



Precision Guided Mortar Munition

XM395 PGMM

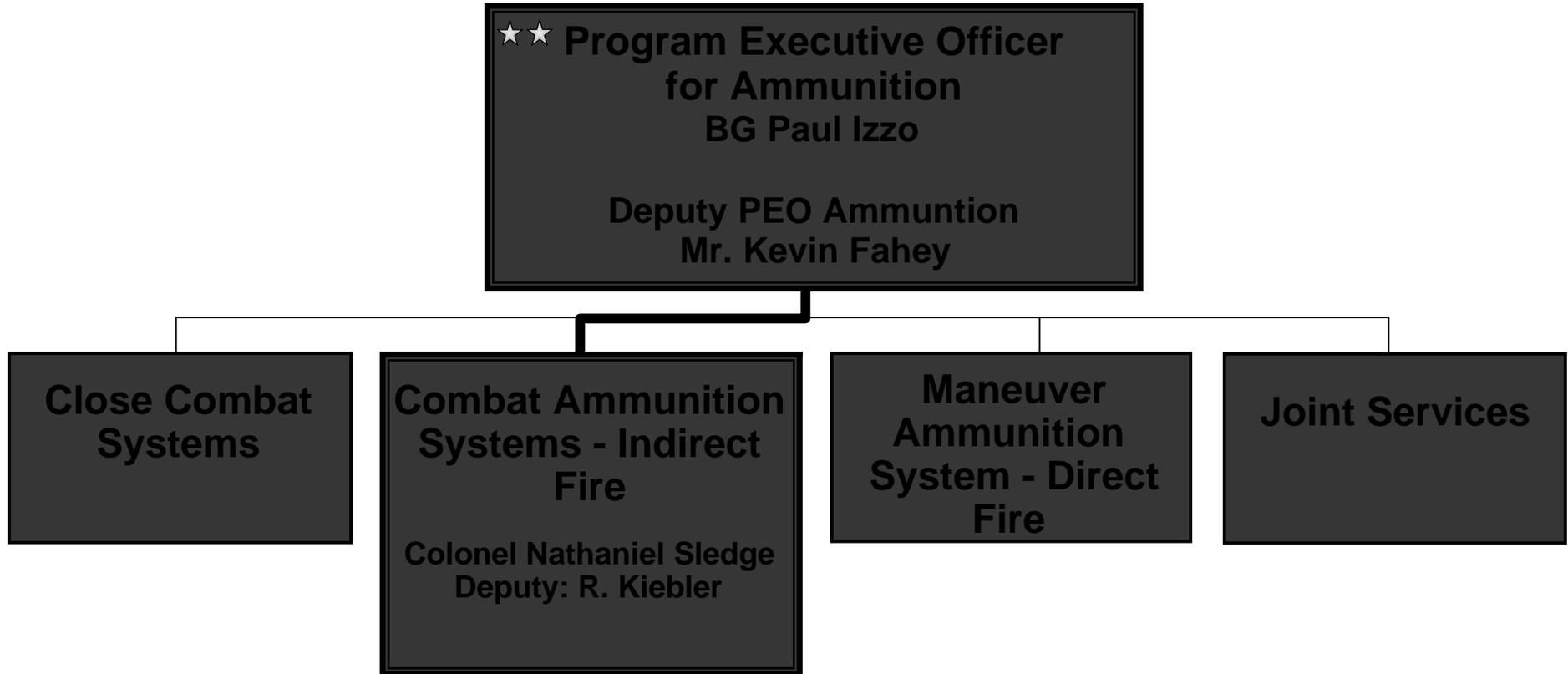
International Armaments
Technology Symposium
16 June 2004

