technology Center
Overview

Dr. Floyd S. Ribe, P.E.

Homeland Defense Technology Center

Picatinny Arsenal, NJ   07806

973-724-6165   fribe@pica.army.mil

Picatinny's Homeland Defense Technology Center

- Established to:

  - **Identify** existing and near term technologies for use in Homeland Defense (HLD),Homeland Security (HLS) & Force Protection

  - **Leverage** Picatinny's assets (People, laboratories, test beds, real estate, etc.) to develop those technologies
    - **4,193 Military/Civilian/Contractors**
    - **6,493 Acres (~6.5 miles x 1 mile)**
    - **804   Buildings**
    - **64   Laboratories/Facilities**
    - **35 Miles from New York**

  - **Team** with other agencies (DoD, Other Federal, State, County and Local) to share/transfer technologies

  - **Share** facilities to local First Responders (Non-interference Basis)

- ## Morphing to include:

  - **Integrating & Evaluating** systems comprised from individual technologies to meet HLD/HLS & Force Protection needs.

  - **Showcase & Training** potential users on HLD/HLS/Force Protection technology systems.

  - **Development of Growth Business Areas** by Creating novel partnerships in the HLD/HLS areas

Authority

Title XIV, Section 1401 of the Public Law 107-314

The Department of Defense(DoD) is given the authority to "identify, evaluate, deploy and transfer to Federal, State, and local first responder's technology items and equipment of homeland security."

2005 Army Strategic Planning Guidance

The Army Released new Strategic Planning Guidance for 2005, It includes three new focus areas of which one is Homeland Defense

Homeland Defense Movie

The 3500 Area Testbed

Sound Facility

Hogan wall

Sensors

Simulators

Information Assurance

Swat Team

Underground Tunnel

Robot Development and Training

Downtown

Classroom

Human Non-Lethal Effects

Fire Tower

Administration

Aircraft Training

Future Administration Addition

Maintenance Facility

Chemical Hazmat
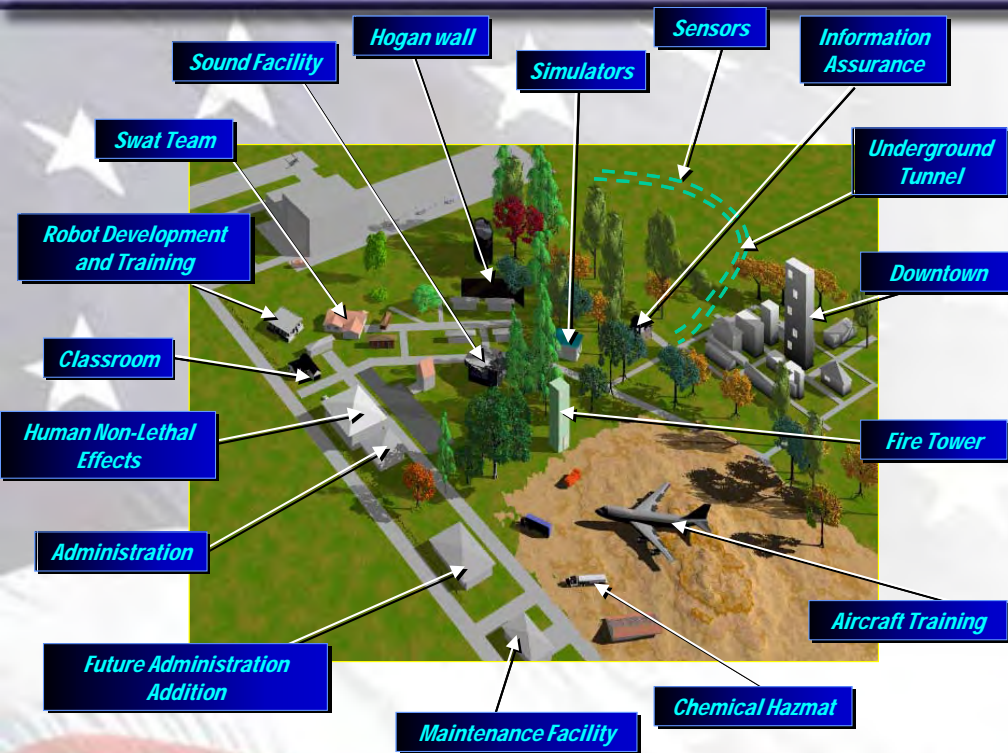
- A multi-acre urban type facility for
  - Armament R&D
    - Target Behavioral Response Lab
  - "Train the Trainer"
  - Readiness Dev for HLD/HLS (including local police, FD, EMS, SWAT,etc)

ARDEC TARGET BEHAVIORAL RESPONSE LABORATORY
(TBRL – Basic investigations into less than lethal)

SCIENCE

- *ARDEC PRINCIPAL INVESTIGATOR*
- *STRESS AND MOTIVATED BEHAVIORAL INSTITUTE (NJMS &NJUMD)*
- *ACADEMIC AFFILIATIONS (NJIT, SETON HALL, RUTGERS, UCLA, U OF ARIZONA & USMA)*

TESTING

- *ARDEC BEHAVIORAL RESPONSE FACILITY*
- *NJHCS-EO (VA) MEDICAL CENTER*
- *UNIVERSITY LABS*
- *COMMERICAL FACILITIES*

APPLICATIONS

- *ADVANCED ENERGY SYSTEMS*
- *SCALEABLE EFFECTS*
  - **NON-LETHAL TO NEAR LETHAL**
- *FULL RANGE OF SCENARIOS*
  - **TACTICAL OPERATIONS**
  - **HOMELAND SECURITY**

CURRENT PROGRAMS

- *GRANT TO STUDY SUPPRESSION TECHNIQUES*
- *DEVELOP MATRIX OF POTENTIAL PERSONNEL EFFECTS FROM VARIOUS ENERGY SOURCE (ie. LIGHT SOUND, PRESSURE, ETC…)*
- *PILOT EXPERIMENTS*
  - **BLUNT IMPACT MUNITION EFFECTS**
  - **STUN EFFECTS**
  - **AVERSIVE ACOUSTIC EFFECTS**
  - **MULTI-SENSORY DISRUPTION**

CAPABILITIES FOR FUTURE WORK

- *MULTI-LEVEL FACILITY AND AREA PROTECTION SYSTEMS*
- *ISOLATION & IDENTIFICATION OF TERRORISTS BY THEIR BEHAVIOR USING NOVELTY DETECTION ALGORITHMS*
- *STUDY OF CHRONIC STRESS & FATIGUE IN CRISIS RESPONSE CENTERS*
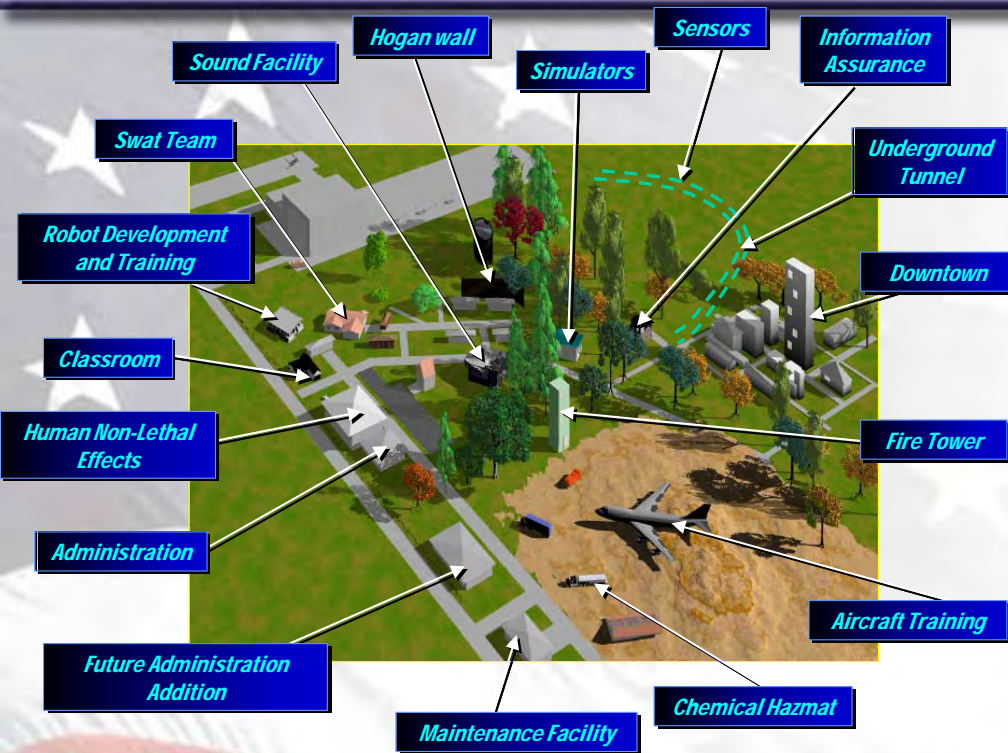
Unique Training

- Unique Military & Civilian Scenarios

- Combined Training with NG, Active & First Responder

- Multi-Tier Training (Tactical & Emergency Operations)

ARDEC Biometrics Research, Test & Evaluation Laboratory {ABRTEL}

Princeton Plasma Physics Laboratory

Miniature Integrated Nuclear Detection System (MINDS)

- MINDS provides rapid identification of specific nuclear signatures.

- Scans autos, trucks, luggage, cargo containers etc.

- Separates medical and normal industrial nuclear signatures from suspect signatures to minimize false alarms.

Semiconductor Detector
CZT/CdTe PIN
(x-ray/soft γ)

Scintillation
NaI | PMT
(γ)

Neutron
He3 or BF3
(η)

Amplifier → MCA

System identifies only radionuclides of interest minimizing false positives.

Library → Decision → Output
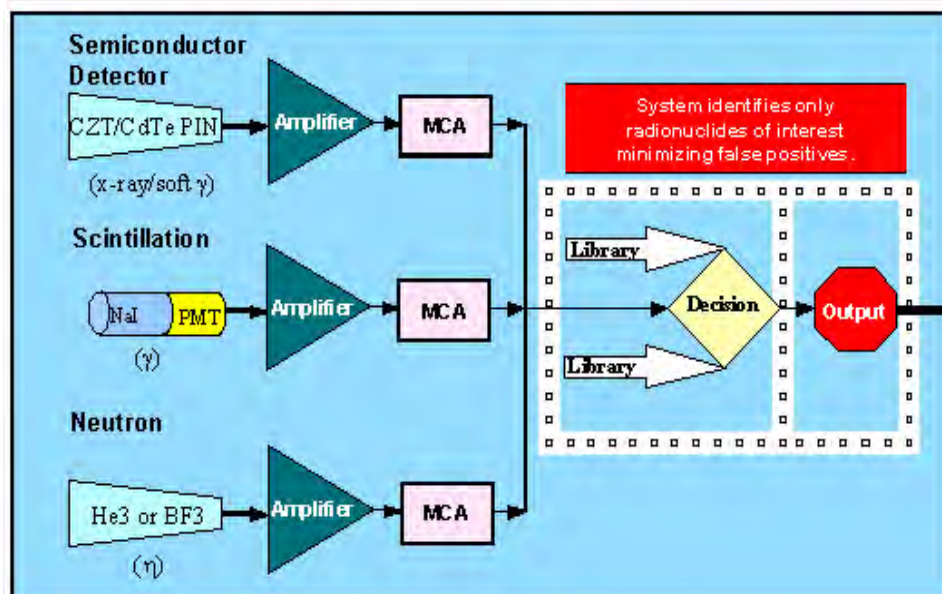
Output

Example of possible output signal to law enforcement / Homeland Security Officials

Nuclear Materials Detected !

Am-241 and Cs-137

at location x.

