PEO Ammunition

12 February 2003

Presented By:
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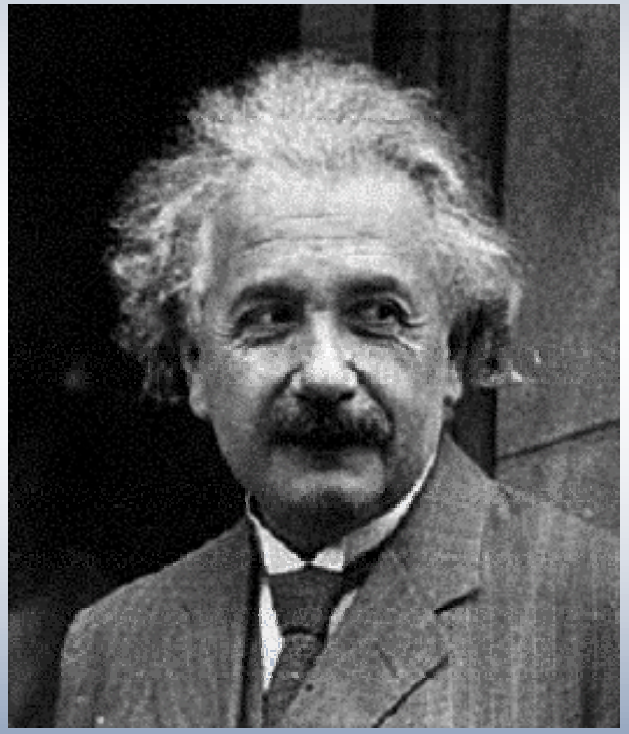
Program Executive Officer, Ammunition

Presented To:
Munitions Executive Summit

GO Jets!!

Thought for the Day …

We cannot solve our problems …

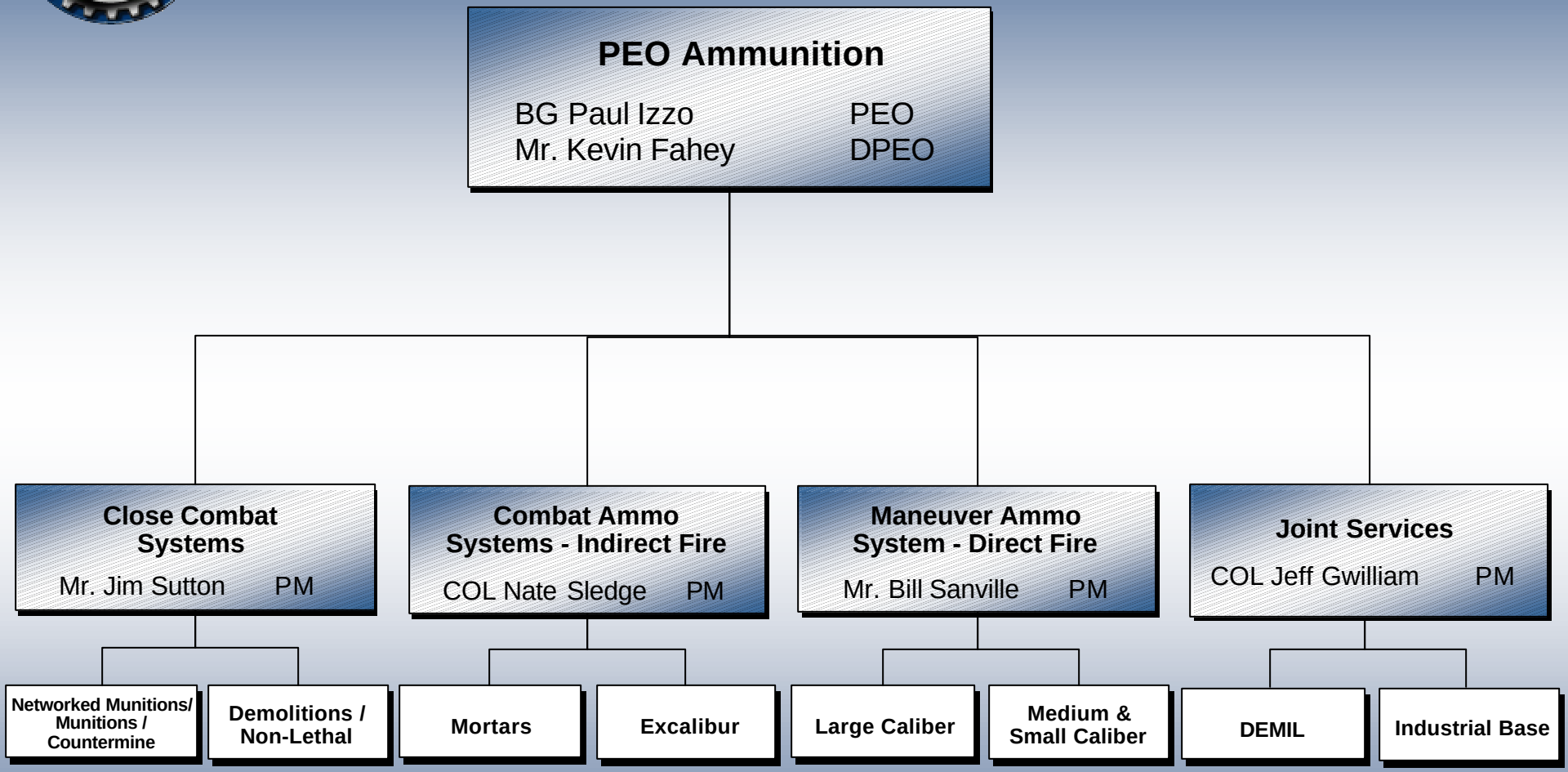


… with the same thinking we used when we created them.

Agenda

- PEO Ammo Vision and Mission
- Management Philosophy
  - ✓ Changing the Way We Do Business
- Products and Services in Support of the Future Force

PEO Ammo Organization



Where PEO Ammo Programs Came From

PEO GCS **$ 375.911M**
- PM ARMS
- PM TMAS
- PM Crusader (MACS)

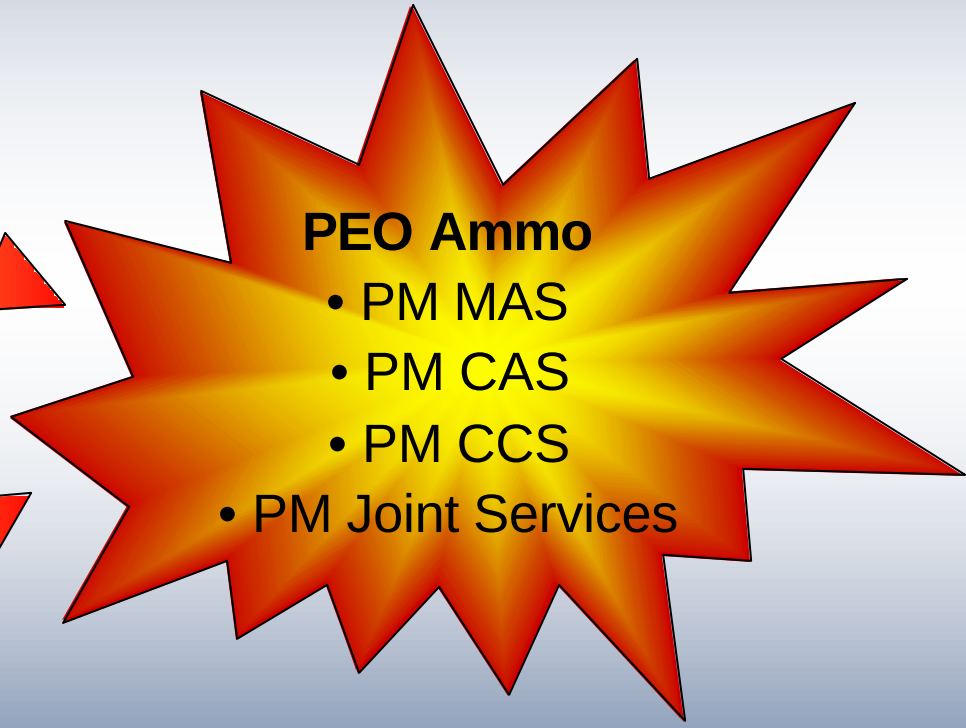
 # Programs 23

DSA-TACOM **$ 439.476M**
- PM Mines
- PM Mortars
- PM Small Arms

 # Programs 74

AMC/DCS Ammo **$ 708.263M**
- Training Ammo
- Industrial Base
- Demil
- ARDEC (Fuze Programs)