Pete Burke
Office of the Product Manager for Mortar Systems

Agenda

- Organization
- Requirements
- Compatibility (Interoperability)
- Training

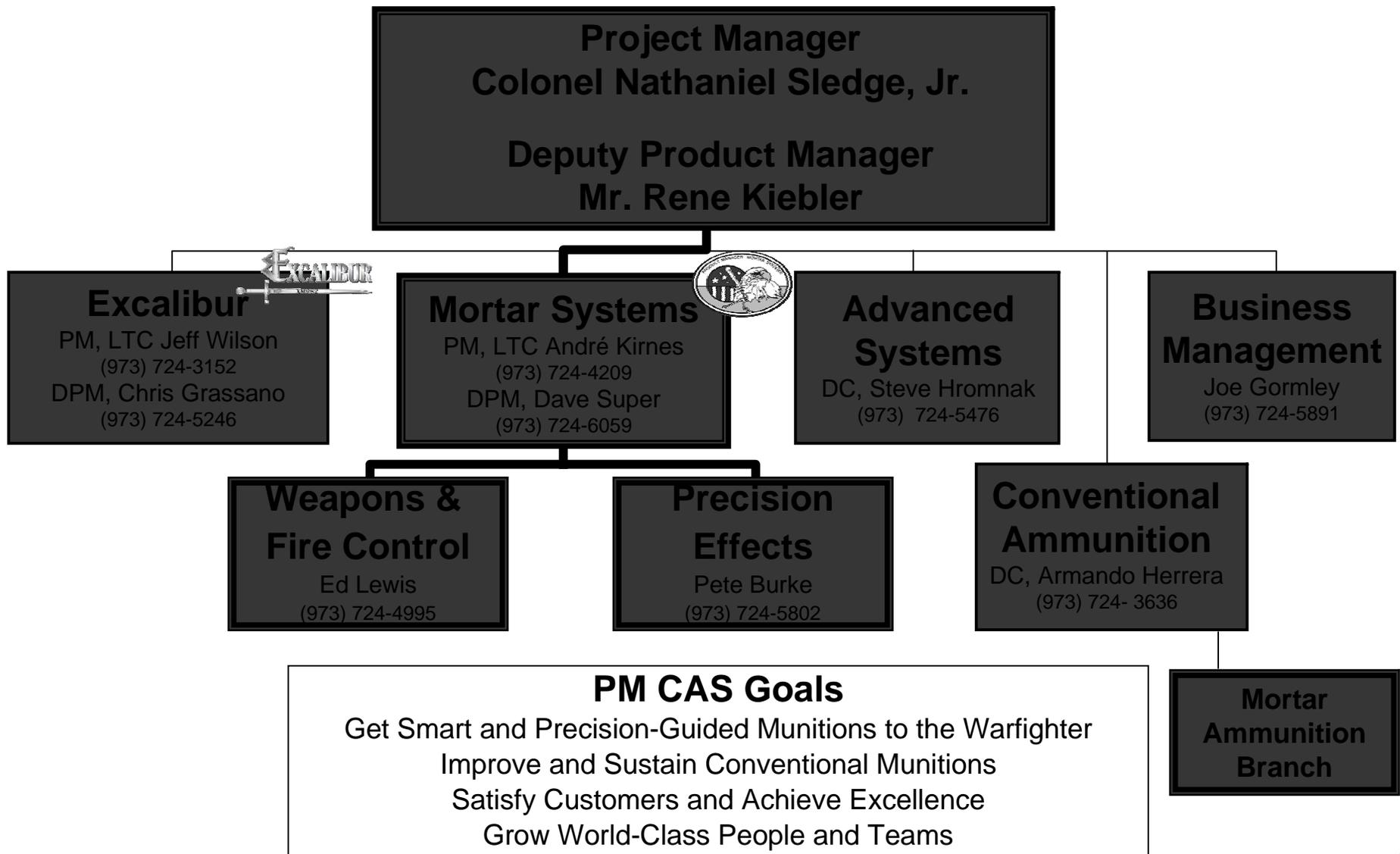
PEO Ammunition



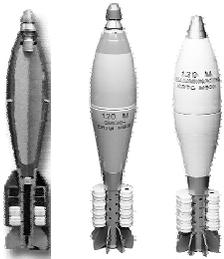
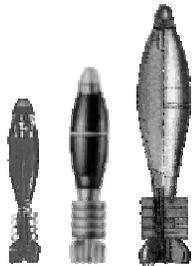
Mission:

Deliver Conventional and Leap-Ahead Munitions
Combat Power to Warfighters

PM Combat Ammunition Systems



PM Mortars



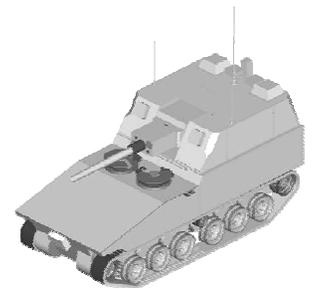
Mission

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**



Systems Approach



Mortars: Responsive Indirect Fire for Close Combat



That was then ...



Mortars: Responsive Indirect Fire for Close Combat



This is now !



Transforming Army Indirect Fires



Networked through Battle Command
Fully Interoperable with Joint systems
Mobile (Strategic and Tactical)



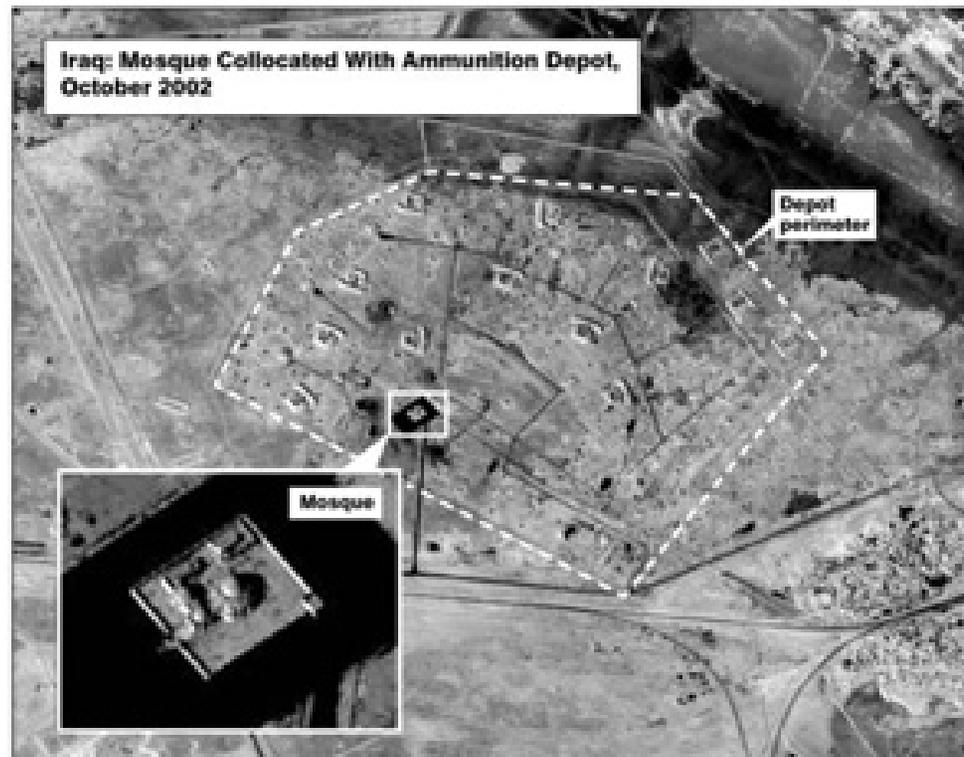
Responsive & Integrated with Maneuver
Lethal (through precision and volume)
Precise Effects with Area Options
Reduced Sustainment
Ability to Mass Effects
24/7, All-Weather, All-Terrain