Information Assurance
Partnered with Stevens Institute of Technology and CERDEC
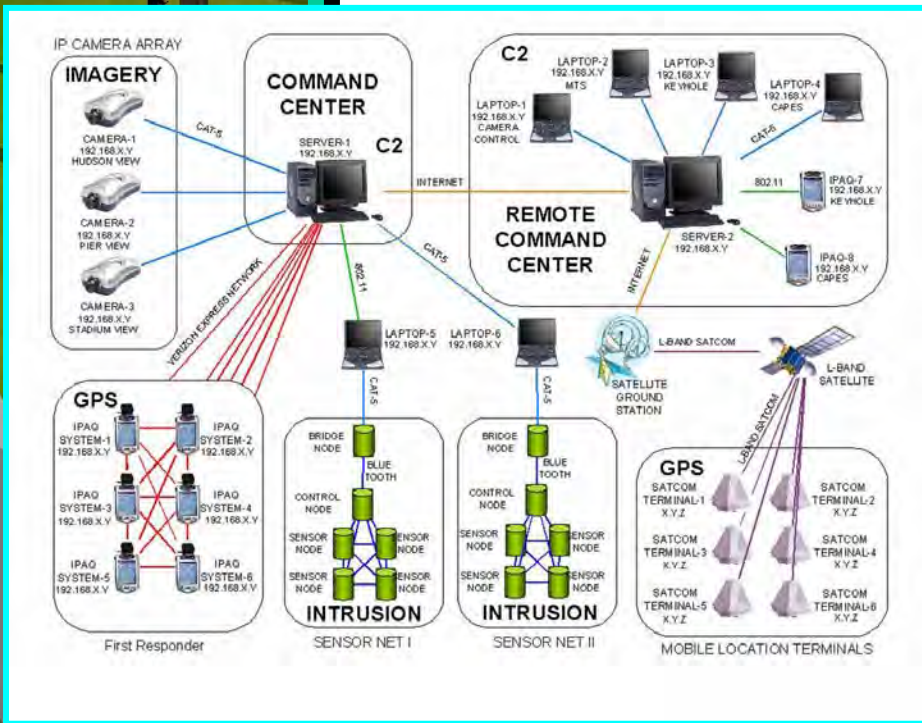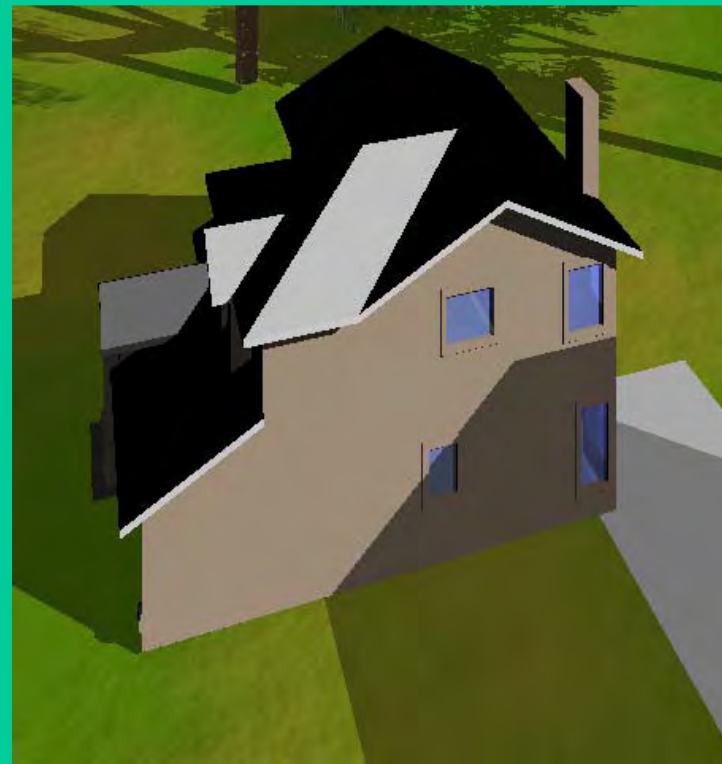
- Secure Wireless Testbed Network Definition and Network Connection

- Application of Information Assurance Technologies to Homeland Defense/Homeland Security

- Advanced Research in Information Assurance

Training the National Guard

– **Providing Training for the New Jersey Army National Guard**
  - Gate Operations and Vehicle Searches
  - WMD Awareness
  - IED Identification
  - Gate Operations
  - Vehicle Searches
  - Handcuffing
  - GUNFIGHTING 101
    – Movement
    – M16A2/M4 & M9 Overview
    – Equipment Considerations
    – Presentation and Stance
    – Immediate Action Drills
    – Tactical & Speed Reloads
    – Contact Responsibilities
    – Cover Responsibilities

– **Over 1000 Trained**

1st Surface Transportation Emergency Operations Summit and "Live Fire" Exercise (22 & 23 Jun 2004)

- NJ Transit
- Morris County
  - Prosecutor's Office
  - Sheriff's Office
  - SWAT
  - HAZMAT
- Rockaway Police and EMS
- Picatinny Garrison Security
- Picatinny EOD
- FBI
- TotalSecurity.US
- Morris County Canine
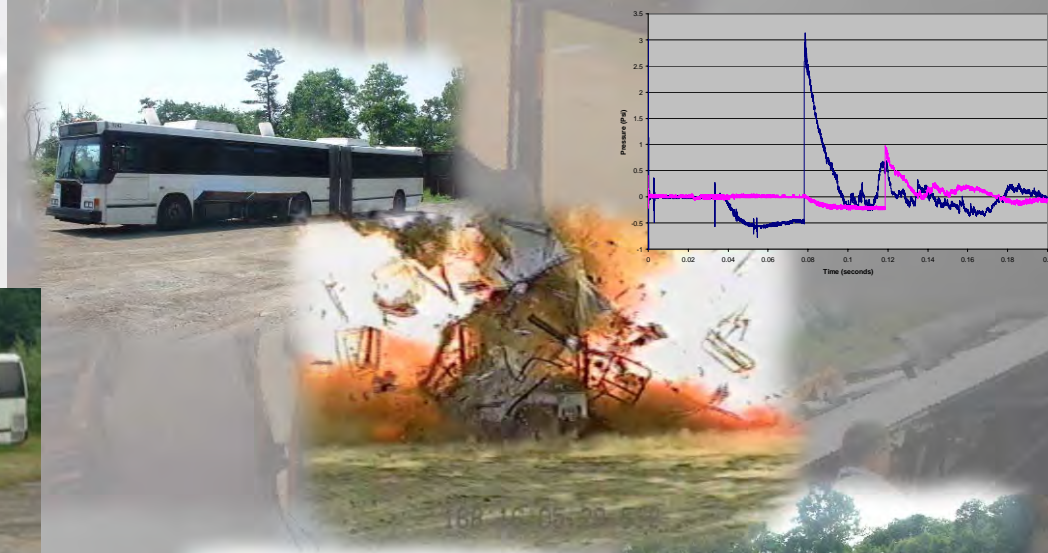
Realistic Training for Multiple Scenarios

Bus with 12.5 lbs of C4
Pressure vs Time
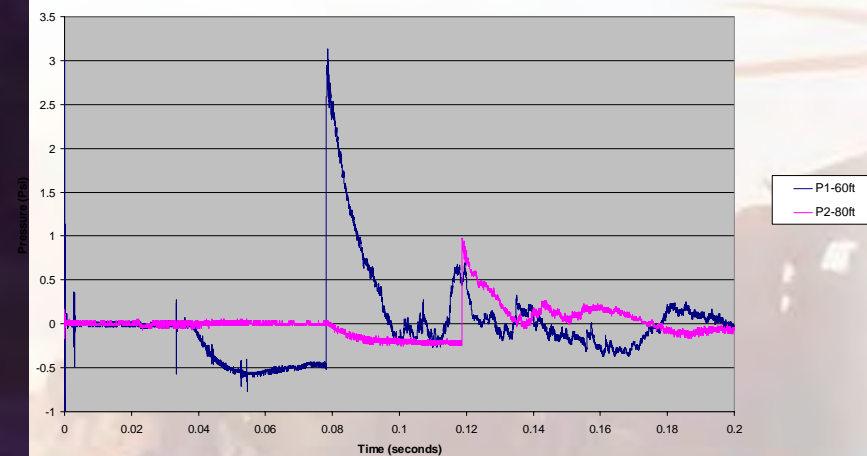
Port Authority – Picatinny Backup Microwave Link
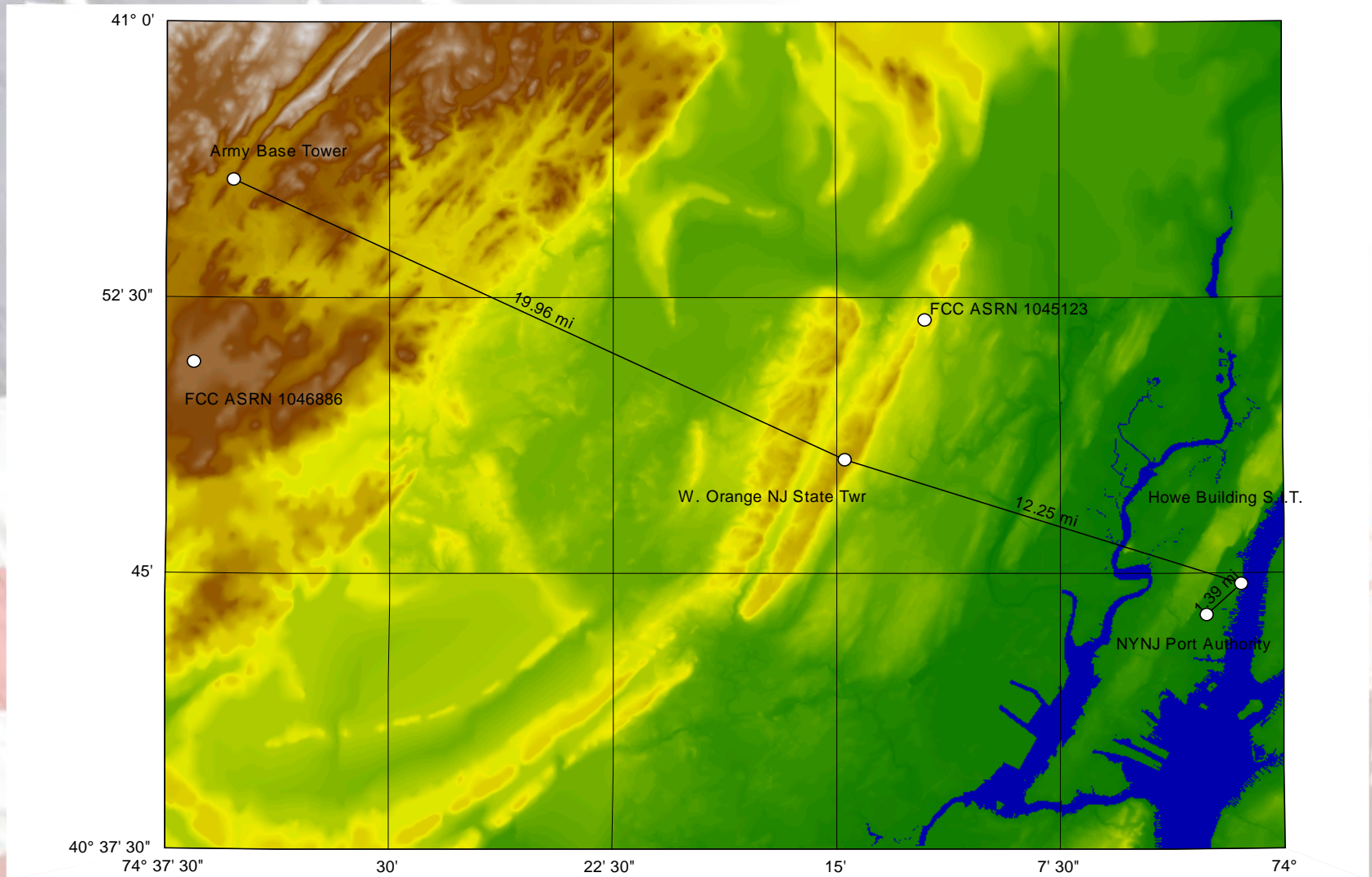
Airborne Rapid Imaging for Emergency Support (ARIES)
(Phase I Completed Oct 04)

World Trade Center during 9/11

3 Sensors utilized to provide a comprehensive daily assessment of ground conditions in the search and recovery effort.

- Digital Optical
- LIDAR
- Thermal
- Problem: 9 hour turn around time

South Tower — Building 7
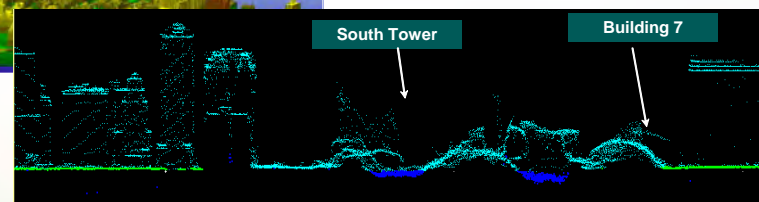
- A Homeland Security (ODP) Sponsored Program

- Phase 1 – System Demonstration – A proof of concept employing rapid response technologies for airborne imagery significantly improving over 9/11 results .

- The highly successful demonstration employed an airborne imagery acquisition, direct downlink (high bandwidth), a mobile ground processing station and a EOC that was able to distribute the information in less than 3 hours.