 # Programs 94



Total RDA Programs
191 programs
$ 1,523.650 M

PEO Ammo

VISION

Deliver Conventional and Leap-Ahead Munitions Combat Power to Warfighters

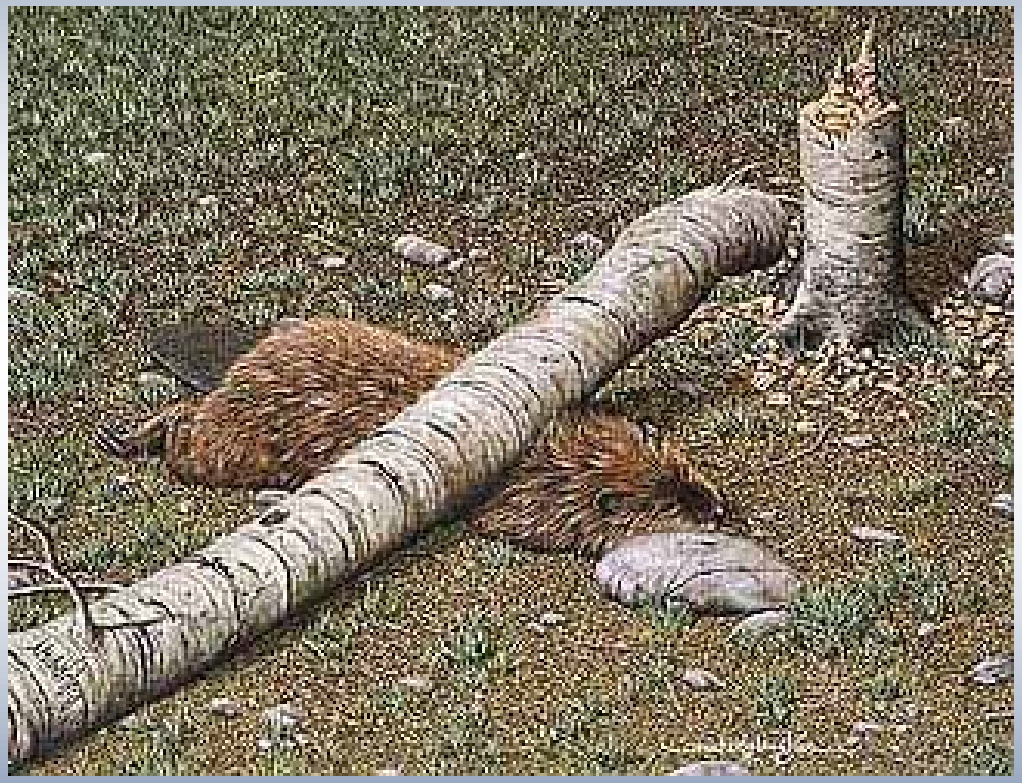
GOALS

- Get PGM's & Smart Weapons to Warfighters
- Improve and Sustain the Conventional Stockpile
- Satisfy the Customer, Achieve Excellence
- Grow World-Class People and Teams

About Experience, …. and Execution

- You've carefully thought out all the angles.
- You've done it a thousand times.
- It comes naturally to you.
- You know what you're doing, its what you've been trained to do your whole life.
- Nothing could possibly go wrong …..

Think Again!



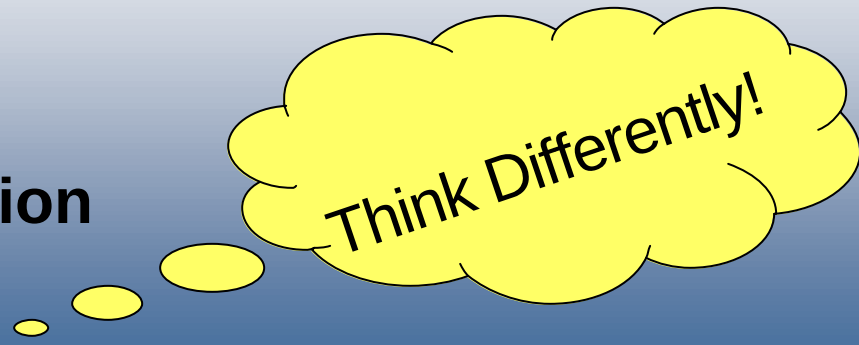
Management Philosophy

- Promote Competition via Best Value Acquisitions
- Reinforce Success
- Utilize Disciplined Processes
- Promote Six Sigma and Lean Design/Production
- Promote Commonality and Interoperability
- Spiral or Evolutionary System Development

Put Eyeballs On – "Trust, but Verify"

Change Acquisition Mentality

- Systems Engineering From The “Systems of Systems” Perspective
- New Approach To Ammo Development
  - ✓ Commonality
  - ✓ Spiral/Block Development
  - ✓ Continuous R&D/Block upgrade
  - ✓ Life Cycle Management
- Ultra-reliability
- Logistics Upfront
- Industrial Base Transformation



The "System of Systems" Perspective

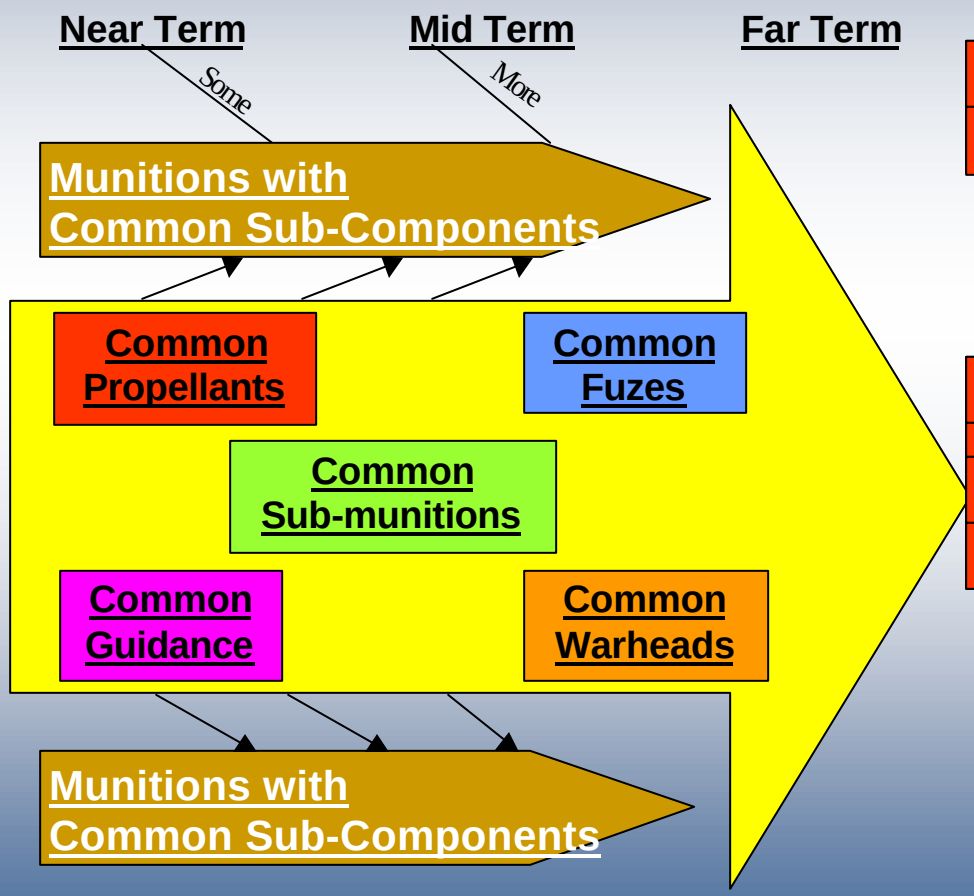
- Newer ammunition will be smarter, smaller, more lethal, more accurate, automation friendly and cost effective
  - ✓ Vehicles will be smaller, less storage
  - ✓ Logistics is key
  - ✓ Insensitivity is critical
- Must think of ammunition as a family of munitions with maximum commonality.
  - ✓ Anticipate limited quantity of "smart" ammo supported by quantity of "competent" ammo