Challenges
Strategic Deployability
Networked Capability (C4)
Tactical Mobility
Target Location (ISR)
Accuracy / Rate of Fire
Precision Munitions

To achieve **Destructive, Suppressive** and **Protective** effects
while **minimizing collateral damage**
taking advantage of **emerging technology**

Trends in Rules of Engagement (ROE)

- **Minimize Collateral Damage to Protect . .**
 - Non-combatants
 - Religious and Cultural Landmarks
 - Socio-Economic Infrastructure (METT-TC Context)
- **Minimize Unexploded Ordnance**



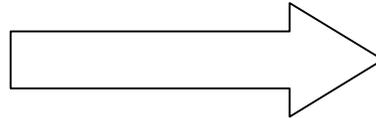
Threat Trends

- **Asymmetric/Paramilitary**
- Use **Nonrestrictive** Rules of Engagement
- Seeks Cover in Reinforced Structures, Bunkers, and Vehicles near **politically sensitive targets**
- Execute **widely dispersed**, often well equipped, small unit operations
 - **Non-linear** battlefield
- Interspersed with **Noncombatants**
- Seeks Sanctuary in Urban and **Complex Terrain**
- Exploits Terrain and Geography
- Possesses **Electronic Countermeasures**
- Intentionally **use civilians** as obstacles
- Capitalize on **media's** response to U.S. military power



Mortar Ammunition Growth Plan

Current



Future

- 3 families of Ammunition (120mm, 81mm, 60mm)
- Highly Flexible
 - Suppression, Obscuration, Illumination
- Area Weapon – Large CEP
- Drop Fired
- Multi-Option, Hand Settable Fuzing
- Max Range 7,200 Meters (120mm)

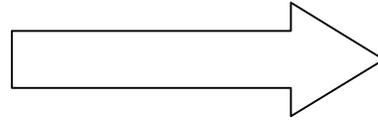


- Adds Precision
 - High Priority Targets
 - Most Dangerous Targets
 - Low Collateral Damage
- Improved Conventional Effects
- Breech Loaded
- Automated Loading/Handling
- Extended ranges (12-15 km)
- Non-Lethal Effects

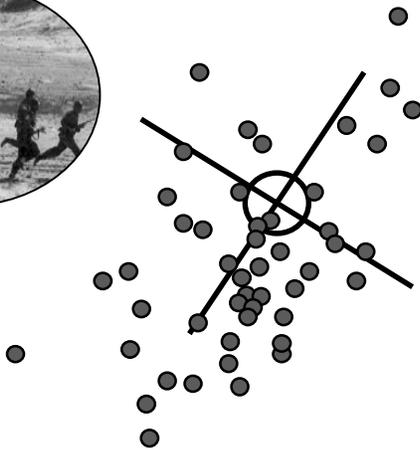
Roles for Mortars are Expanding in Range & Capabilities

Precision Guided Mortar Muniton

Suppression

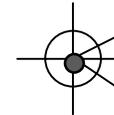
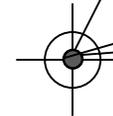
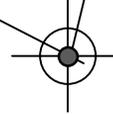


Destruction



High Explosive

- Area Effects
- High Volume Fire
- Defeat Targets in the Open
- Suppress Personnel Under Cover



Precision Guided

- Precision Effects
- 1-2 Rounds to Effect Target
- Incapacitate Personnel Under Cover
- Low Collateral Damage

PGMM gives Battalion Commanders Organic Precision Strike, Destructive Capability

Incremental Development



PGMM →

2004

2010

TBD**

TBD**

	M934A1 High Explosive	XM395 PGMM Increment 1	XM395A1 PGMM Increment 2	XM395A2 PGMM Increment 3
Accuracy	Area Fire*	< 2 rounds	< 2 rounds	< 2 rounds
Range	7.2 km	7.2 km	12 km	15 km
Lethality	High	High	High	High +
Cost	Affordable < \$1K	Affordable \$5 – 15 K	Affordable	Affordable

* 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

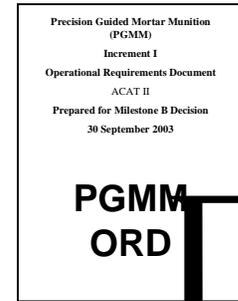
PGMM Requirements

Increment 1

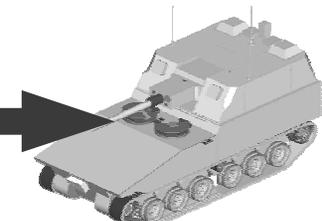
- **PGMM Requirements are Final**, Approved by the Joint Requirements Oversight Council (JROC) on 27 April 04.