ARIES Concept

(phase 1)

Enacting a plan to improve rapid response

1. Airborne Sensor Component

2. Downlink Technology

3. Mobile Ground Processing Station (MGPS)

4. Transfer Data to Picatinny's Simulation & Emergency Operations Center

5. Sent throughout NJ VIA HLS's ASOCCS system

ARMAMENT RESEARCH, DEVELOPMENT & ENGINEERING CENTER

PICATINNY, NJ
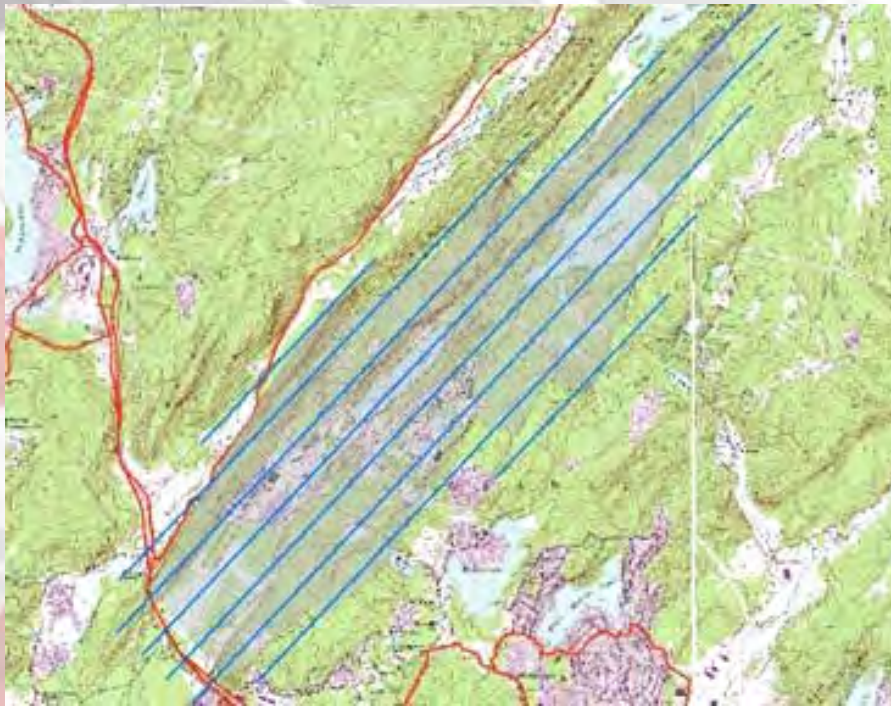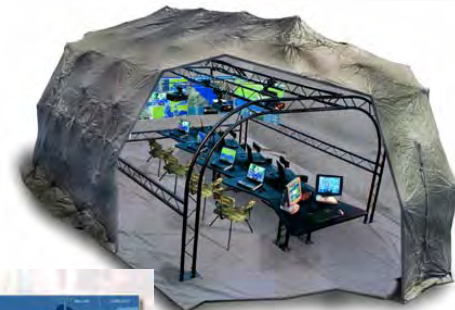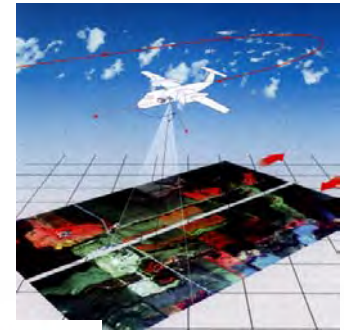
LOCAL

G HILL RACE

HIGHLANDS BILL ON WAY TO BUSH
House unanimously adopts legislation despite worries about technical changes. A23

CHARITY LOW ON DONATIONS
Interfaith Food Pantry relies on holiday giving but is seeing a decline in food contributions. A23

ER 18, 2004 · www.dailyrecord.com

High tech response in times of disaster

Picatinny shows imaging of maps

BY ABBOTT KOLOFF
DAILY RECORD

ROCKAWAY TWP — They arrived shortly after terrorists attacked the World Trade Center, taking aerial images of Ground Zero and then processing them at a makeshift command center in Albany to make maps to be used by emergency officials.

The high-tech maps were then sent to Manhattan using a transportation system that was low-tech.

"We gave it to a state trooper," said Bryan Logan, chairman of the board of EarthData, a Maryland-based mapping company.

Logan has a name for that system, which relied more on shoe leather than electronics: "The Sneakernet."

Logan said his company resorted to those tactics because the Internet was in chaos in the first days after the 9/11 terrorist attacks. EarthData's system for mapping Ground Zero — using thermal imaging to identify underground fires, and laser imaging and photographs to produce a detailed map — was cobbled together after a state agency asked company officials to see what they could do to help rescue workers avoid dangerous areas and find survivors buried under debris.

EarthData demonstrated a more polished version — called ARIES, or Airborne Rapid Imaging for Emergency Support — for military and emergency management officials gathered at the Picatinny Arsenal on Wednesday. They say the system, which uses off-the-shelf technology, would allow first responders to have quicker access to detailed maps of disaster sites. It took 12 hours to get maps to emergency officials on 9/11.

The maps are now available, company officials said, just hours after the images are taken.

A small plane took off from Morristown Airport and took various kinds of images of the arsenal. It downloaded that information to a command

SEE ARIES / A22

David Lilly of EarthData speaks with Lt. Col. Mike Hendricks, a teacher of geographic information systems at West Point about the radio dish antenna that will receive images from an airplane.

System of Systems SECurity (SoSSec) Integration

☑ Support preparation against asymmetric threats in Homeland Defense/ Security, Military Force Protection and Stability/Security missions

☑ Promote interoperability across organizational and geographic boundaries

☑ Maximize the combined, full spectrum of capabilities and solutions

☑ Operate across the full cycle of awareness, prevention protection, response, and recovery

SoSSec Program Goals

☑ Deliver an integrated "System of Systems" solution

☑ Promote an "Enterprise Architecture" approach

☑ Enable a spiraling set of demos

☑ Evaluate component system for utility and interoperability across the development spectrum

    ☑ Commercial Off-The-Shelf (COTS)

    ☑ Government Off-The-Shelf (GOTS)

    ☑ Research and Development Initiatives (Universities, DoD/Federal & Commercial)

Current Situation: Many Isolated "Islands" of Capability
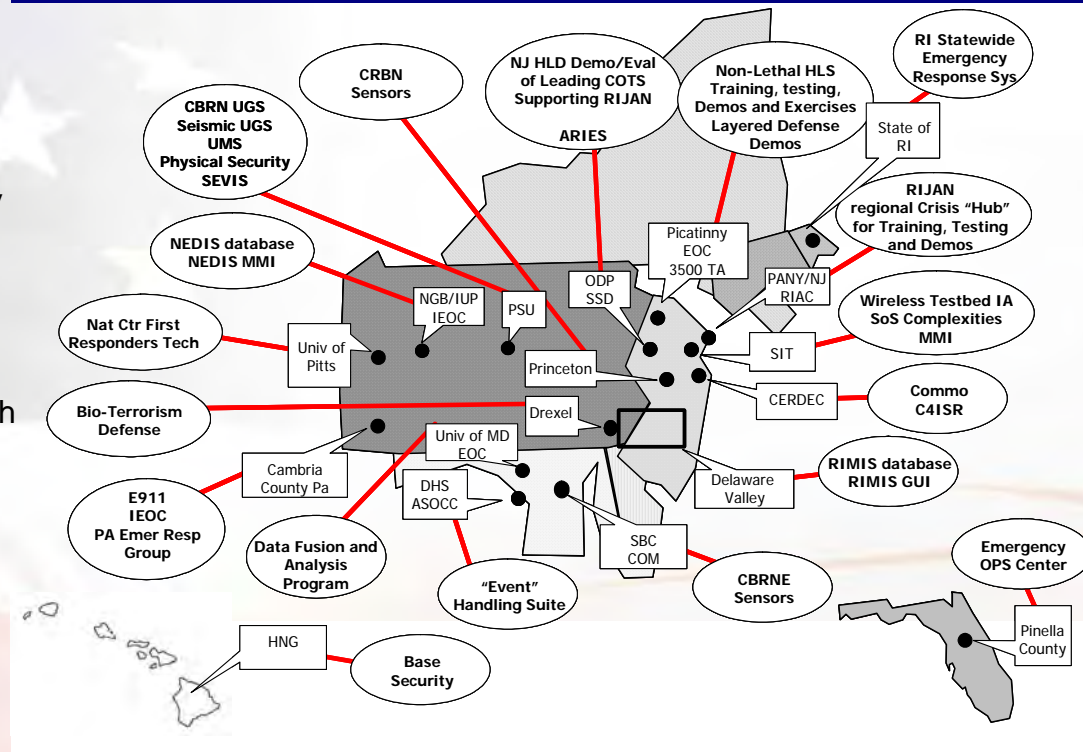
Office of Homeland Defense Technologies
Hosting Demonstrations, Exercises & Conferences

- **Emergency Preparedness Incident Command Simulation (EPiCS)**
  - 10 MAR 04

- **NJ Transit 1st Surface Transportation Emergency Operations Summit**
  - 22-23 JUN 04

- **Airborne Rapid Imaging for Emergency Support (ARIES) Survey Demonstration**
  - 10 OCT 04

- **Northern New Jersey Urban Area Security Initiative (UASI) Meeting**
  - 20 OCT 04

- **NJ Regional Homeland Security Technology Committee Meeting**
  - 20 OCT 04

- **Layered Defense Demonstration (LDD) #1**
  - 20-21OCT 04

- **Airborne Rapid Imaging for Emergency Support (ARIES) Exercise**
  17 NOV 04

- **Northern New Jersey UASI Region Rapid Deployment Force Training Barrier Protection Penetration – Practitioner & Commander Course**
  15 DEC 04

- **Public Health Response to Terrorism: A Regional Approach Conference**
  16-17 FEB 05

- **Miniature Integrated Nuclear Detections System (MINDS)**
  Deployed at Picatinny for demonstration and acquisition of baseline data
  May 05

- **Layered Defense Demonstration (LDD) #2**
  Jun 05

Collaborating with

- CECOM
- ECBC
- TRAC WSMR
- Ft. Dix
- ODP, DOJ, Office of Homeland Security
- US Army Medical Research Institute of Infectious Diseases (USAMRIID) Fort Detrick, MD
- The Naval Undersea Warfare Center Division, Newport (NUWCDIVNPT)
- United States Military Academy – Providing Testbed design and SERIS support
- FEMA (integrating HAZUS into SERIS)
- Veterans Administration
- US Postal Inspectors (Training at Picatinny)
- Secret Service (Potential training at Picatinny)
- Picatinny Fire Department & Security Force

- State Police
- The NJ Regional Homeland Security Technology Committee (reports to NJ Domestic Security Preparedness Task Force)
- State of NJ Department of Military and Veterans' Affairs (NJDMVA)
- Office of Morris County Prosecutor
- Morris County Office of Emergency Management
  - ARDEC is a member of the Emergency Planning Council
- Summerset County
- Port Authority of New York and New Jersey
- New Jersey Transit
- SOSSEC Members

- NJ College of Medicine and Dentistry
- Stevens Institute of Technology
- Princeton
- Rutgers
- NJIT

Remarks and Conclusions

- **Picatinny has extensive expertise in force protection, situational awareness, systems integration, modeling and simulation, and numerous other technologies that may be applied to HLD/HLS needs.**

- **Picatinny's Assets support optimized training technique development.**

- **Picatinny looks forward to participate with its partners.**
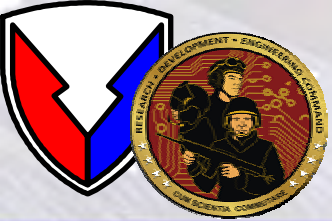
ARDEC & Picatinny Community Support to Southwest Asia

Presented to:

NDIA Armaments Technology Seminar & Exhibition

14 June 2005

THE HIGHEST CALIBER

Hooah!

Anthony J. Sebasto

U.S. Army Armament Research, Development, and Engineering Center (ARDEC)

asebasto@pica.army.mil

973-724-6198
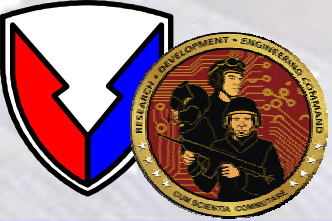
ARDEC at a Glance

- **Established "Center of Mass" for Armament Systems and Munitions for Joint Services**
- **ARDEC Personnel = 2679; >600 new hires since FY99**
- **$100M invested in modern experimental R&D facilities since mid-90's**
- **Proven track-record supporting transition of technologies to the field; since Nov 03.....**
  - **9 Type Classifications**
  - **16 Material Releases (MR)**
  - **10 Urgent MR (17 since early FY03)**
- **Strong partnerships with Industry, Academia, and other Government agencies.**
- **In-house rapid prototyping initiatives overcoming production problems or providing new desired capabilities to field in near term**
- **>$125M Tech Base portfolio addressing Joint needs**

2004 Army Large R&D Lab of the Year
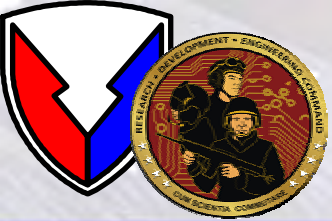
World Class Facilities
Most Recent in Operation

$11.7M — Opened 1996
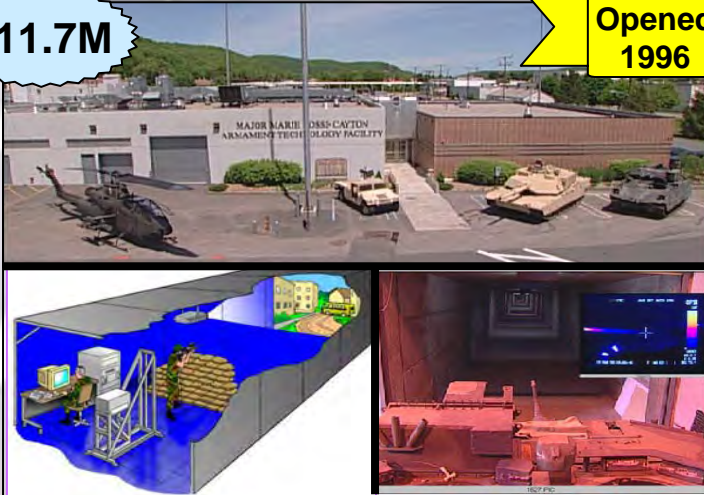
Armament Technology Facility

$8.8M — Opened 2000

Davidson Advanced Warhead Development Facility

~$45M in Facility Modernization invested over last 10yrs

$8.4M — Opened 2003

ROBERT A. REISMAN
PRECISION ARMAMENTS LABORATORY

Precision Armaments Laboratory

$15.5M — Opened 2005

Armament Software Engineering Center
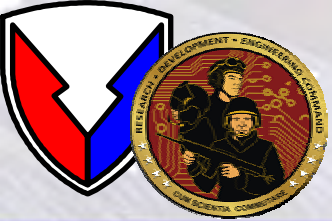
World Class Facilities
Breaking "old" grounds

High Energy Propellant Formulation Facility
- **MCA Funded - $17.7M**
- **Planned Completion – FY07**
- **45,000 ft^2 -**
  - **Propellant Pilot Plant /**
  - **Characterization Laboratories /**
  - **Magazine Storage / Offices**

Pyrotechnic Research & Technology Complex
- **MCA Funded - $9.9M**
- **Planned Completion – FY07**
- **33,000 ft^2 –**
  - **Engineering Offices & Laboratories**
  - **Pilot manufacturing facility**
  - **Energetic stowage**
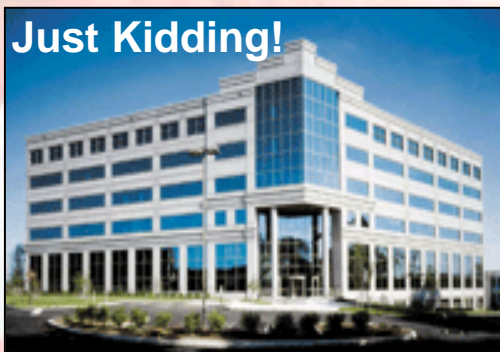
Just Kidding!