Commonality

CURRENT MUNITIONS

- Small/med cal
- 25mm
- Javelin
- TOW
- Tank
- 2.75” Rocket
- Mortars
- Howitzers
- Hellfire
- MLRS
- ATACMS

COMMONALITY PLAN



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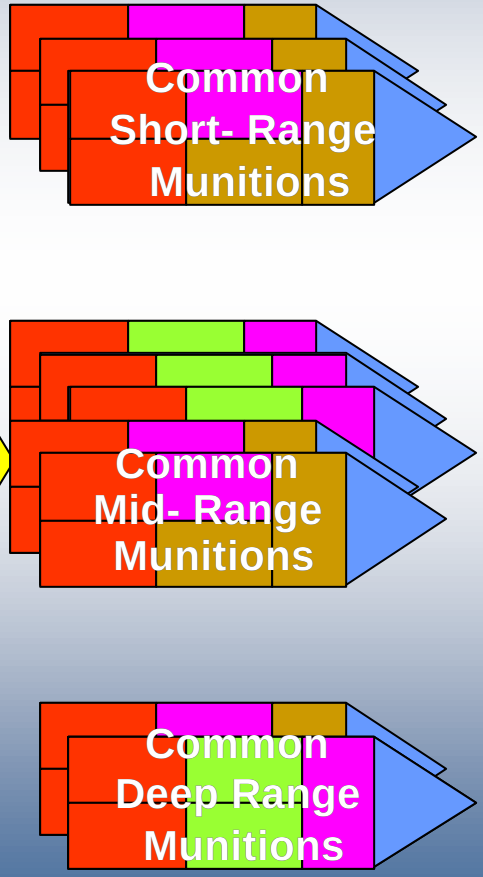
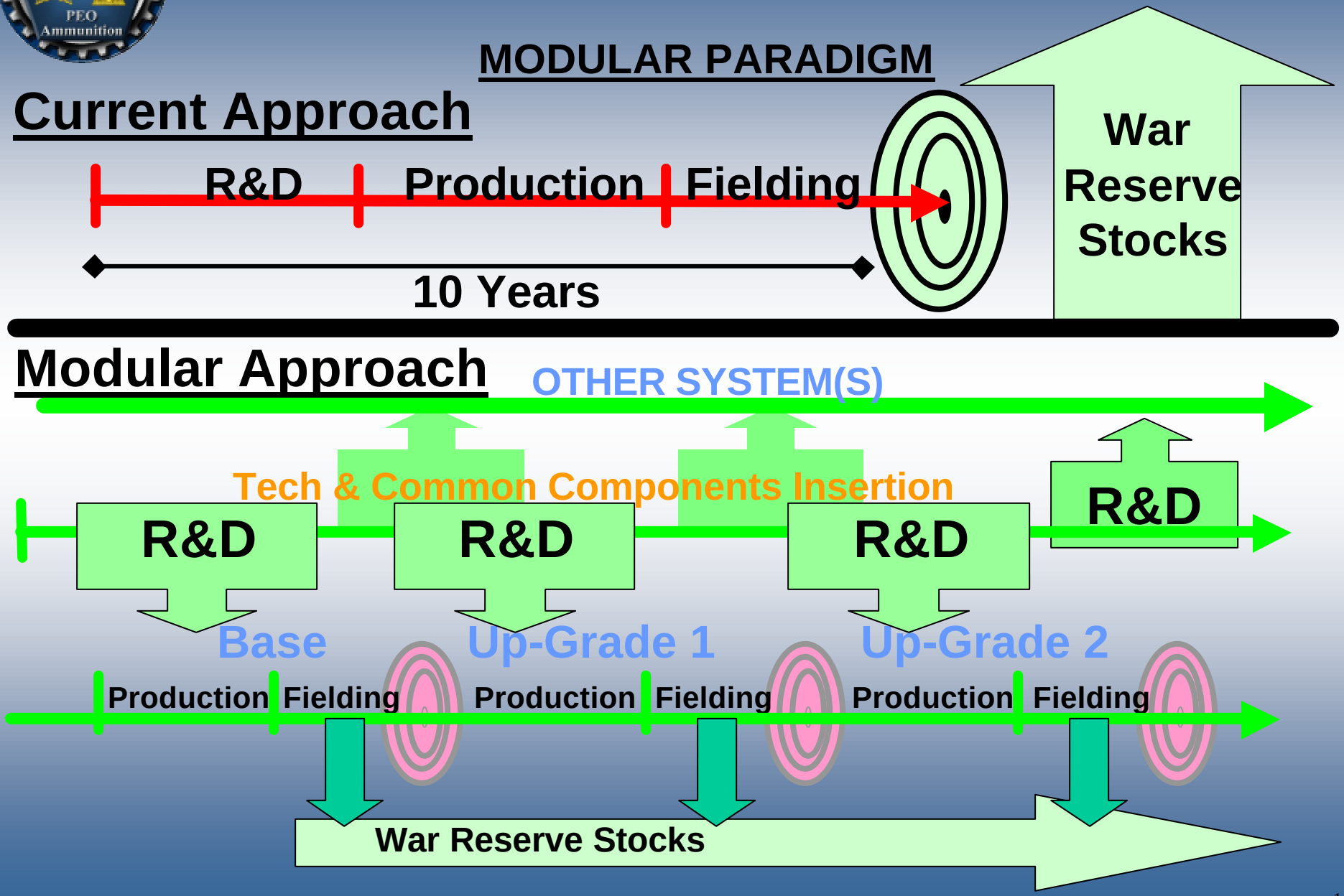


Spiral / Block Development



Life Cycle Management

- **Manage Ammunition as a Family, by Families (Artillery, Mortars, Tanks, etc.)**
  - ✓ Optimize Acquisition Strategy
  - ✓ Optimize Technology across Family can save $$ in schedule
  - ✓ Opportunity for Continuous Improvement thru Recurring Buys and Long Term Strategies
  - ✓ Shape the Product Base through acquisition (modernize base through long term strategies)

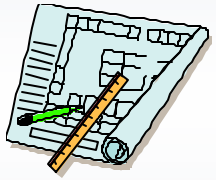
Authority and Accountability…
For Meeting Full Military Requirement For all Ammo Families

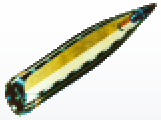
Ultra - reliability

Achievable and Deliverable to the Objective Force

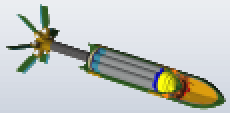
Understanding of the manufacturing, operational, storage & user environment

Knowing / documenting / challenging "how and why“ an item performs successfully





Logistically aligning ultra-reliability materiel assets with deliveries to the battlefield



Robust design that accommodates spiral development

Controlling, assuring, and assessing those "key characteristics / weak links" in the production and post-production

Logistics Upfront

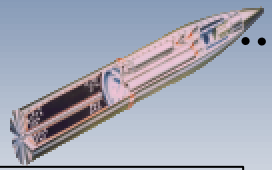
- Strategic configured loads / mission configured loads
- Insensitive munitions
- Remote readiness asset prognostics/diagnostics system (RRAPDS)
- FCS modular rearm
- Smart distribution