- **Key Performance Parameters:**

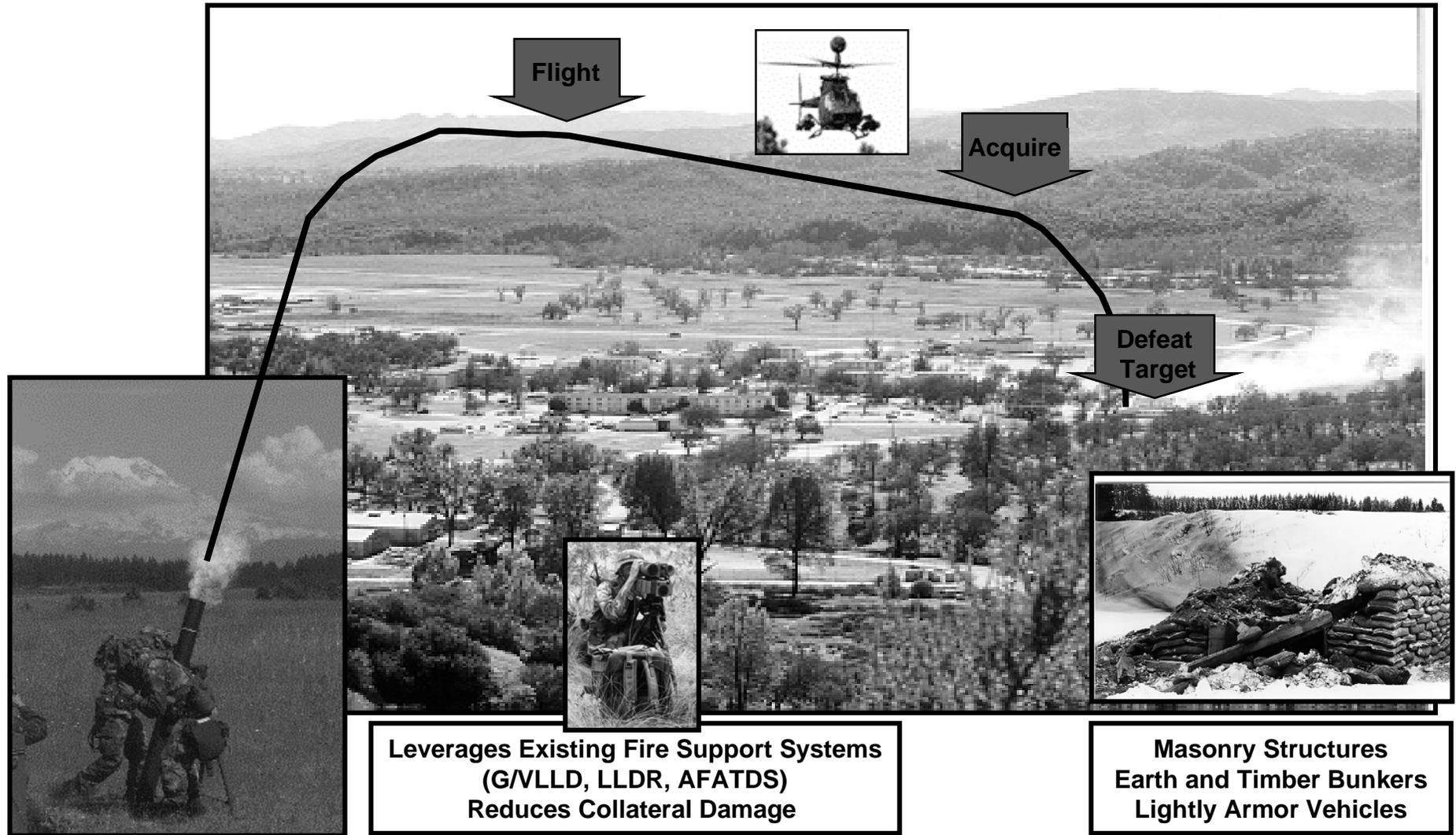
- Incapacitate Personnel protected by Earth & Timber Bunkers, Masonry Structures, or Lightly Armored Vehicles **in 2 Rounds or Less**
- Range: Match current maximum range (Threshold), 10km (Objective)
- **Compatibility (Interoperability):** Work within current / future 120mm weapons, fire support system



Targets:

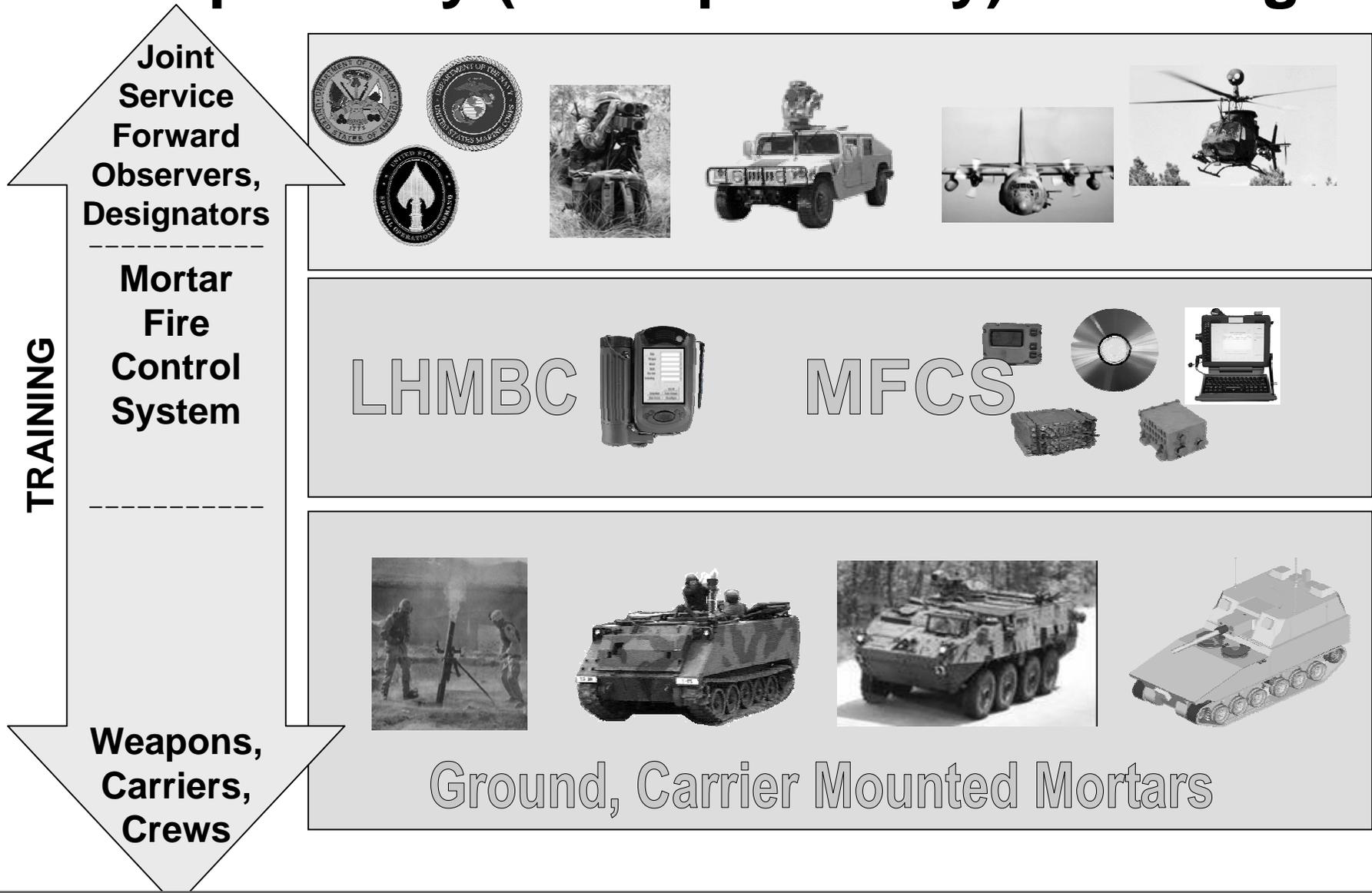


PGMM Operational Concept



PGMM Adds Destructive Capability to Mortars for High Value Targets

Compatibility (Interoperability) Challenge



PGMM Must Communicate with MFCS, Operate within Mortar Environment (transportation, handling, firing), and Guide to Designator's Spot on the Target