Actual Building Concept Available Jul 05

Explosives R&D Loading Facility
- **MCA Funded - $8.0M**
- **Groundbreaking Dec 05; Completion – FY07**
- **28,000 ft^2 –**
  - **Melt Pour Operations & Engineering**
  - **Climate Controlling Machining**
  - **Explosive Pressing, Cast Cure, & X-Ray**
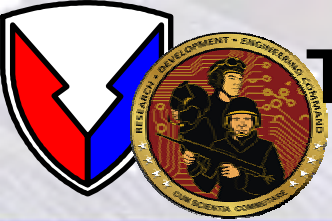
Type Classification & Material Releases
Some Examples - FY04 to Present

Type Classification Items

- M85 Remote Activation Munitions System Trainer
- M111 Improved Position, Azimuth Determining System
- M192 Lightweight Ground Mount
- M240H- 7.62mm Aviation Machine Gun (Aviation Version)
- M255A1 Flechette Warhead, 2.75 Inch Rocket
- MK281 Cartridge, 40mm TP-T
- M393A3/M467A1 Cartridges, Tank 105mm
- HE441D RS 84mm Munition
- HEAT551C RS 84mm Munition

Materiel Release (MR) Items

- M19/M20 Modernized Demolition Initiator
- CHARGE, PROPELLING, 155MM: M232 (MACS)
- Cartridge, 60mm: Smoke, WP, M722A1 w/ Fuze PD/DLY M783
- M769, 60mm, Full Range Practice Cartridge (FRPC)
- M829A3, Cartridge, 120mm, Armor Piercing, Fin Stabilized, Discarding Sabot with Tracer (APFSDS-T)
- M879, 81mm, Full Range Practice Cartridge (FRPC)
- M111 Improved Positioning & Azimuth Determining System
- M1155 Portable Inductive Artillery Fuze Setter (PIAFS)
- M303 Special Operations Forces Demo Kit
- M95/M96 Mortar Fire Control System
- Cartridge, 9mm, Jacketed Hollow-Point,
- M255A1 Flechette Warhead, 2.75" Rocket
- M192 Lightweight Ground Mount

Urgent MR Items

- XM101 Common remotely Operated Weapon Stations (CROWS)
- M930E1 120mm Illuminating Mortar Cartridge
- X26E Advanced Taser Weapon and Associated Equipment
- XM32 Lightweight Handheld Mortar Ballistic Computer
- M107 Cal .50 Long Range Sniper Rifle (LRSR)
- FN303 Less Lethal Launcher
- M211 and M212 Flare: Countermeasure
- Non-Lethal Capabilities Sets
- AT4 Confined Space High Performance Weapon
- MP5-A5 9mm Submachinegun
- Lightweight Shotgun System
- M203 Grenade Launcher (GL) Day/Night Sight (DNS)

Supporting Transition of Technologies to Production/Field During War Time
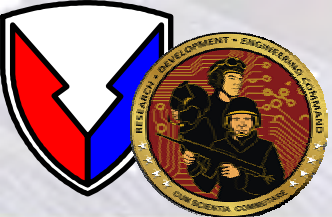
Urgent Fieldings
Some FY03/04 examples

AT-4 Comfined Space (CS)

- **Enables safe firing in MOUT environments**
- **Same performance as AT-4**
- **~800 systems to Army and SOCOM FY03/04**

XM32 LtWt Handheld Mortar Ballistic Computer (LHMBC)

**Top 5 DOD Best Program
Top 10 Army Greatest Inventions**

- **Computes ballistics, gun pointing data and tactical fire control for US 60, 81 & 120mm mortars faster and more accurate than M23 MBC**
- **32 units fielded to 3/2 Stryker Brigade Aug 04**

Gunfire Detection System (GDS)

- **Acoustically locate small arm fire origins**
  - **Provides azimuth, elevation & range**
  - **360 degree coverage**
- **>100 systems fielded to Army and SOCOM since Aug 03**

M211/212 Countermeasure Flares

M212

M211

- **Broadens countermeasure signature to defeat all fielded Surface-to-Air Missile (SAM) Threats**
- **> 65,000 Flares fielded to Army & Air Force since Jan 03**
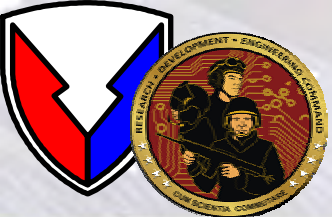
Urgent Fieldings
Some FY04/05 examples

M107 0.50 Cal Sniper Rifle

- **First .50 cal semi-auto sniper rifle**
- **Effective against materiel/personnel to 2km**
- **Multiple Urgent Releases in FY04/05**
- **Full Materiel Release approved Jan 05**

X26E TASER

M26 Advanced Taser

**X26E Taser/
M4 Adaptor**

- **Adaptation from original M26 TASER**
- **X26E provides readily available non-lethal capability to XM-4 carbine**
- **Urgent Fielded 350 X26E TASER since May 05**

XM101 Common Remotely Operated Weapon Station (CROWS)

- **Enables User to engage targets while under protected under armor**
- **Fully stabilized firing of M249, M240, M2, & MK19**
- **Urgent Fielded Feb 05**

M930E1 120mm Illuminating Mortar Cartridge

- **Responded to Urgent Requirement**
- **Standard white light illumination**
- **Reworked M930 stockpile to meet current need**
- **Urgent Fielded in 95 days (Feb 05)**
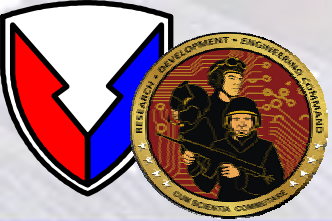
Rapid Prototyping Initiatives
Examples Supporting Production Requirements

Stryker Ballistic Shield
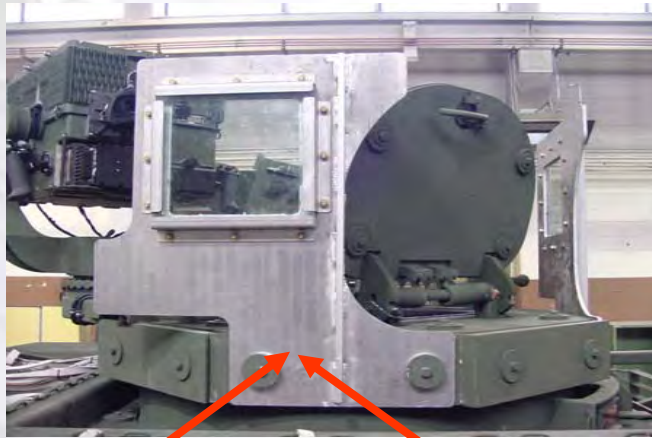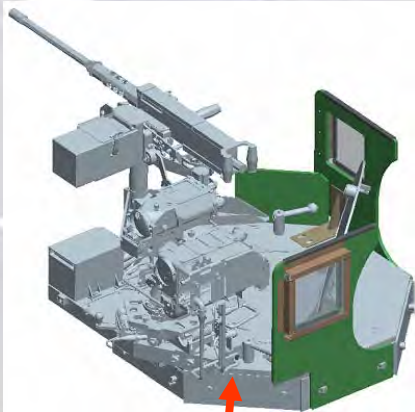
APR-05 IED Incident – <u>Soldier Unharmed</u>
SBCT 1st Brigade – 25th Infantry Division

ARDEC Design	User Input	Qualification	LRIP	Fielding
OCT 04	NOV 04	DEC 04	JAN 05	FEB 05	MAR 05
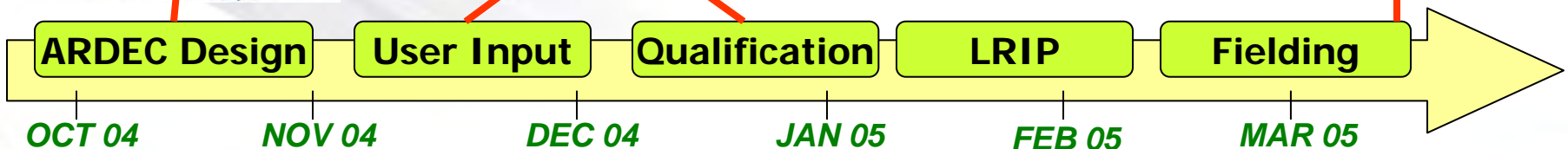
- Lightweight (145lb) Cupola mounted ballistic titanium protection w/armor windows
- Leverages MANTECH for low-cost Titanium processing and manufacturing
- ARDEC producing 136 kits in response to Stryker Brigade urgent need
- 70 kits produced and shipped; >30 kits installed and in operation
- Spiral improvements to kit underway
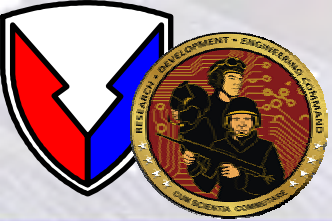
Rapid Prototyping Initiatives
Examples Supporting Production Requirements

M54A1 Burster Tube Loading

155mm M110A2
WP Smoke
Projectile
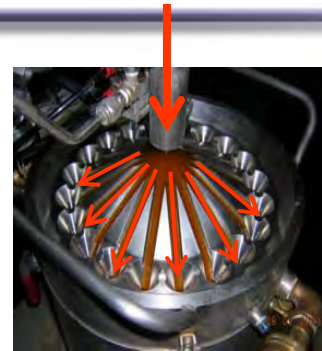
*ARDEC
Developed
Load/Cooling
Process*
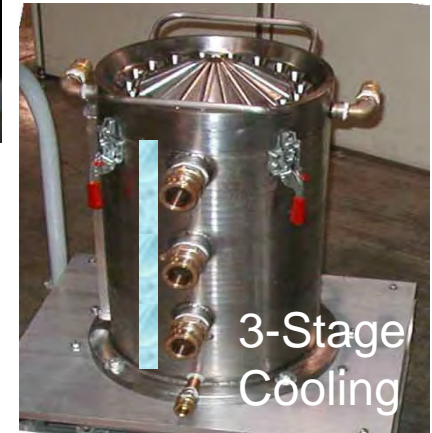
3-Stage Cooling

- **Problem: M54A1 production problems impacted fielding of M110A2 to USMC**
- **ARDEC developed new melt pour & controlled cooling process**
- **7000 Burster Tubes loaded/delivered by ARDEC to Pine Bluff by Jun 05**
- **ARDEC executing new requirement for additional 7000 burster tubes**
- **Technology transfer of ARDEC process to industry underway**
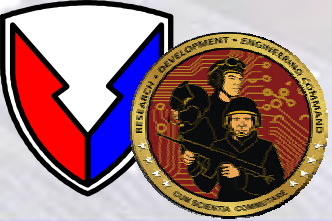
Rapid Prototyping Initiatives
Examples of "Tech Push" for Early User Demo's

Special Weapon Observation Reconnaissance Direct-Action System (SWORDS)

Joint ARDEC/OSD funding

3/2 Stryker Brigade Demo in Kuwait Nov 03

- Demonstrates small, low-cost, remotely operated weapon system
- Remotely Operated Recon, Security, Sniper Asset with increased weapons accuracy & control
- Early User design feedback from Stryker Brigade, 10th MD, & SOCOM
- Safety Confirmation Testing continuing to support potential Urgent Materiel Release Oct/Nov 05
- Transition agreement in place with Robotic Systems - Joint Project Office
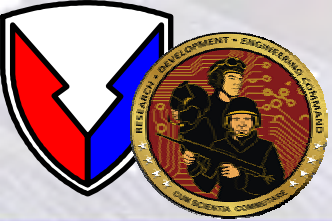
Special Weapon Observation Remote Direct-Action System (SWORDS)
Live Fire (w/M240B 7.62mm Machine Gun)
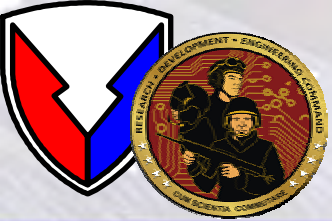
Rapid Prototyping Initiatives