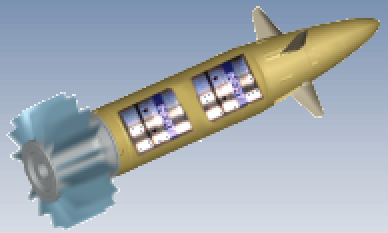
Industrial Base Transformation

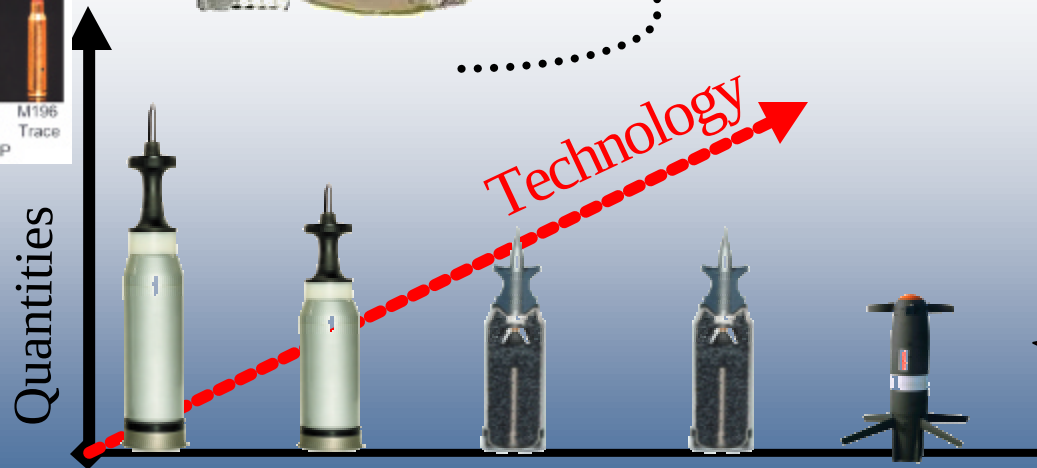
Sizing Up the Problem …

- Munitions Production Base Capacity
  - ✓ Down 68% Last 10 Years
  - ✓ Currently Underutilized
- Single Sources
  - ✓ 71 of 302 Critical Components
- Minimal Incentives for Contractor Capital Investment
- Manufacturing Capability
  - ✓ Currently Focused on Legacy Systems
  - ✓ Marginal Future Munitions Capacity
- Surge Capability Virtually Non-Existent

Evolution

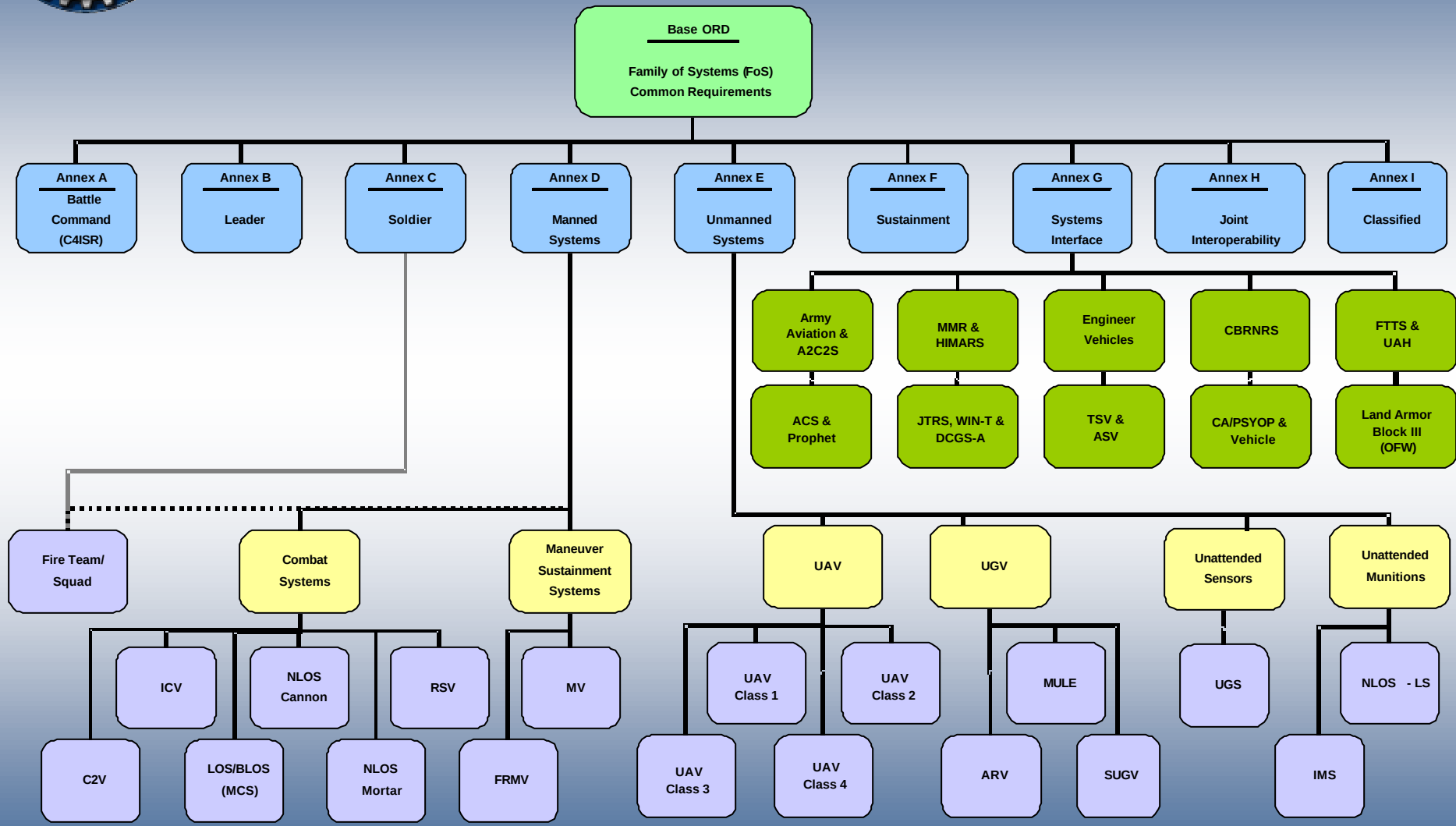






Balance Affordability & Preparedness

FCS Family of Systems

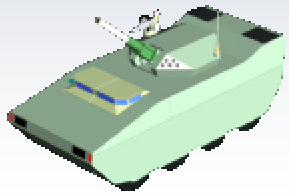


Emerging FCS Concept
LSI's Family of Combat Systems

120mm BLOS / LOS

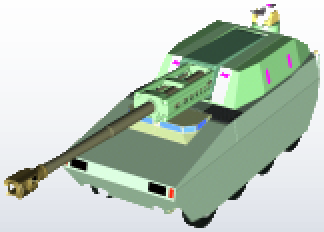
- Combat Wt: 20.8 tons
- Airlift Wt: 18.0 tons
- Crew size: 2
- Remote Wpn Station
- 42 stowed rounds

120mm Mortar



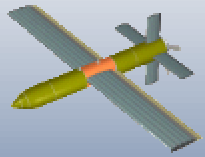
- Combat Wt: 18.5 tons
- Airlift Wt: 16.5 tons
- Crew size: 2
- Robotic follower P3I
- 100 stowed rounds

155mm NLOS



- Combat Wt: 21.4 tons
- Airlift Wt: 18.0 tons
- Crew size: 2
- Remote Wpn Station
- 35 stowed rounds

SUAV



- Combat command asset
  - Reconnaissance
  - Surveillance,
  - Target acquisition
- 75lb payload

Infantry Carrier Vehicle

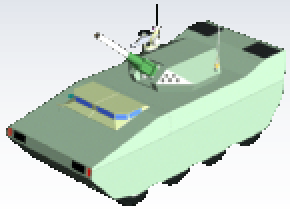
- CH130 transportable
- Carry Infantry squad with Individual equip
- Crew size: 2
- Remote Weapon Station

Government's Efforts Are Aligned With LSI's Family of Combat Systems

120mm BLOS / LOS

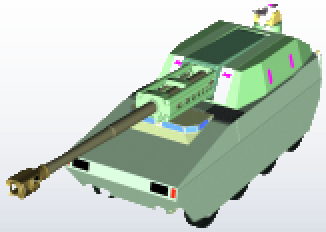
- **MRM**
- Advanced KE
- Advanced Multi-Purpose Anti-Tank (MPAT)
- Lt Wt 120mm Cannon

120mm Mortar



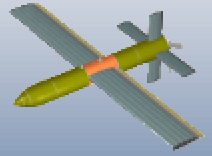
- **Precision Guided Mortar Munition (PGMM)**
- Mortar Fire Control
- Advanced Mortar System (AMOS)

155mm NLOS



- **XM982 Excalibur**
- Low Cost Course Correction
- Next Generation Scatterable Mines (NGSM)