Conventional Mortar Training

Live Firing

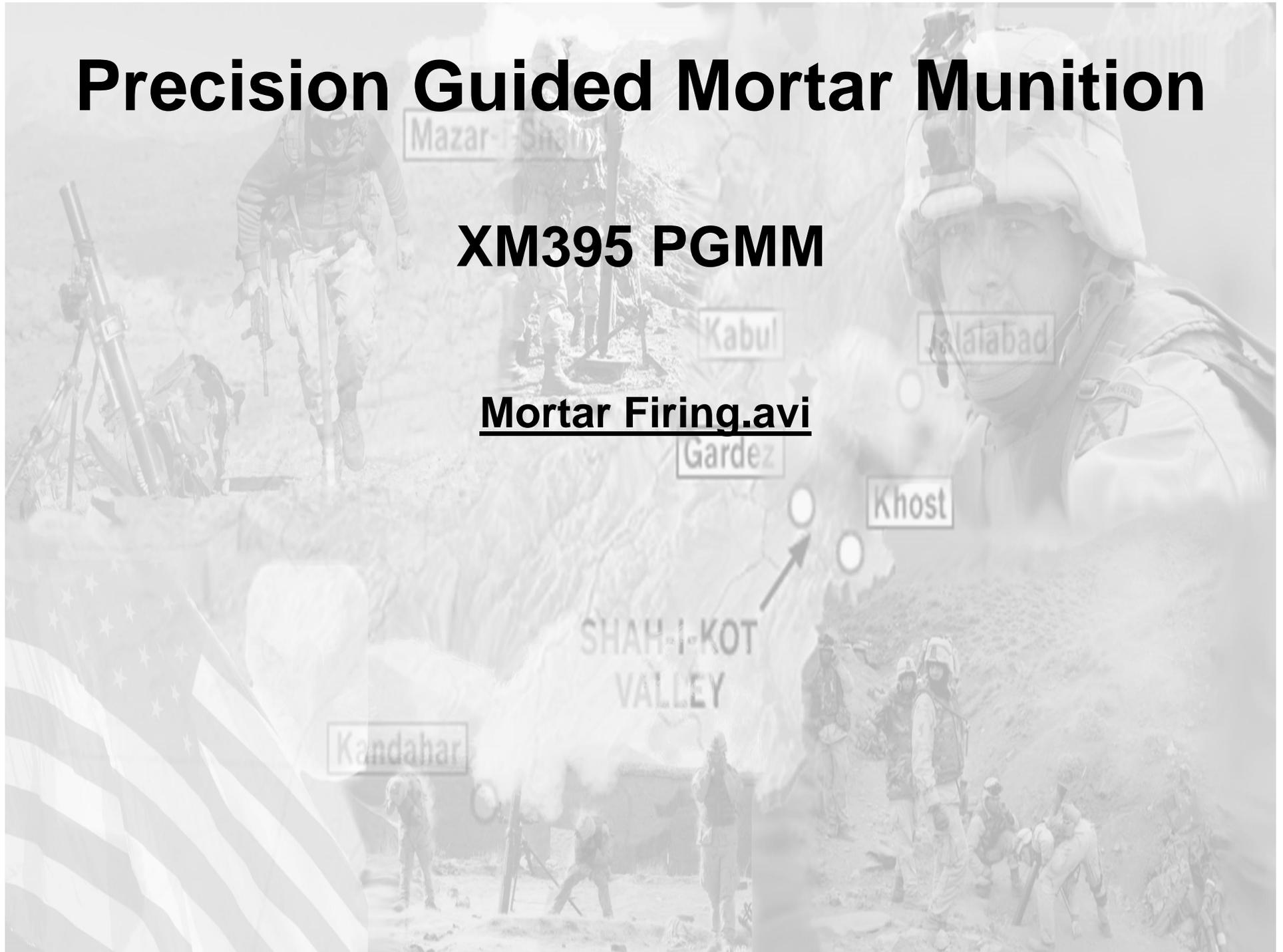


Live Firing Offers Best Training Value for Conventional Ammunition, *but Precision Munitions can't Afford this...*

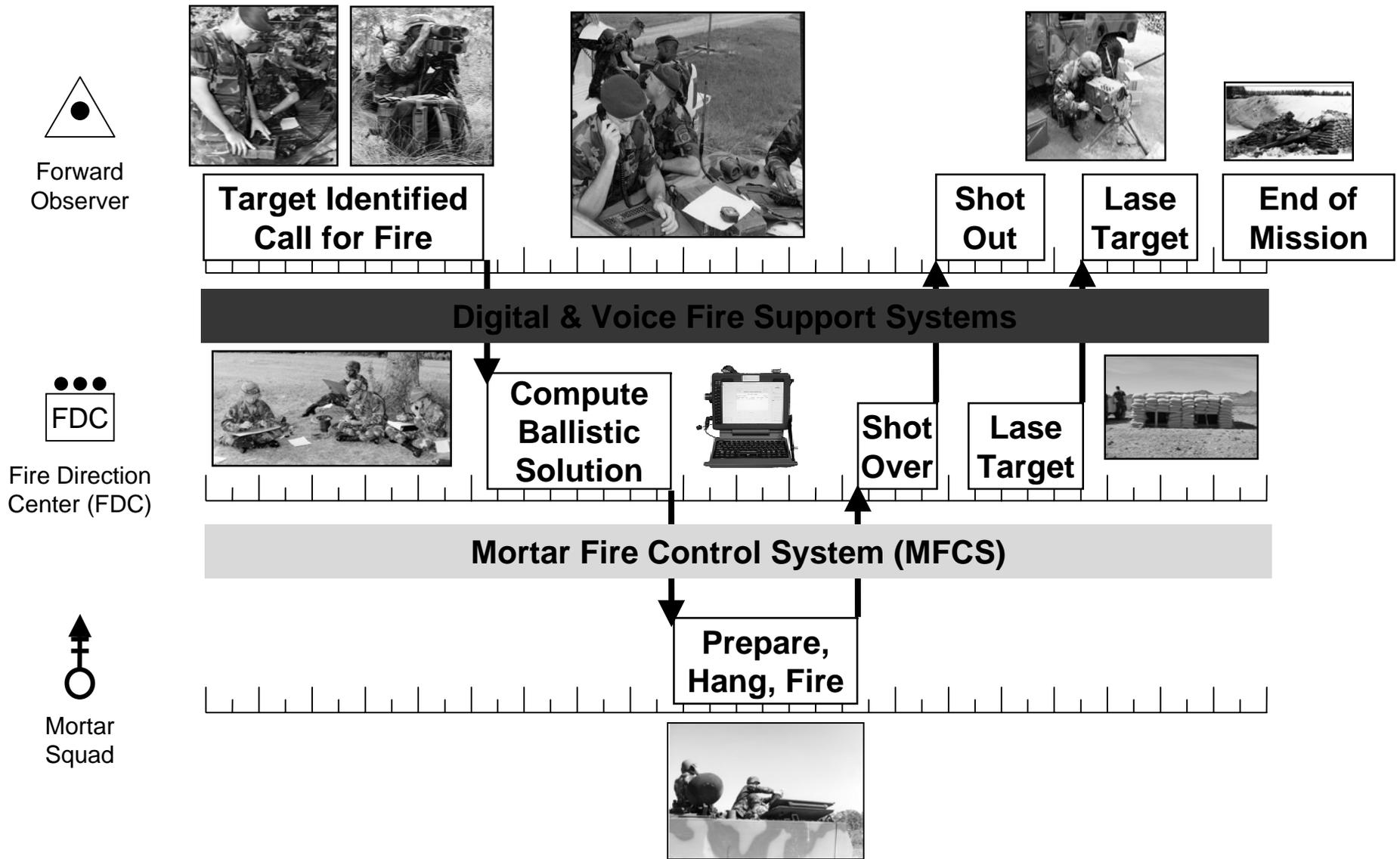
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XM395 PGMM