Examples of "Tech Push" for Early User Demo's

Remote Weapon Acoustic Counter Sniper System

CROWS

Corner Microphone Array x 4

Typical Display
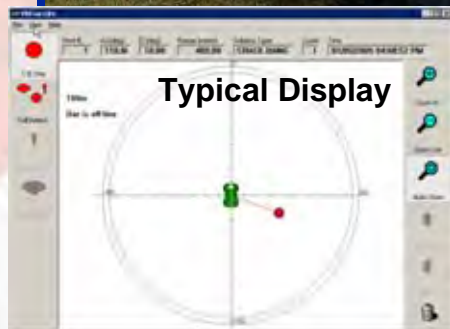
- Joint ARDEC, AMC-FAST, PM-Soldier Weapons, & Industry Program

- Integrates 360º acoustic detection & location with remote weapon station

- Automatic/manual weapon position

- On-the-move weapon position updates

- USARPAC evaluation in CONUS and Limited Safety Release Jul 05

- ARDEC & PM working path ahead for evaluations in Iraq Oct/Nov timeframe

Enhances Situational Awareness of the most Critical Threats....Shooters!
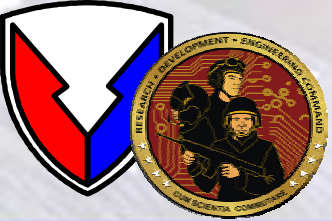
Rapid Prototyping Initiatives
Examples of "Tech Push" for Early User Demo's

Picatinny Lightweight Remote Weapon Station (PLRWS)
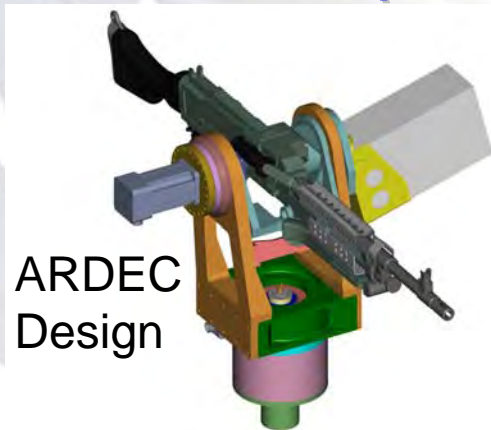
ARDEC Design
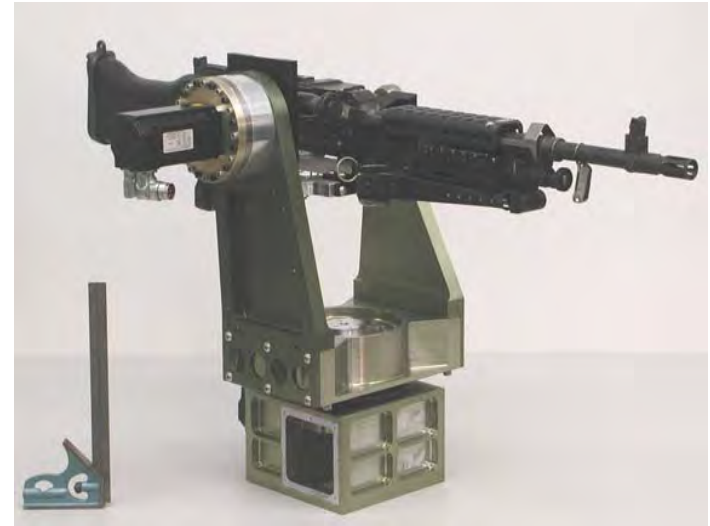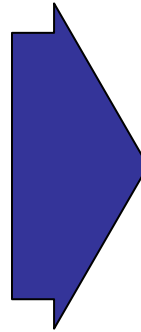
- **Joint ARDEC, PM-Soldier Weapon (PM-SW), and REF Program**
- **Lightweight remote mount for M249, M240, & ACSW applications**
- **Target Wt: <150lbs with weapon/ammo (GOAL MET)**
- **Compliments CROWS-class systems**
- **2-Axis Stab; 360º continuous rotation; Elevation Range: +45º to -15º**
- **SAFC II sight integration and hardstand/vehicle testing Sept/Oct 05**
- **ARDEC working path ahead under PM-SW Remote Mount Strategy**
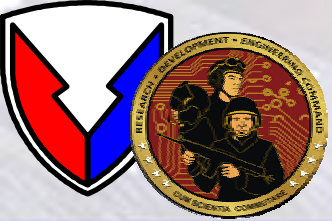
Rapid Prototyping Initiatives
Examples of "Tech Push" for Early User Demo's

Early Attack Reaction Sensor (EARS)
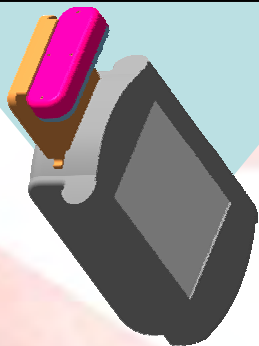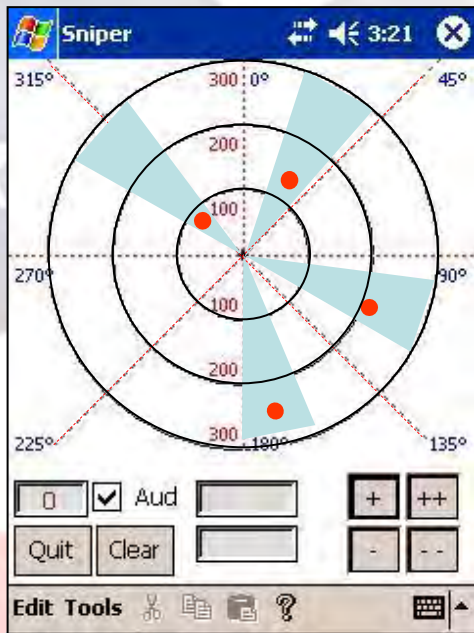
- **Joint ARDEC and AMC-FAST Program**
- **Portable Hand-held Gunfire Detection System to detect/range small arms gunfire origin for individual soldier out to ~150m+**
- **PDA Display Outputs: Shockwave Alert, Muzzle Blast Bearing Estimate, Shooter range w/ Audio Alert**
- **Successful Proof of Concept at ARDEC Nov 04 out to 100m**
- **Technical demonstration at APG Aug 05**
- **User demonstration Dec 05**
- **Future Capability:**
  - **Wireless network - triangulate to provide high localization accuracy.**
  - **Vehicle mount & helmet mount application**
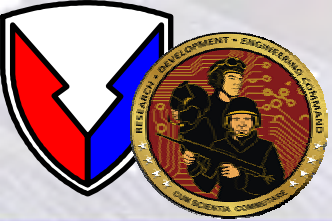
Non-Lethal Options for Theater Internment Facility (Camp Bucca)

Picatinny Air Launcher

Typical Compound Area

Vehicle Mounted Modular Control Munition

- Response to 18th MP BDE Commander request for site survey team to provide non-lethal technology options to control detainee populations during riots
- Joint USAMPS, ARDEC, and JNLWD survey team visit 25-29 April 2005
- Longer stand-off NL munitions primary User need
- ARDEC prototyped technology options for demonstration in theater in < 72hrs
- VERY POSITIVE User feedback from BDE Commander; Operational Need Statements in process
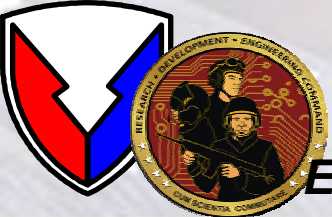
M855 5.56mm Terminal Ballistics Assessment
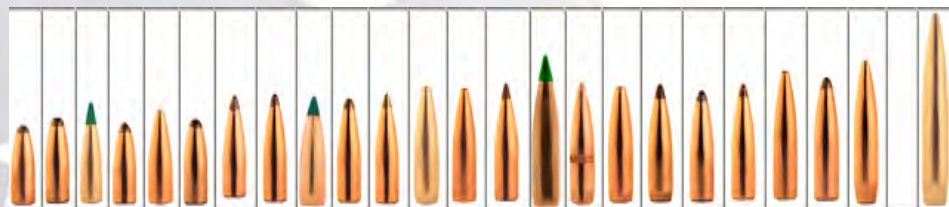
M855 (62 grains @ ~2800 fps)

Purpose:

- *Standardize gelatin block test methodology amongst DOD and other federal agencies*
- *Establish ranking methodology for lethality of bullets*

Product:

- *Gelatin Block Test Standardization Manual (COMPLETED)*
- *Ranking of "off the shelf" bullet designs based on lethality*

Payoff:

- *Allows any Gov't agency/contractor to share data with confidence.*
- *Determine if there is a more effective 5.56mm bullet than M855*
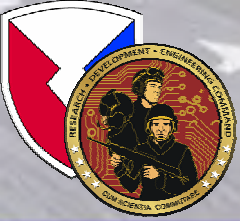
In Summary....ARDEC/Picatinny...

- **Proven track record of rapid transition of technology to the field**

- **Demonstrating new technology concepts enhancing warfighter capabilities**

- **Rapid prototyping processes solving production issues to meet warfighter needs**

ARDEC & Picatinny Community…….

Products, people, and processes enabling our ultimate customer, the soldier, to "take care of business" throughout the spectrum of conflict!

InSitech

Incorporated

Adapting the Technologies of Lethality to HLD/HLS

NDIA Firepower Symposium

June 15, 2005

Timothy N. Teen
Chief Executive Officer
InSitech, Inc.

InSitech

Incorporated

Adapting the Technologies of Lethality to HLD/HLS – **Transferring DoD Technology into the GWOT**

NDIA Firepower Symposium
June 15, 2005

Timothy N. Teen
Chief Executive Officer
InSitech, Inc.

Transferring DoD Tech into the GWOT

Agency Requirements (example):

- Identified through initiatives and communicated via BAA
- Solutions race begins – researchers & private sector
  - Government funding can augment R&D
  - Compelling tech can starve for resources
  - Bootstrap proof of concept
- Priorities change & conflict
- Repeat the entire process

Transferring DoD Tech into the GWOT

Leverage commerce:

- A role for venture capital
  - Invests in early stage high risk/high reward
  - Provides money, strategy, and contacts
- Venture backed innovation is developed 3-4x faster
- Venture capital firms invest ~$25 Billion/year
  - Compare to DHS investment in R&D
    - $1 Billion for R&D/deployment of technologies
    - $3.5 Billion for R&D of 1st responder capabilities

Transferring DoD Tech into the GWOT

ATC @ ARDEC:

- Spin In

- Spin Out

- Investment catalyst
  - $100 million venture fund
  - Define Dual-Use

InSitech

Incorporated

Homeland Security

Domestic Nuclear Detection Office

Transferring DoD Tech into the GWOT

MINDS

Miniature **I**ntegrated **N**uclear **D**etection **S**ystem

PPPL
PRINCETON PLASMA
PHYSICS LABORATORY

InSitech
Incorporated
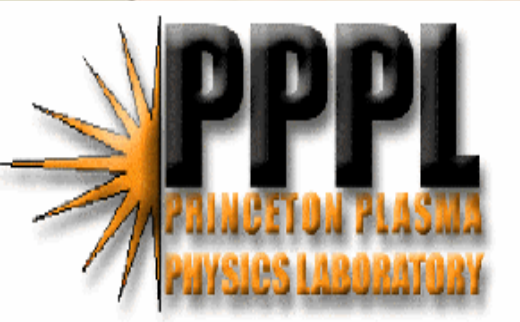
Instantly identifies

One-Billioneth

of the radionuclide material required for a dirty bomb

A CLOSER LOOK

Saddam's 'Dirty' Bomb

Iraq in 1987 developed and tested a radiological bomb that used conventional explosives to scatter radioactive material. The effects on people can range from radiation sickness to agonizing slow death.