SUAV

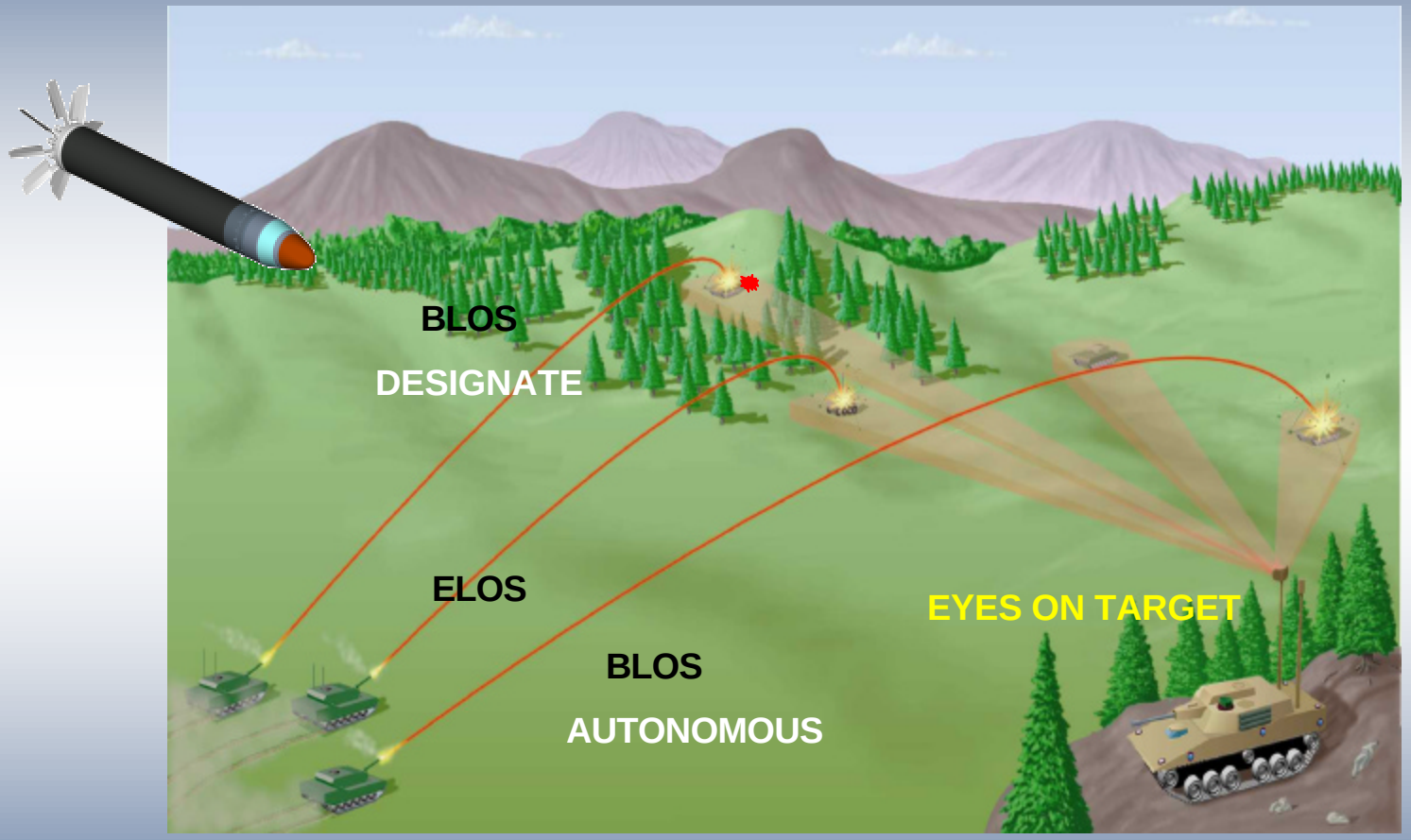


- **Intelligent Munitions System (IMS)**
- Quicklook
- Air Standoff Mine Detection System (ASTAMIDS)

Infantry Carrier Vehicle

- **Bursting Munitions**
- Medium Caliber Program
- Ground Standoff Mine Detection System

Mid Range Munition (MRM) Block I FCS Lethality

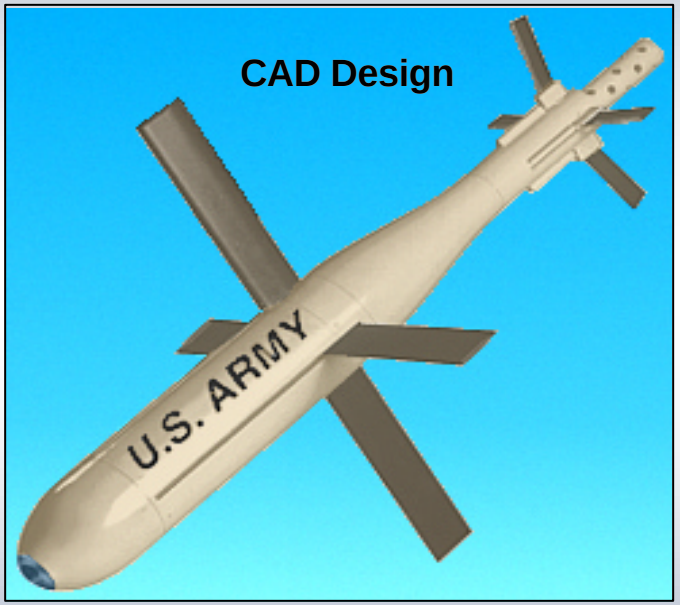


- LOS & BLOS 105mm / 120mm Precision Munition for Blk 1 FCS that can destroy heavy armor and other targets

