

The background is a collage of military-related images. At the top left, a military aircraft is in flight. In the center, a soldier in full combat gear is shown from the chest up. To the right, a green military vehicle is being loaded from the back of a large transport plane. Below these, a line of soldiers in camouflage uniforms is marching across a field. In the bottom right, a tank is visible, and in the bottom left, a missile is being launched from a launcher, creating a large plume of smoke and fire. The overall scene is a depiction of modern military operations.

Field Artillery Capabilities Update

Mr. Kirby Brown

**Deputy to the Commanding General/ Director
Capabilities Development and Integration
Directorate**

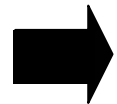
System of Systems Capability



Desired Capability: Ability to rapidly and accurately locate and attack targets with the required operational responsiveness matched to desired effects (lethal and non-lethal) and the greatest efficiency.

To achieve this, Field Artillery needs these "enablers"

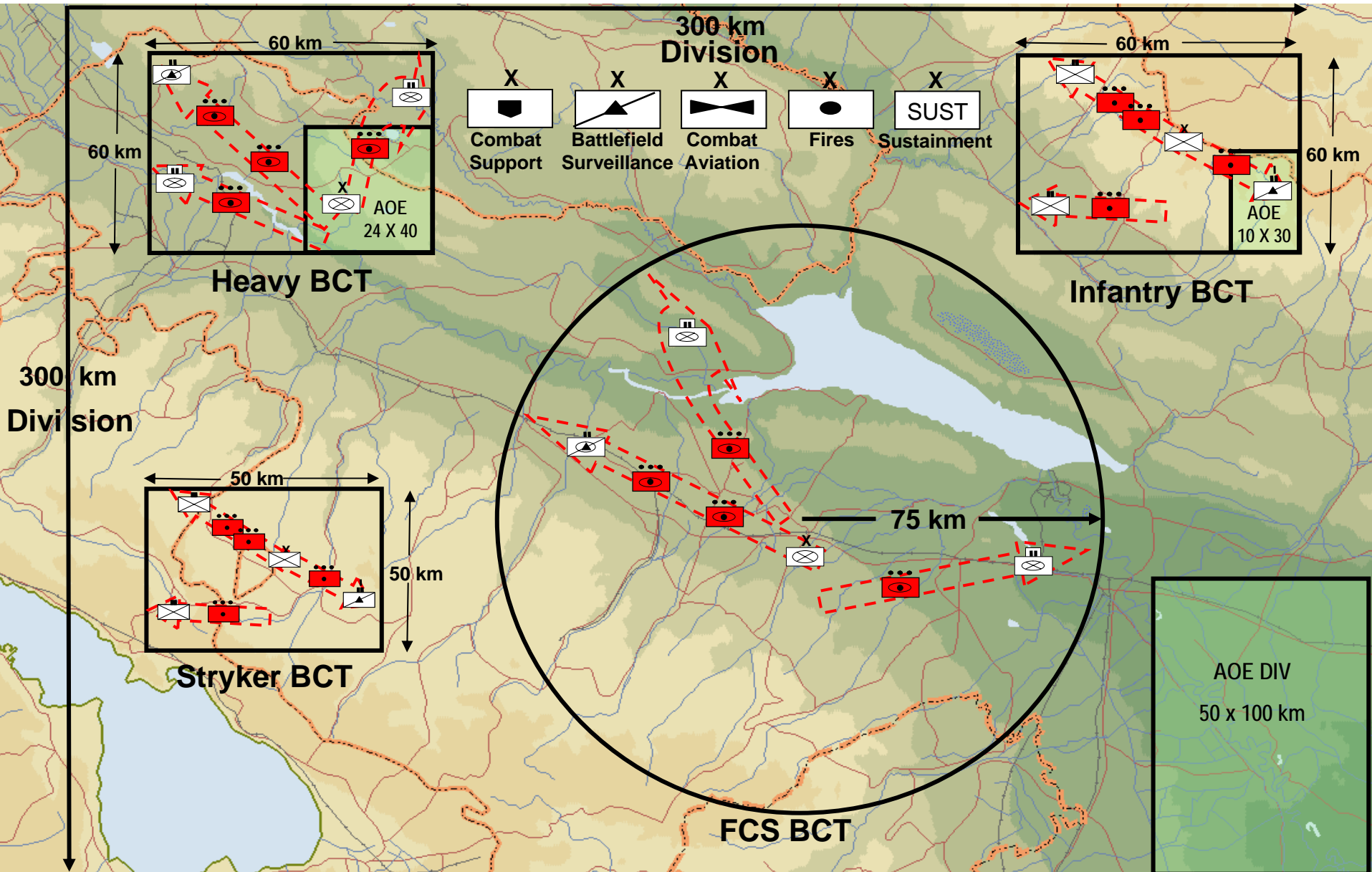
- Target location error <10M at extended ranges, 360--mounted and dismounted
- Technical fire direction and limited tactical fire direction on all delivery systems
- Delivery systems that can rapidly emplace/displace with high rates of fire
- Accurate on demand, meteorological data to delivery system ranges
- All munitions with less than 50M CEP at all ranges
- Munitions that provide a variety of effects in any environment