8 feet

HIGH EXPLOSIVES

1.5 feet

FUSE

FUSE

Tail, not shown, adds 4 feet to total length

Cross section   **Radioactive core and casing**

HIGH EXPLOSIVES   LEAD CASE   RADIOACTIVE ZIRCONIUM CORE

LEAD CAP

METAL RING
HOLDS LEAD CASE

HANDLING
RINGS

POSITIONING SCREWS

InSitech
Incorporated
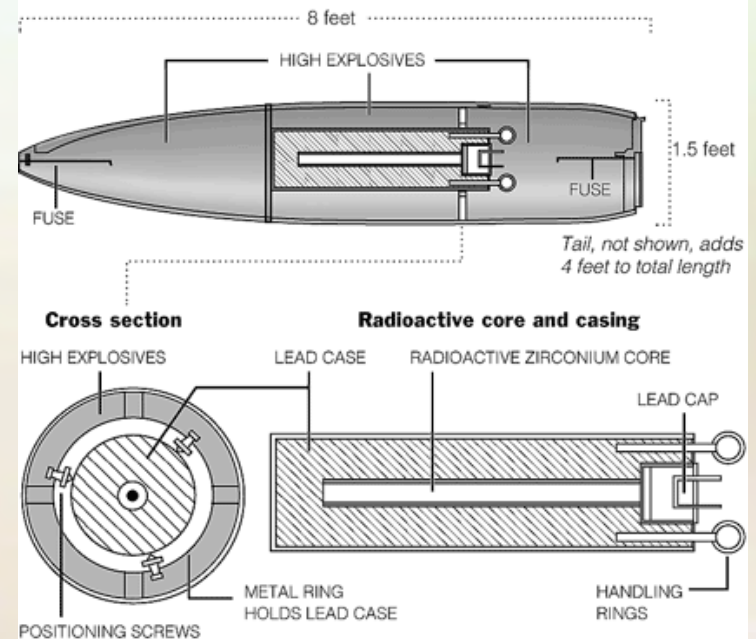
Uses advanced peak fitting and neural networking software to **identify**, not just detect
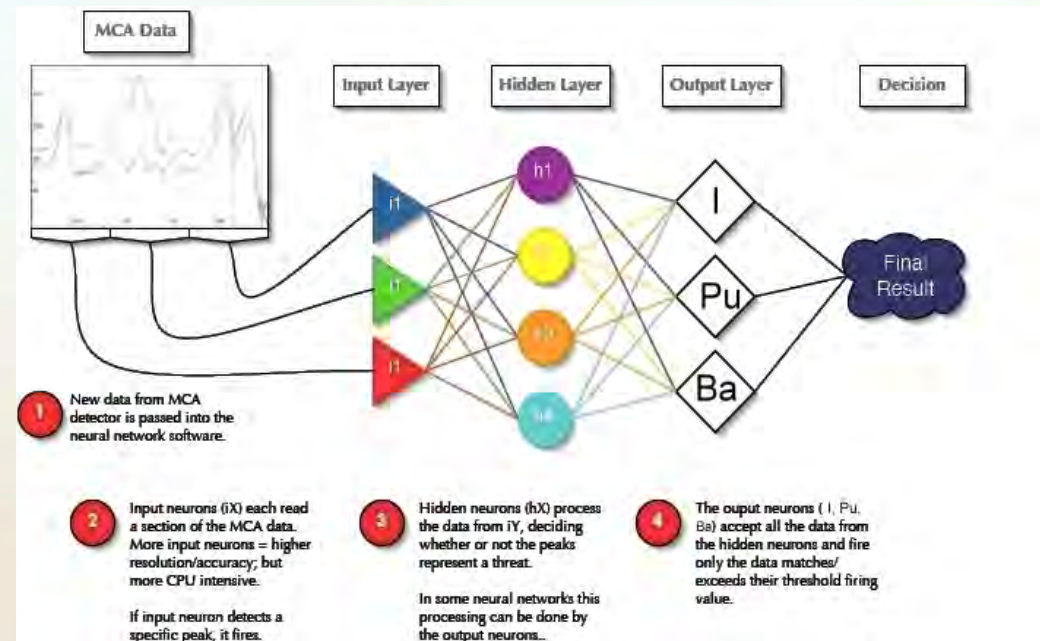
Transfer of DoD Tech into the GWOT

Conclusion:

- The DoD wants to be in the HLS/HLD sector
- The need exists to leverage DoD technology
- The use of private money mitigates the risk
- Tech transfer and commercialization creates value
- This process can speed tech to the Warfighter

Adapting To The Realities Of The Global War On Terrorism

Lieutenant General Joseph L. Yakovac, Jr.
Military Deputy to the
Assistant Secretary of the Army
(Acquisition, Logistics and Technology)
15 June 2005

Ways That Help Adapt To The Realities:

:01 Supplementals, Supplementals, Supplementals, …!

:02 Operational Needs Statements Vice The JCIDS Process.

:03 Access To Infrastructure Within The Theater.

:04 Time (Not Always Adequate) To Integrate Solutions, Minimally Test, And Train To Use Prior To Deployment.

:05 Acceptance Of Contractor Support Throughout The Theater.

:06 Supply Chain Able To Support New / Low Density Capabilities.

When **:01** Goes Away – Then What?

PEO Ammunition

Joint Lethality

14 June 2005

Presented by:
Matthew Zimmerman
Associate PEO Ammo
Industrial Base
Matthew.zimmerman1@us.army.mil

Hooah!
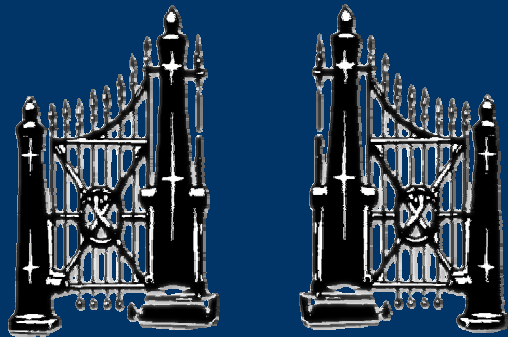
PEO Ammo Organization
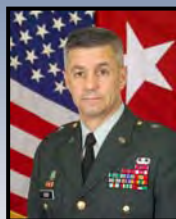
PEO Ammunition

BG Paul Izzo   PEO
Mr. James Sutton   DPEO

PEO Staff

Washington DC Staff

Industrial Base
Matt Zimmerman
APEO Ammo, Ind Base

Close Combat Systems

COL Jack Koster   PM

Combat Ammo Systems - Indirect Fire

COL Nate Sledge   PM

Maneuver Ammo System - Direct Fire

COL Mark Rider   PM

Joint Services

COL Jeff Gwilliam   PM

Networked Munitions/ Munitions / Countermine

Demolitions / Non-Lethal

Mortars

Excalibur

Large Caliber

Medium & Small Caliber

DEMIL

PEO Ammo
Industrial Base Management

➤ General Responsibilities:

- ✓ Develop and Maintain an Overarching Ammunition Industrial Base Strategic Plan.

- ✓ Plan, Program, Budget and Manage the Production Base Support Program to Sustain GOCO Army Ammunition Plants:
  - **Industrial Facilities**
  - **Maintenance of Laid-away Industrial Facilities**
  - **Layaway of Industrial Facilities**
  - **Armament Retooling and Manufacturing Support (ARMS)**

- ✓ Plan, Program, Budget and Manage RDTE PE605806, Munitions Standardization, Effectiveness and Safety-Project 859: Life Cycle Pilot Process.

- ✓ Perform Industrial Base Preparedness Planning: 200+ End Items

- ✓ Environmental Management & HQDA Heavy Metals Charter Execution

- ✓ Execute Public Law 105 -261, Section 806, Procurement of Conventional Ammunition.

DOD 5160.65 & 5160.68; AR700-90

Manage and Invest in a Production Base to Ensure an Adequate Production Base is Available to Meet the Military Services' SMCA requirements.

Ammunition Industrial Base

Current State

- ~90-95% of SMCA PAA Resources to Commercial Sector
- Gov Owned AAPs Oversized and Underutilized
  - 5 of 11 GOCO AAPs Less Than 15% Utilization
- Sec Army Mar 2003 Direction:
  - No AAP Consolidation or Divestiture Outside BRAC Process
- Production Base Support Investment Down 84% Since 1990
  - GOCO Equipment At or Approaching Useful Life
- Supply Chain State:
  - 300+ Single Point Failures
    - 27 Foreign
    - 175 DODICs w/ Critical SPFs
  - Financial Viability of Several Commercial Suppliers Under Pressure

Transformation

- **Implementing an Overarching Strategic Plan**
- **Integrating Ammo Production & Logistics Industrial Bases**
  - **Goals:**
    - **Balance Industrial Base & Acquisition Risk**
    - **Transform to Meet Current and Future Requirements**
    - **Incentivize Industry to Reinvest**
    - **Modernize Capacity**
    - **Operate Effectively and Efficiently**

Single Manager for Conventional Ammunition (SMCA)

Industrial Base Strategic Plan: 2015

3 November 2003
(Updated November 2004)

Program Executive Office Ammunition
SFAE-AMO
Picatinny, NJ 07806-5000

4

Ammunition Organic Industrial Base
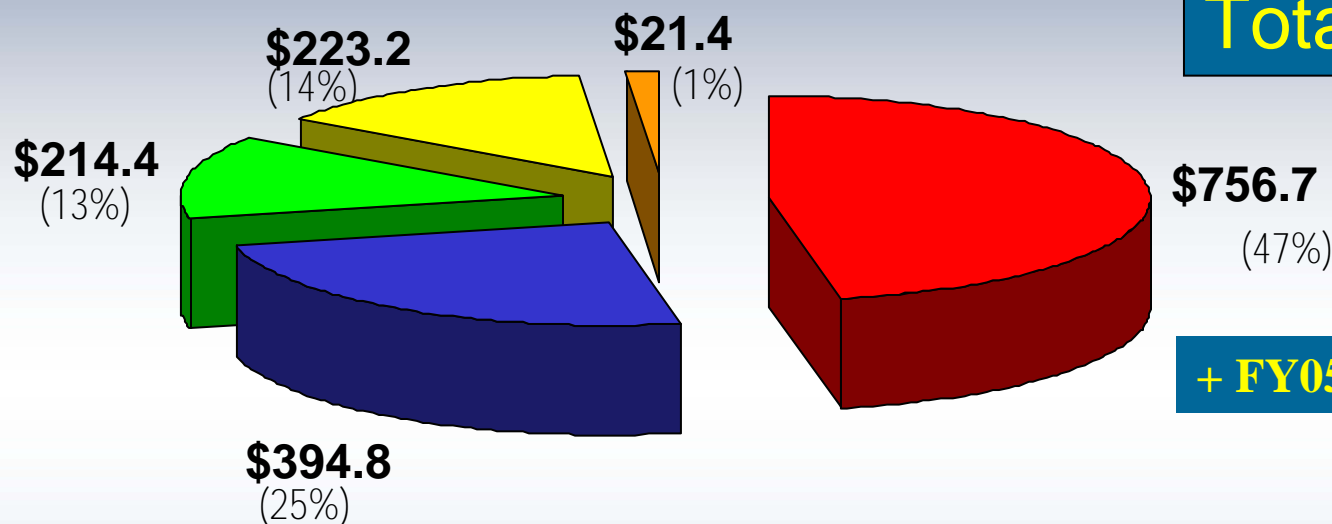
Lake City AAP [1]

Tooele AD [2]

Iowa AAP [1]

Crane AAA [2]

Letterkenny Munitions Ctr [2]

Scranton AAP [1]

Hawthorne AD [1]

Riverbank AAP [1]

Radford AAP [1]

Blue Grass AD [2]

Kansas AAP [1]

Holston AAP [1]

Mississippi AAP [1]

McAlester AAP [2]

Pine Bluff Arsenal [2]

Milan AAP [1]

Louisiana AAP [1]

Lone Star AAP [1]

Anniston Munitions Ctr [2]

BRAC05

Red River Munitions Ctr [2]

Note: (1) GOCOs
(2) GOGOs

FY 05 PEO-Ammo RDTE

$57.1 **(16%)**

$28.3 **(8%)**

Total: $349.4 M

$76.9 **(22%)**

$187.1 **(54%)**

- 🟦 PM Combat Ammunition Systems
- 🟨 PM Joint Services
- 🟥 PM Maneuver Ammunition Systems
- 🟩 PM Close Combat Systems
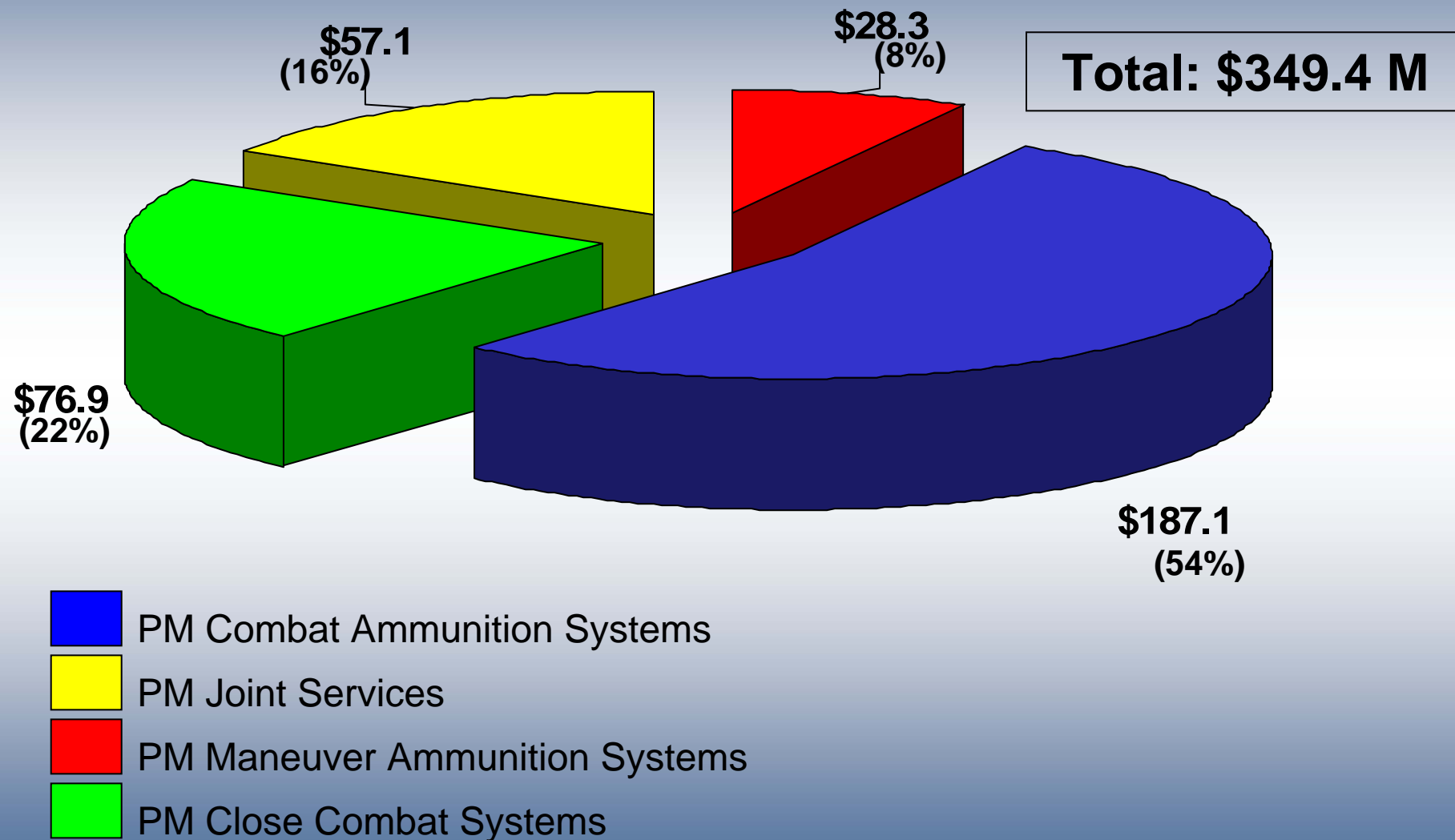
Procurement of Ammunition, Army-
Activity 2, Production Base Support Funding