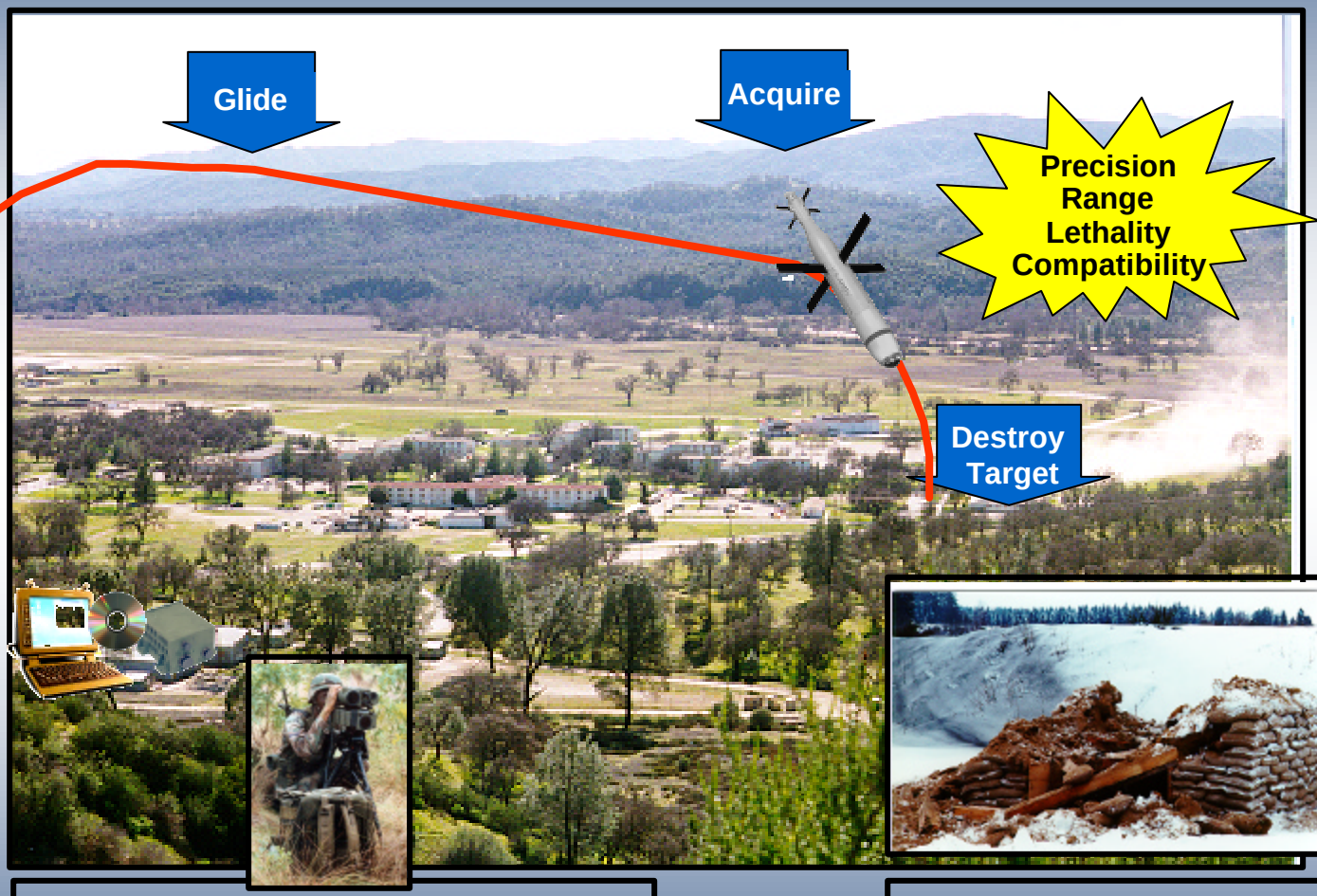
XM395 Precision Guided Mortar Munition

Description:

- **Precision Engagement of Point Targets**
- **Incapacitate Personnel protected within:**
  - ✓ Earth and timber bunkers
  - ✓ Masonry walls
  - ✓ Lightly armored vehicles
- **Engage targets at Extended Ranges – Block Upgrades to 12 km Threshold, 15 km Objective**
- **Compatible with existing and future weapon platforms**



PGMM Operations

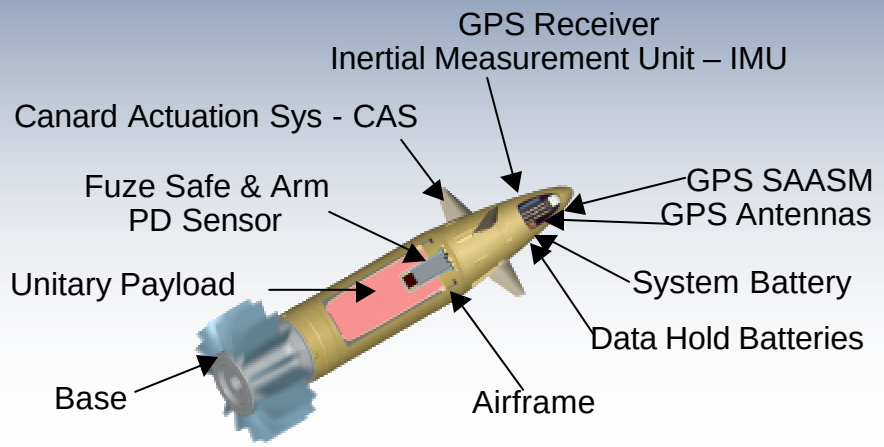


Leverages Existing Fire Support Systems
(G/VLLD, LLDR, AFATDS)
Reduces Collateral Damage

Masonry Structures
Earth and Timber Bunkers
Light Armor Vehicles

Precision Munitions Increase Warfighter Effectiveness

Excalibur

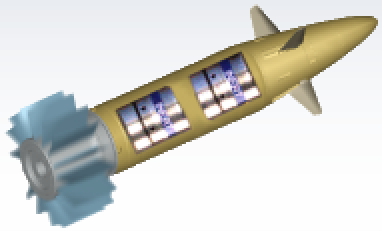


Unitary

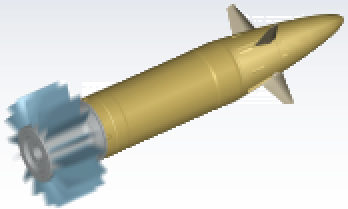
Current: System Development & Demonstration

FY06: Unitary Milestone C

FY08: Unitary IOC



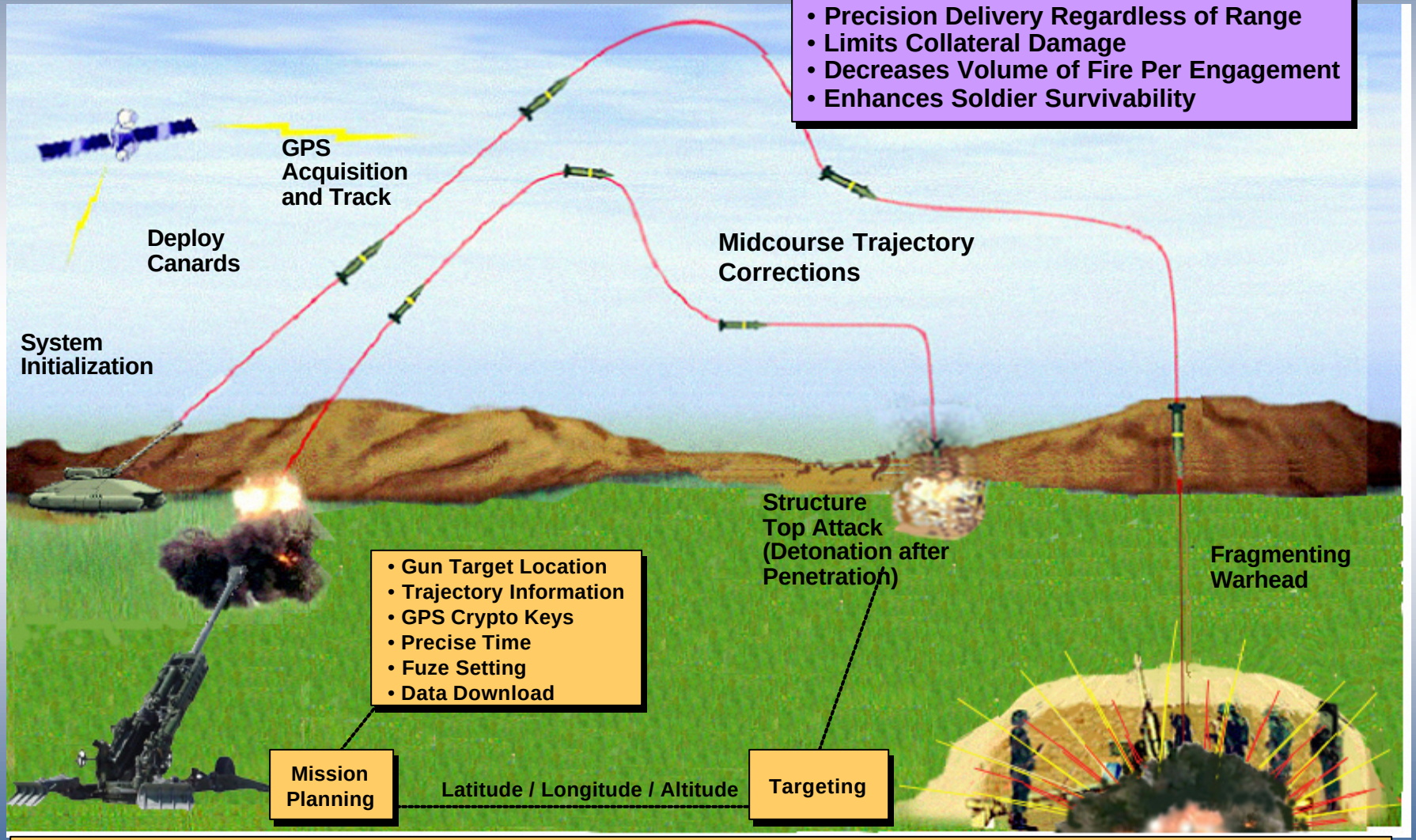
Smart



Discriminating

- Fin Stabilized Glide Air Frame
- Inductive Set Integral Fuze with Enhanced Setter
- GPS - Inertial Navigation System (INS) Guidance
- All Weather, Day and Night
- Compatible with JLW155 & FCS Digitized 155mm Platforms
- One Meter Length / 106 lb