Mortar Firing.avi



PGMM Mission Thread



Realistic, Affordable Training System required at Each Step in the Process

New Equipment Training (NET) / Institutional Training Requirements



Packaging



Handling



Operations

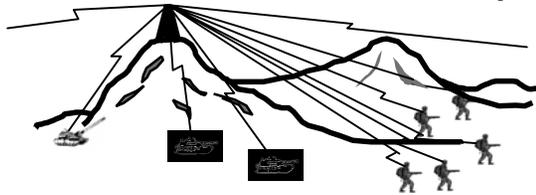
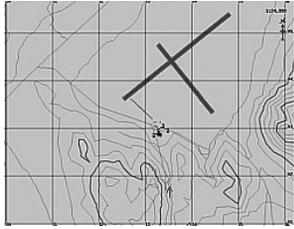
- **Purpose:** Provide an initial transfer of knowledge on the employment and maintenance of PGMM to instructors and Key personnel. New Equipment familiarization Training (NET), Unit, Classroom, Individual and sustainment training.
- **Tasks:**
 - Text / Video Course instruction training material.
 - Update document to include PGMM and operating Tactics, Techniques and Procedures.
 - Develop physical mock up of PGMM for handling, programming, and visual reference.
 - Develop classroom training.
 - Virtual training resources to allowing more complete, effective, and interactive Institutional and sustainment training.

Virtual Training Requirements



- **Purpose:** Use M&S to support and supplement New Equipment Training (NET), Institutional, and Live Collective Training. Early introduction of Training will help Understand Tactics, Techniques & Procedures as well as help shake out design decisions
- **Tasks:**
 - Virtually train Gunner, FDC, and Forward Observer in a closed loop system, for collective unit training.
 - Integrate PGMM Trainer with MFCS Gun & FDC training aids and devices.
 - Leverage GUARDFIST /Call For Fire Trainer (CFFT) to virtually train FO
 - Existing, Fielded PC based virtual trainer
 - Enhancement to add Laser Designation hardware/software now underway at PEO STRI