FY05 Supplemental

Cong Adds
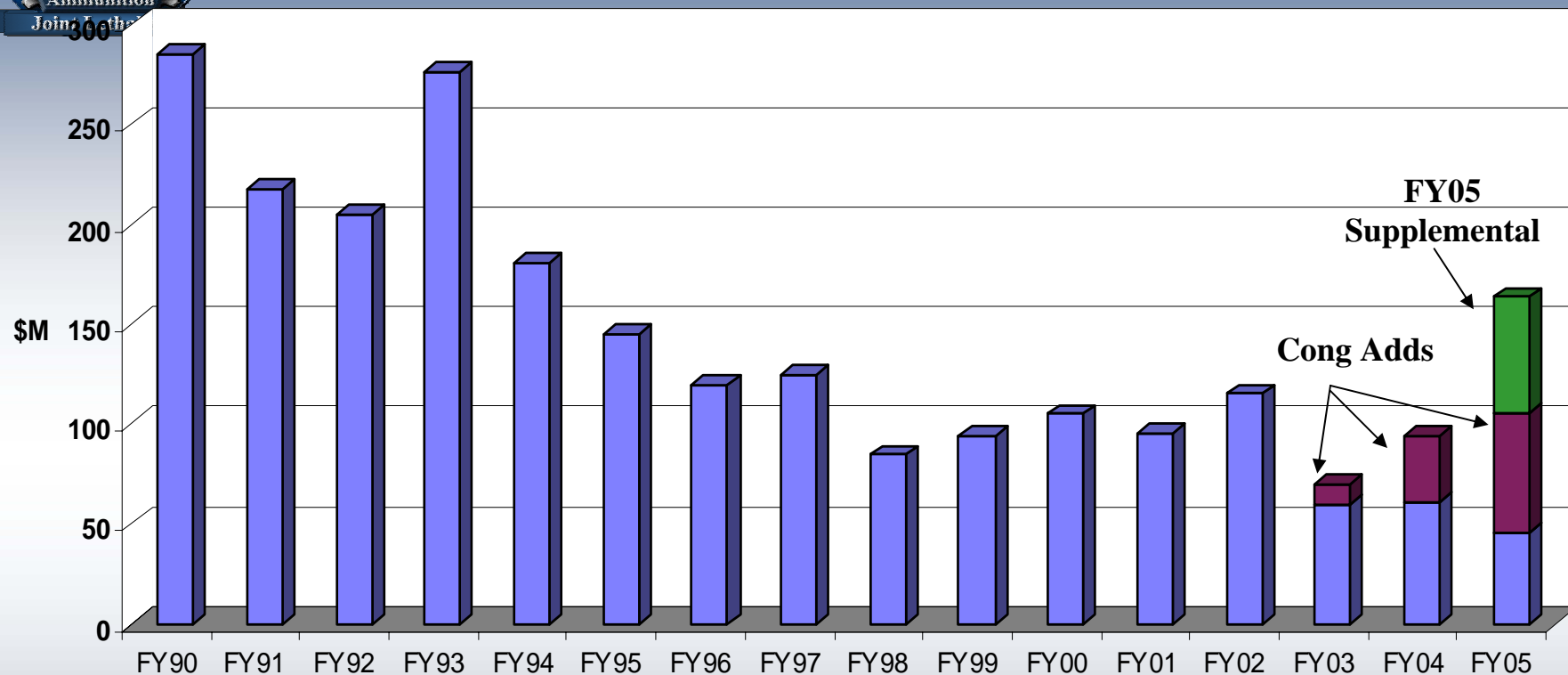
APE		FY05	FY06	FY07	FY08	FY09	FY10	FY11
1200	Industrial Facilities	$ 34.270	32.56	33.02	36.34	37.26	34.11	35.08
	Congress Add	$ 59.670						
	FY05 Supplemental	$ 57.800						
	Subtotal	$ 151.740						
1500	Maintenance of Inactive Facilities	$ 4.730	5.00	4.93	4.35	4.55	4.48	4.49
2000	Layaway of Industrial Facilities	$ 2.310	0.35	3.27	3.59	5.46	9.96	10.12
2500	Armament Retooling & Manuf Supp	$ 4.743	2.75	2.77	2.94	3.01	3.14	3.18
	Total IF, MIF, LIF and ARMS	$ 163.523	40.66	43.99	47.22	50.28	51.69	52.87

Ammunition Procurement Projection by Categories

FY02-FY07 PAA Budget

SUPPLEMENTAL FUNDING INCLUDED

Legend:
- Prod Base
- Other/Misc
- Rockets
- Mines
- Arty Fuzes
- Arty Ammo
- Tank
- Mortars
- Small/Med

$Thousands

Y-axis: $0, $500,000, $1,000,000, $1,500,000, $2,000,000, $2,500,000

X-axis: FY02, FY03, FY04, FY05, FY06, FY07
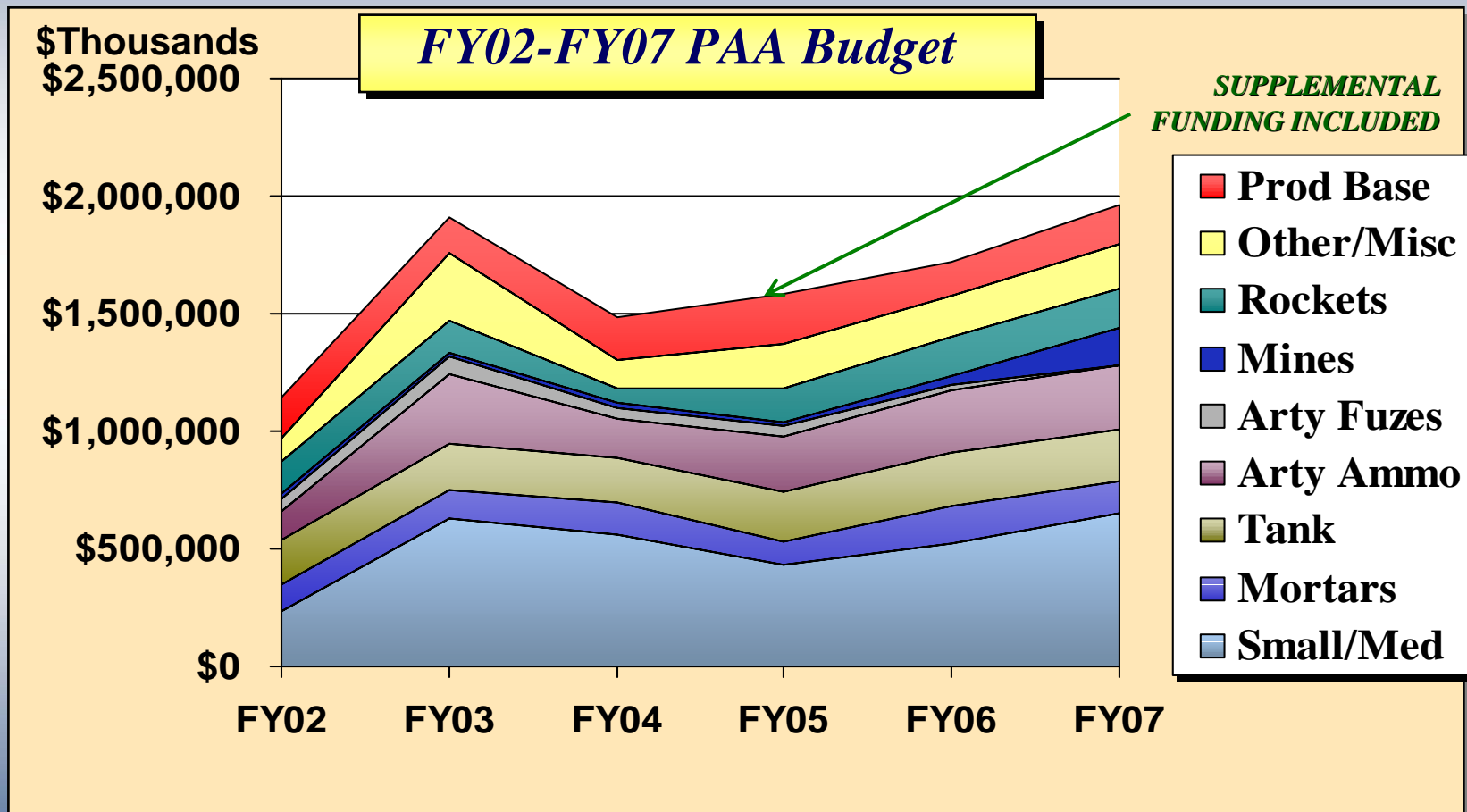
RDTE PE605805, Munitions Standardization, Effectiveness and Safety:
Project 859 –Life Cycle Pilot Process
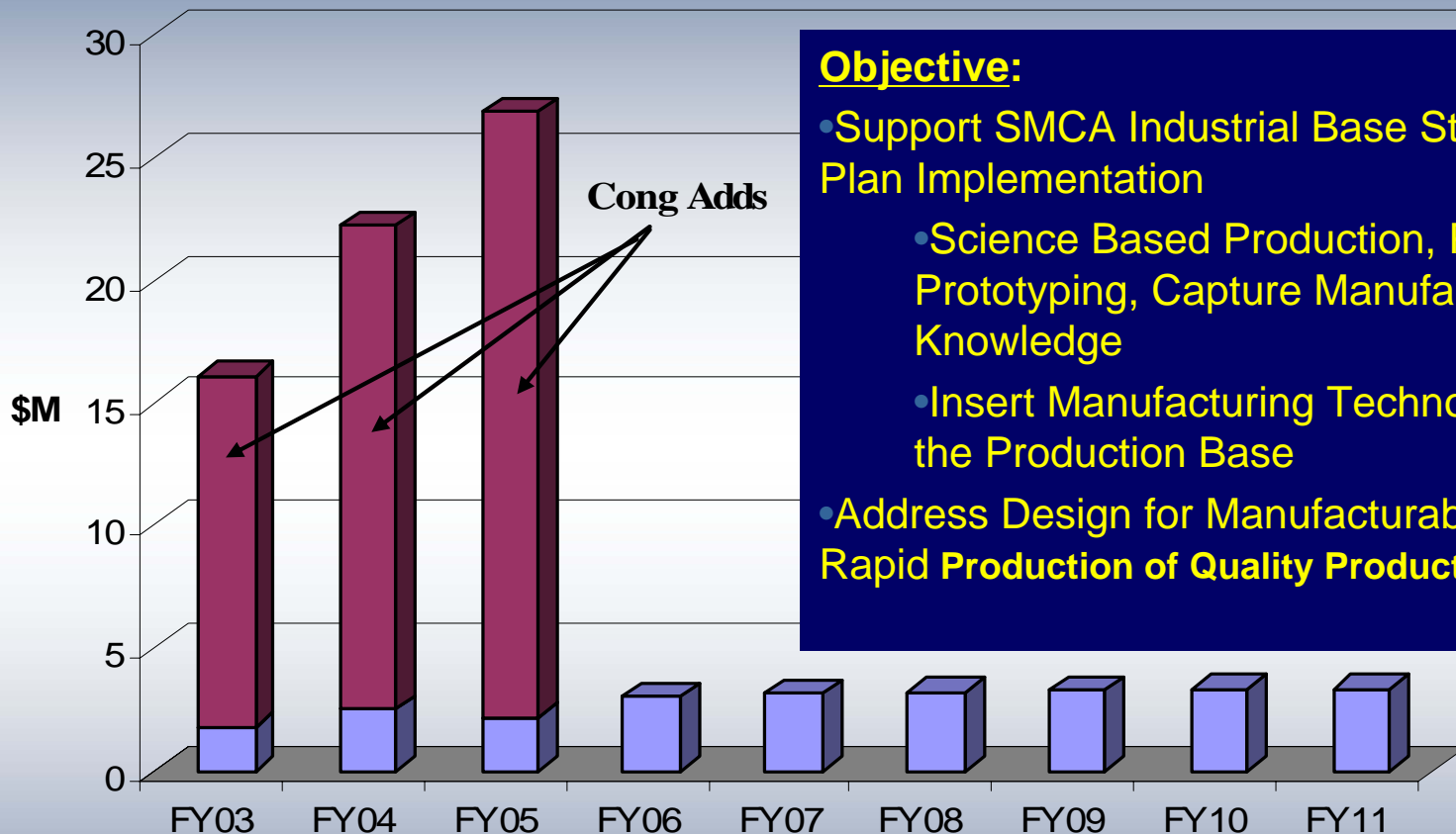
Objective:
- Support SMCA Industrial Base Strategic Plan Implementation
  - Science Based Production, Pilot Prototyping, Capture Manufacturing Knowledge
  - Insert Manufacturing Technology into the Production Base
- Address Design for Manufacturability & Rapid **Production of Quality Products**