Our goal is to become a "Precision System of Systems"

The Future of Fires Begins Here

Conceptual Areas of Operation



Full Spectrum Capabilities



Dominant target today is personnel in various postures

TODAY
COIN

Challenge is to find capabilities for today that carry into the future--across the spectrum

Lethality Spectrum



TOMORROW
Irregular Warfare to Major Combat Operations?

What are the projected capability gaps in the future across the spectrum

What should we expect in an MCO of tomorrow



The Future of Fires Begins Here

Assessment and Way Ahead

"Precision System of Systems"



Locate and Designate



Fire Support Sensor System



Lightweight Laser Designator Rangefinder

- <10M TLE mounted and stationary
- <5M TLE when aided with PSS-SOF
- Need JETS for dismounted operations

Location and Direction



Improved Positioning and Azimuth Determining System

- Moving to "on board" capability
- IPADS for all other

Met



Profiler

- Target area capability
- Met on demand
- Moving to "embedded"

Computation



Advanced Field Artillery Tactical Data System

- Technical and tactical from same automation system
- Moving to on board technical
- Exploring limited on board tactical

The Future of Fires Begins Here

Assessment and Way Ahead

"Precision System of Systems"



Counterfire Location



Lightweight Counter Mortar Radar V3



Enhanced Q-36

- Theater demanding enhanced capability:
 - 360 acquisition
 - Better accuracy, range and probability of detection
- Fielding of EQ-36 and LCMR V3 close the gap
- Working to sustain readiness of current Firefinder fleet in the interim

Delivery Systems

M270A1



M119A2



Improved Crew Protection HIMARS



Paladin Integrated Management Howitzer



FCS - NLOS Cannon



FCS - NLOS Launch System

- Must maintain viability of current systems for many years
- Must address crew protection issues—especially towed systems with larger crews
- Must close gap with on board digitization for M119A2
- NLOS Cannon and LS are great systems but pose some challenges with crew size

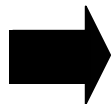
The Future of Fires Begins Here

Munitions - Current Capability



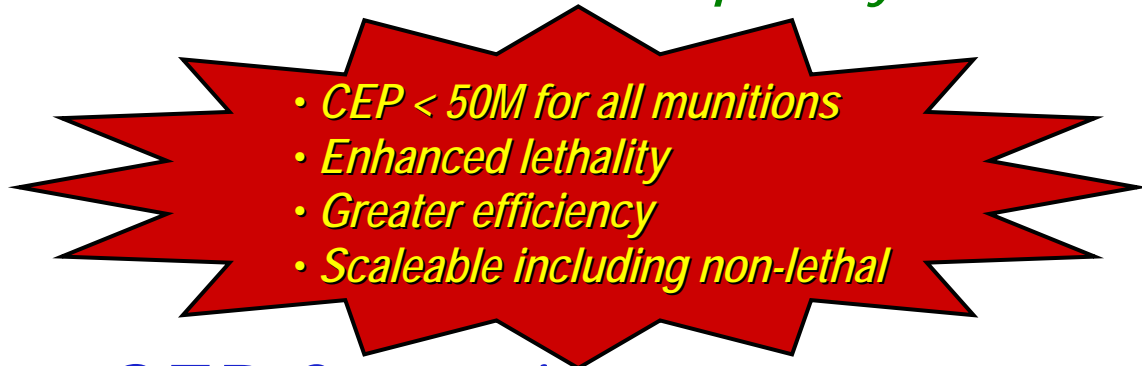
Precision Guidance Kit

- Technology demonstration showed initial capability of 30M CEP
- Working form fit for 155mm and 105mm unique challenges
- Funded in POM