Concept of Operations



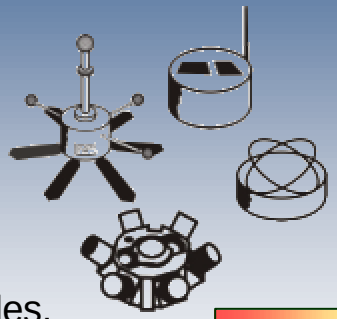
Unitary Warhead XM982 Is Designed To Meet User Needs

IMS – Intelligent Munitions System

- **Integrated system of sensors, lethal and non-lethal munitions, software and communications**
- **Emplaced by multiple means and capable of autonomous, unattended employment**
- **Detects, classifies, identifies, tracks and engages selected targets IAW commander's intent**

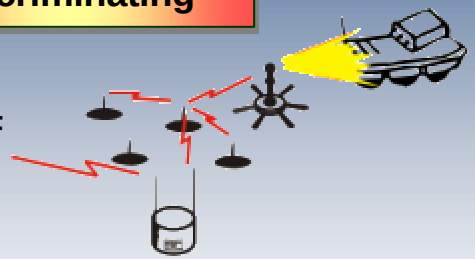
Key Aspects of IMS

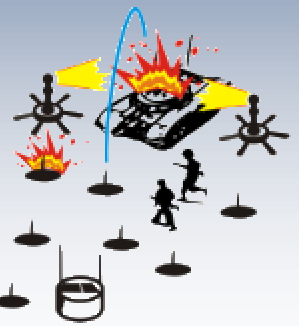
Physical



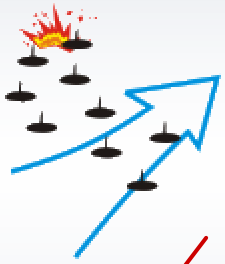
- Small and lightweight
- Remotely delivered by mortars, cannons, missiles, air & ground vehicles

Discriminating





Tunable



- *On-Off-On*

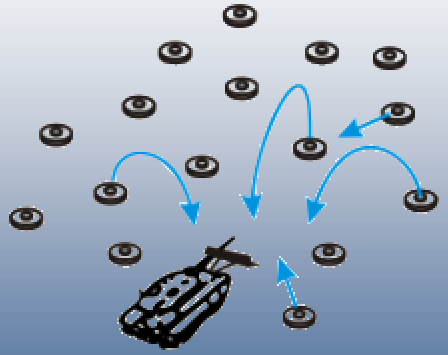
Self-Destruct

- Selectable times
- On command
- Anti-tamper
- Anti-jam

Autonomous or "Man-in-the-Loop"

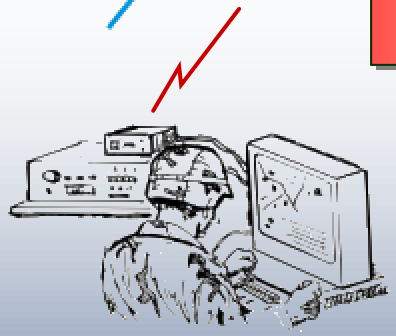
Reconfigurable

- Self-organizing
- Respond to gaps
- Munitions move/adjust



Commander's Intent

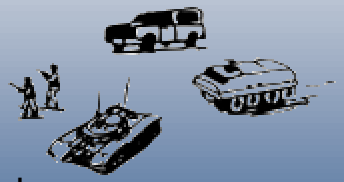
- Detect and attack
- Selectively attack
- Detect and report
- Pass and then attack

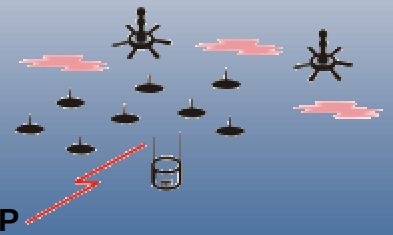


Recoverable

Self-Marking

- Physical
- Electronic





Scaleable

- Lethal and non-lethal munitions
- Variable lethal effects

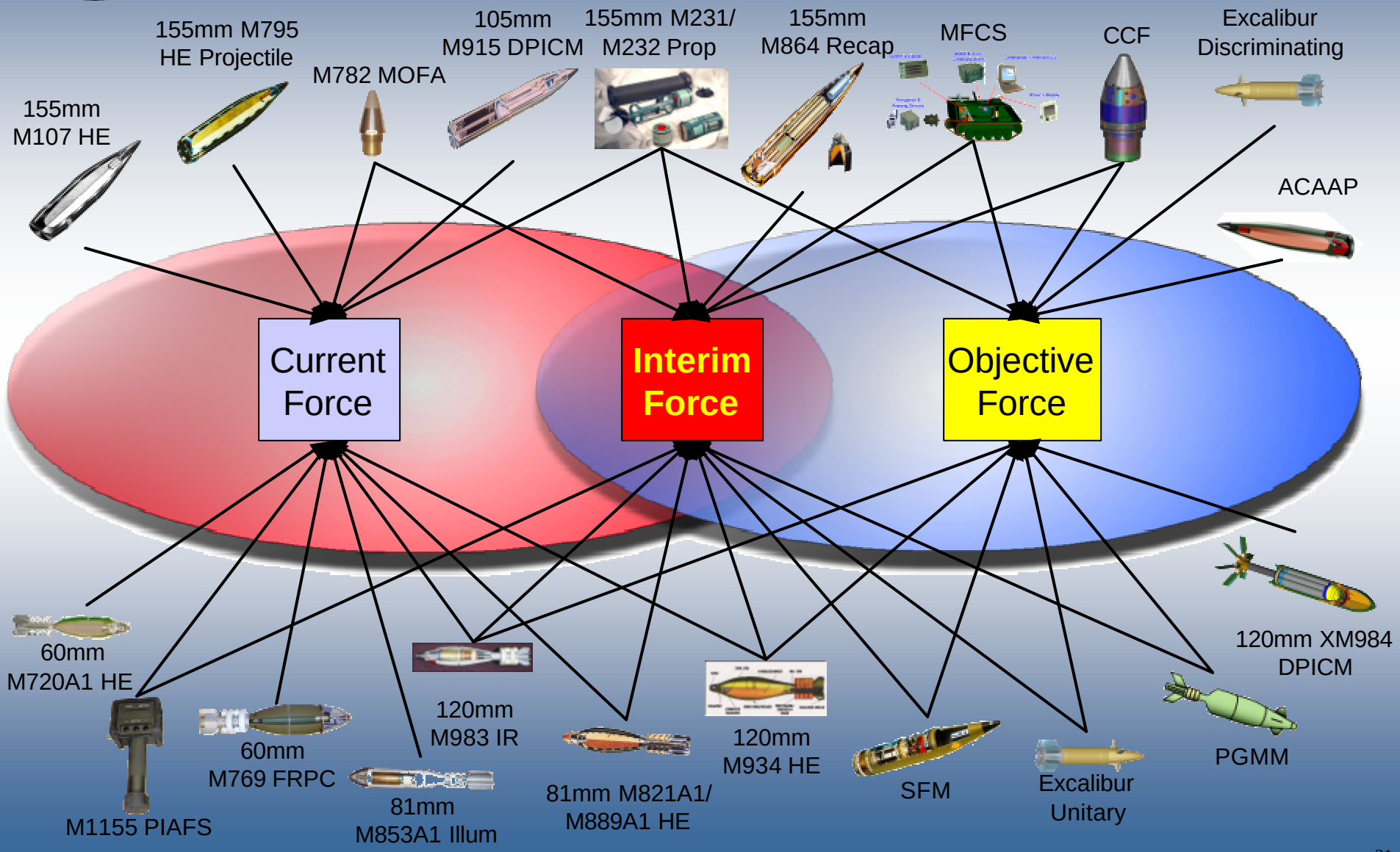
•MS-B in FY05, FUE in FY08

40mm Airburst Munitions

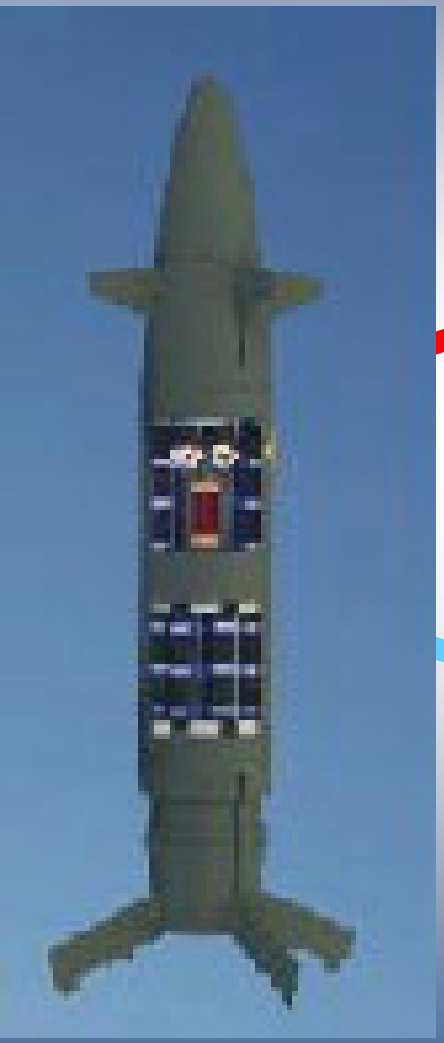
Description:

- **Air Burst Munitions employ programmable fuzes which are set in the gun by the fire control system**
- **Provide large increase in lethality**
- **Air burst ammunition can be programmed to burst over tops of prone and prone protected troops**
- **Multi round bursts can be programmed to burst at different points downrange (string-of-pearls) increasing lethal area**

Transformation – Artillery and Mortars



Our Munitions Goals



AFFORDABLE
&
EXECUTABLE

Reliable
Accurate
Lethal

Cost Effective
Commonality
Upgradeable

Realistic Training
Maintainable
Reduced Log Footprint

Responsive Industrial Base
Planned Demil/Recapture
Environment Friendly

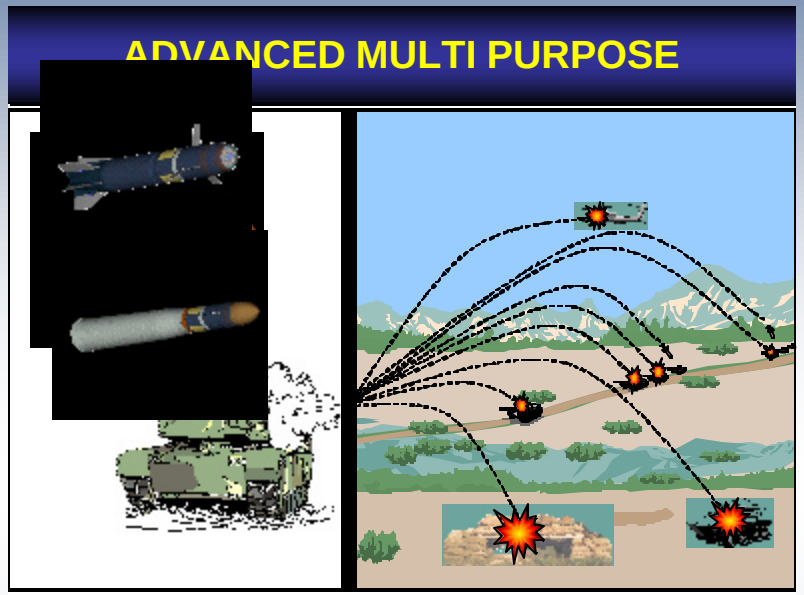

PEO
Ammunition
Joint Lethality

Back-ups

Advanced Munitions

Advanced Kinetic Energy Munition

Defeat of ERA/APS Protected Threat

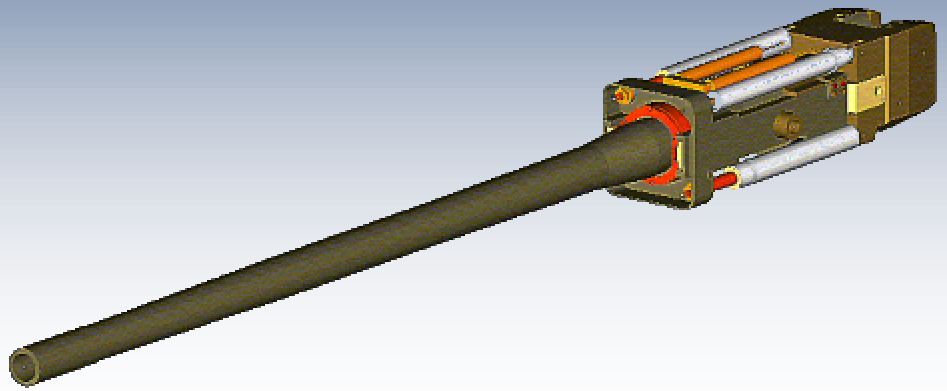


- LOS 120 mm or 105 mm Munition capable of defeating advanced Heavy Armor threats
- Follow-On Improvement to 120mm M829E3 with Addition of Novel Penetrator Technologies and Advanced Propulsion Systems
- Addresses Advanced ERA

- Included Advanced Warhead to Defeat
  - ✓ Concrete Walls
  - ✓ Building & Bunkers
  - ✓ Light Armored Vehicles
  - ✓ Helicopters

Lightweight 120mm Gun

- Breech Ring
- Breech Block
- Breech Mechanism
- Two Recoil Brakes
- Two Recuperators
- Gun Mount
- Cannon Rails
- Tube Yoke/Adapter



Description:

- Lightweight 120mm LOS Gun
  - ✓ 4400 lbs maximum weight
  - ✓ 85000 lbs maximum tunnion force
  - ✓ 22 inch recoil stroke
  - ✓ Integral muzzle brake (efficiency TBD)
- FCS MCS must have a field of regard (FOR) of 360° azimuth and –10 to +30° elevation (threshold), -15 to +50° (objective) [ORD 2168]

NLOS Mortar: Mortar System Evolution

Today

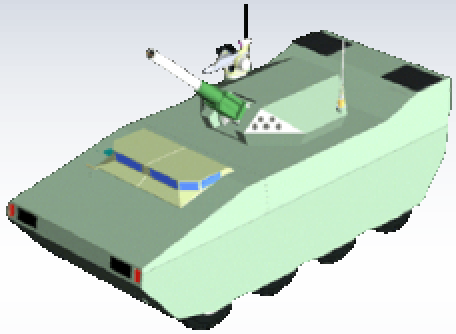
M1064A3

- Labor Intensive
- Crew Exposed During Missions
- Flexible, Responsive
- High Volume Fire

Interim

IAV Mortar Carrier

Tomorrow



NLOS Mortar

- Semi-Automation
- Reduced Crew Size w/Protection
- Direct Fire and Extended Range
- Increased Mobility & Responsiveness

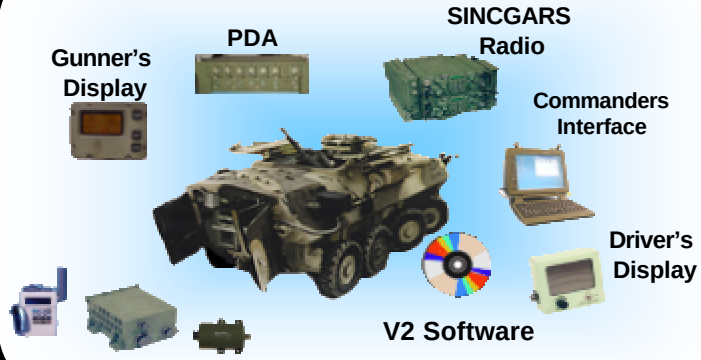
Mortar Fire Control System (MFCS)

Legacy

MFCS (H) Heavy

Interim

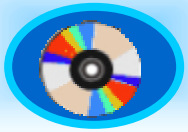
MFCS BCT



Future Combat System - Dismounted

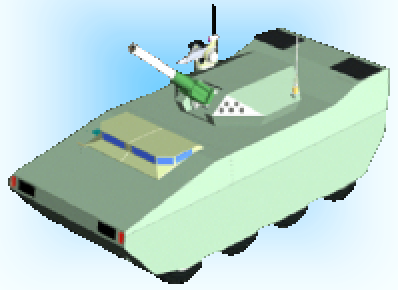
MFCS (L) Light

MFCS Software



Objective

Future Combat System



MFCS is Key to Legacy, interim and Objective Mortar Platforms

Advanced Medium Caliber Fire Control