Cong Adds

PE605805	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11
Proj 859, LCPP	1.764	2.474	2.164	3.028	3.139	3.195	3.252	3.304	3.359
Congressional Plus-Up	14.3	19.75	24.7						
Total	16.0	22.2	26.9	3.0	3.1	3.2	3.3	3.3	3.4

BRAC 05 AAP Recommendations

Implementation: Initiate Within 2 Yrs; Complete by 6 Yrs

Close / Relocate To:	Rock Island Arsenal	Iowa	Milan	McAlester	Crane
Riverbank	➢Artillery Cartridge Case Metal Parts				
Kansas		➢105MM/ 155MM HE ➢Missile Warhead	➢155MM ICM Artillery ➢Mortar 60/81/120MM	➢SFW ➢Cluster Bomb ➢Missile Warhead	➢Detonators/ Relays/ Delays
Mississippi	➢155MM ICM Artillery Metal Parts				
Lone Star		➢Mines ➢Detonators/ Relays/ Delays	➢105MM/155MM Artillery ICM ➢MLRS Artillery ➢Hand Grenades ➢60MM/81MM Mortar	➢Storage and Demilitarization Functions	➢Demolition Charges

Armament Retooling & Manufacturing Support (ARMS)

$30M Annual Revenue

Thrust: Offset Army Cost of Ammo Plant Operations

How Does It Work?

Army Incentive Funds for Infrastructure Improvements

Market Army Idle Capacity

Commercial Agreements with Tenants

Tenant/Private Investments

Site Manager

State & Local Funding

State & Local Economic Dev Agencies

Reduced Army Ownership & Production Costs

Services & Reduced Overhead

Facility Agreeme

$290M in Savings to Date
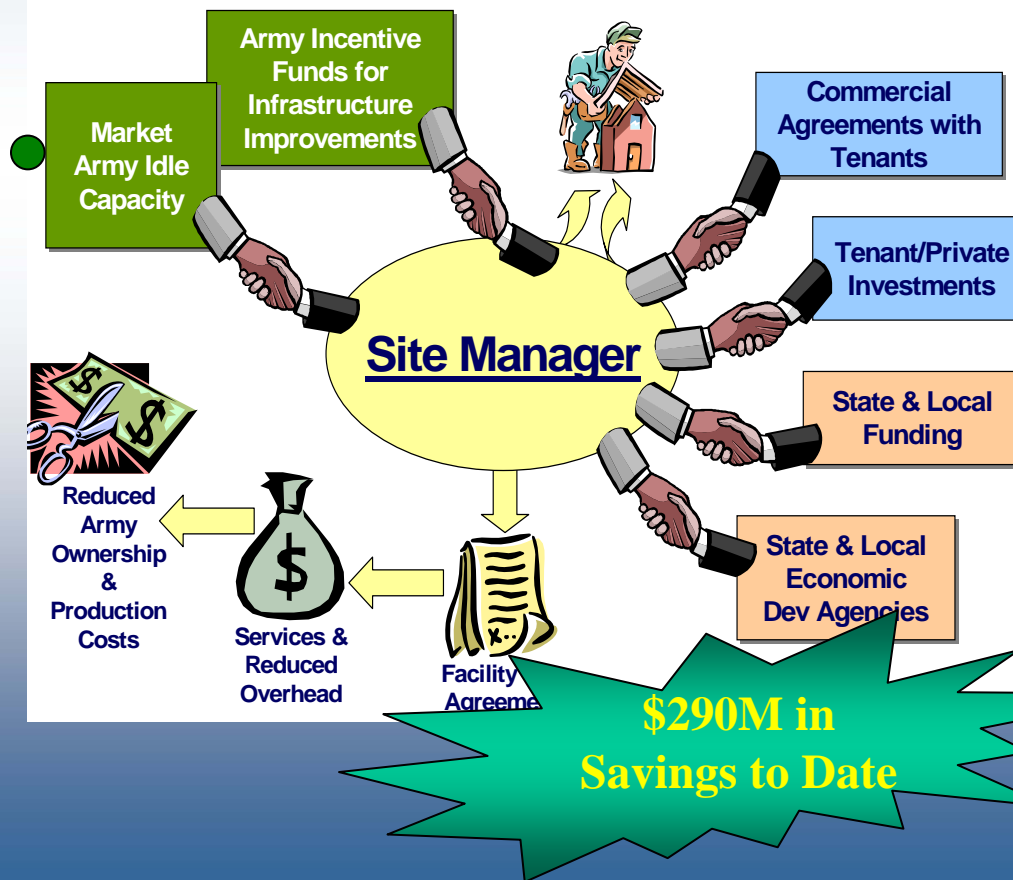
Reduce Ownership Costs

Make Facility Self-Sustaining

Recognize Facilities as Assets

Reduce Product / Operating Costs

Allow Marketplace to Work

Reduce Environmental Costs

Reduce Future Liabilities

Increase Readiness: Retain Skills; Gain Facility & Infrastructure Upgrades

13

Industrial Base Strategic Plan

Section 806 Summary

FY04 Actual Procurements

FY05 Planned Procurements

FY04 Actual Procurements pie chart:
- 41 — $1807.6M
- 27 — $379.8M
- 30 — $896.6M
- 66 — $1914.4M

FY05 Planned Procurements pie chart:
- 23 — $795.2M
- 75 — $987.0M
- 27 — $755.8M
- 14 — $175.5M

Actual FY04 Section 806s

USA	69	$3329.3M
USN	25	$351.2M
USMC	20	$117.9M
USAF	1	$1200.0M
TOTAL	*115*	*$4,998.4M*
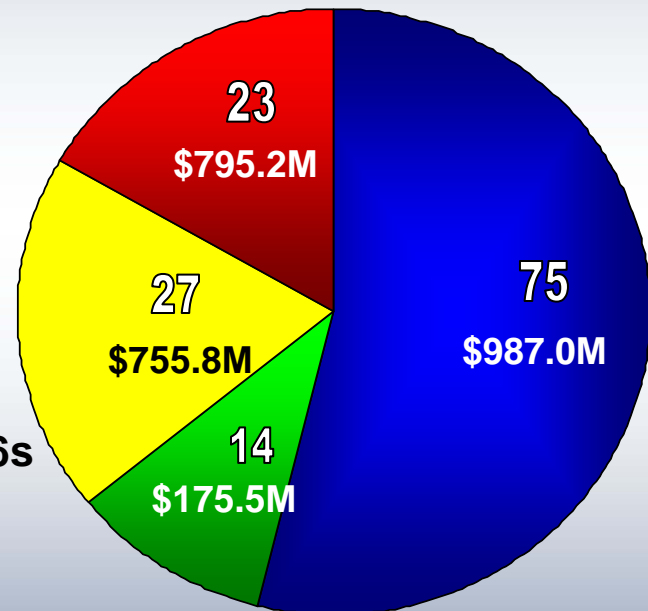
Planned FY05 Section 806s

USA	62	$1377.5M
USN	12	$469.9M
USMC	7	$35.2M
USAF	57	$831.0M
TOTAL	*138*	*$2,713.5M*

PEO Ammo Delegated Section 806 Authority Nov 02

Competition Limited to the NTIB   **Full and Open**

Sole Source   **Small Business Set Aside**

SMCA Conventional Ammo End Item & Component Risk List (June 05)
(Section 806 Watch List)

Critical Risk	At-Risk
Batteries, Liquid Reserve	Bomb Bodies
Batteries, Thermal	Cartridge Cases, Metal-Medium Caliber
Black Powder	Dyes, Specialty
Cartridge Cases, Combustible	Explosively Loaded Components (E.g., Detonators, Primers, Bursters)
Fuzing	Metal Parts, Medium Caliber
Explosives	Sabot, Composite
Illuminating Candles	White Phoshporous
Infrared Flares	
Load, Assemble and Pack (LAP) for Explosively Filled Ammunition	
Magnesium, Atomized/Ground	
Metal Parts, Large Caliber	
Nitrocellulose	
Penetrators, DU & Tungsten	
Propellants	

Critical Single Point Failures Snapshot:
~50 % of SPFs Mitigation Strategies Defined

PEO	PM-MAS	PM-CAS	PM-CCS

PM-CCS:
- •300+ Single Point Failures
  - • 80 Critical SPFs

PM-MAS:
- ✓ **Small & Med Cal Propellants**
- ✓ **Small Cal Ammo**

PEO:
- ✓ **Atomized Mag (AM)**
- ✓ **Black Powder (BP)**

PM-CAS:
- ✓ **Laminac Adhesive**
- ✓ **Batteries**
- ✓ **Mortar Smoke**
- ✓ **TFE Lubricant**
- ✓ **Electronics & LCDs**
- ✓ **Fuzing**
- ✓ **Chemicals**
- ✓ **Projectile Bodies**
- ✓ **Grenade Bodies**
- ✓ **Combustible Mortar Cases**

  -3-

- ✓ **TNC**
- ✓ **Propellants M110 / M9**

  -3-

- ✓ **Cotton Linters**
- **Propellant M30**
- **Burster Tubes**

PM-CCS:
- ✓ **CM Flare**
- ✓ **C70 Det**
- ✓ **Laminac Adhesive**
- ✓ **HHS Seals**
- ✓ **M18 Smoke Dyes**

- ✓ **Grenade Fuzing**

PM-MAS:
- ✓ **Links**
- ✓ **Cotton Linters**

PEO:
- ✓ **VAAR**
- ✓ **Polysulfide**
- ✓ **TNT**
- ✓ **Lead Azide**
- ✓ **C4 Tag Agent**
- ✓ **RDX**
- ✓ **NC**
- ✓ **Cotton Linters**

Mitigation Status
- ● **In Planning**
- ● **Funded & In Mitigation**
- ● **Risk Mitigated**

CTG 120MM MRTR ILLUM M930 (C625)

Loaded Components | **Artillery Caliber**
Pyrotechnics | **Navy Gun**
Rockets,Warheads

Crane AAA
(Crane, IN)
Illum Candle

FASCAM | **Artillery Caliber**
Navy Gun

SCAAP
(Scranton, PA)
Shell Body

Junghans Feinwerktechnik
(Shramberg, Germany)
Fuze MTSQ,M776

Demo,Grenades,Mines | **Artillery Caliber**
Pyrotechnics | **Navy Gun**
Cannon Caliber

Pine Bluff Arsenal
(Pine Bluff, AR)
LAP

Tank | **Propelling Charges**

Armtec Def Products Inc
(Coachella, CA)
Increment Cntr f/M234

North American Aerodynamics
(Roxboro, NC)
Parachute Assy

Demo,Grenades,Mines | **Artillery Caliber**
Rockets,Warheads | **Fuzes**
Cannon Caliber

Pocal Industries Inc.
(Moscow, PA)
Ignition Ctg M1020

Demo,Grenades,Mines
Rockets,Warheads

GD-OTS
(Marion, IL)
Prop Charge M234

GD-OTS
(St. Marks, FL)
Prop WC 863 [Prop M47]

Lockheed Martin
(Archibald, PA)
Fin Mortar Ctg M31

- Commercial
- Government Owned
- Other Families by Producer
- Component In Other Families

Summary: Item has 8 main components, 8 producers operating in 6 states and 1 foreign country.

Family: Mortars

Base Capability Constraints:

➢ **Current fuze producer is a foreign source.**

Summary

Cost Effective & Executable

- **Ammo:**
  - **Reliable**
  - **Accurate**
  - **Lethal**

- **Industrial Base**
  - **Responsive**
  - **Adaptable**

- **Ind Base Management:**
  - **Ind Base Office**
  - **Section 806**
  - **Strategic Plans**
  - **Integrated Supply Chain Management**
  - **Integrated Data Environments**
  - **Manufacturing Tech Insertion**
  - **Single Pt Failures**

PEO
Ammunition
Joint Lethality