Collective / Institutional Training Requirements



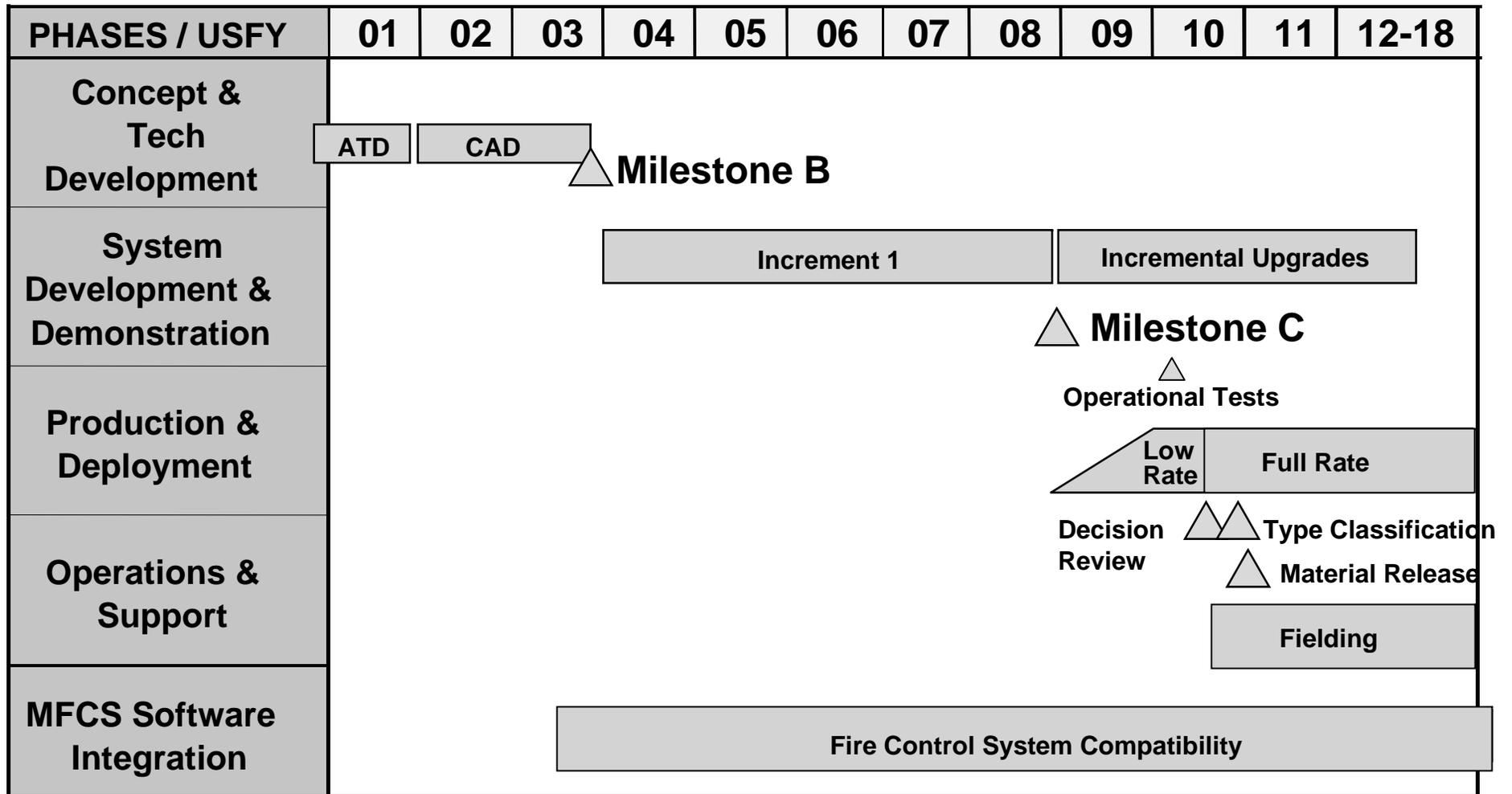
- **Purpose:** Provide a Live / Collective and Combined Arms Training capability at the Combat Training Center (CTC)

- **Tasks:**

- Modify Legacy/Current Training system software
- Develop interface hardware.
- Develop Embedded Training Instrumentation (MFCS).
- Develop Models and Simulations as part of Virtual Training resources to support Live Training.



PGMM Schedule



PGMM Delivered to the Field in US Fiscal Year 2010

Summary

- US Army investing in Precision Munitions for Close Combat (Mortar Systems)
 - Requirements are Approved
 - Program is Fully Funded, Ready to Start
- Result will be Leap Ahead Precision Effects Capabilities for the Maneuver Commander

***5th Annual Mortars Conference October 6-8, 2004
Headquarters Plaza Hotel, Morristown NJ***

Contact Information



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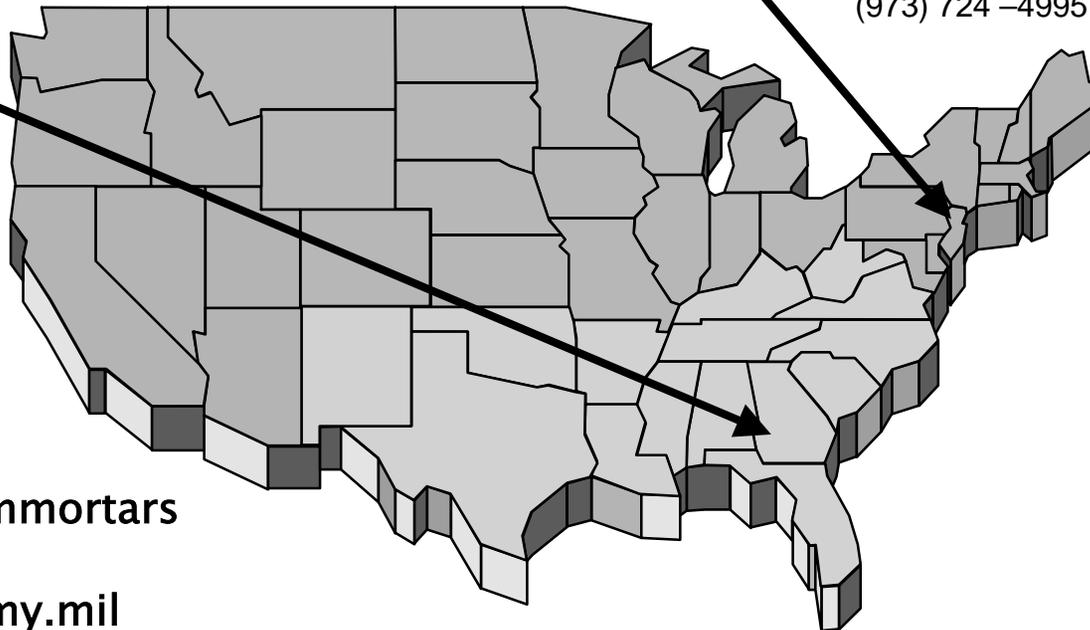
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