“More precise” area effects

Desired Future Capability

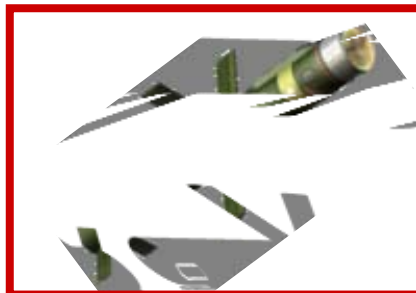


Guided MLRS - Unitary

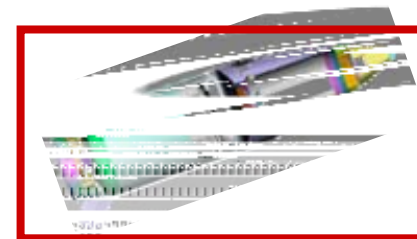
< 10m CEP for point target attack



Excalibur



Precision Attack Missile



ATACMS Unitary

The Future of Fires Begins Here

GMLRS-Unitary Rocket



737 Total Rockets Fired As Of 3 June 2008

Who Shoots GMLRS-U:

US Army	587	79.65%
USMC	24	3.26%
UK	126	17.10%

US Army Missions

Who Requests GMLRS-U:

Army	372	63.37%
Marines	121	20.61%
Other	94	16.02%

How GMLRS-U is employed:

Troops In Contact	183	31.18%
Pre-Planned	404	68.82%

Environments GMLRS-U is employed:

Urban/COIN	558	95.06%
Other (TD/Test)	29	4.94%

Capability Gap: Persistent, responsive, all-weather, rapidly-deployable, long-range, surface-to-surface, precision-strike capability.

Description

- GPS-Augmented Inertial Guidance
- 200lb-Class HE IM-Compliant Warhead
- Multi-Fuze Selection (Point Detonating, Delay, Proximity)
- 15-70km Range



Current Targets

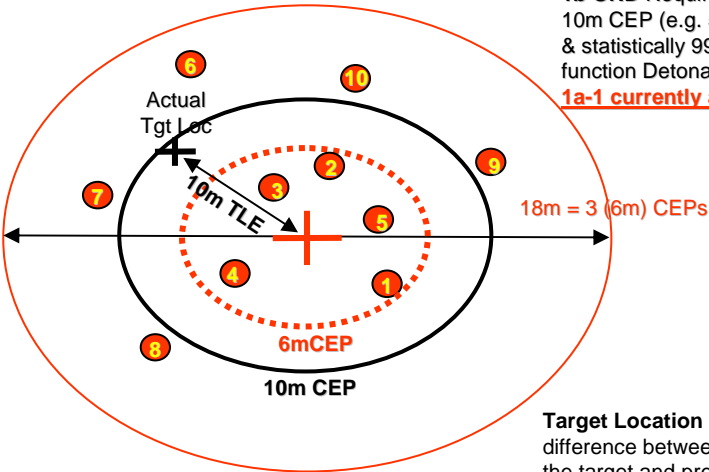
- Precisely Located/Mensurated Point targets
- Congested/Complex Urban Targets
- Targets in Areas Where Collateral Damage is of Concern

Effectiveness/Reliability

- BDA Shows High Level of Effectiveness
- Rare Reports of Minor Collateral Damage
- Reliability of US Army Missions: 98.63%



Excalibur



1b ORD Requires Excalibur achieve 10m CEP (e.g. 50% land within 10m & statistically 99.8% of rounds that function Detonate within 3 CEPs i.e 30m)
1a-1 currently achieves 6m CEP

Target Location Error (TLE) the difference between the actual location of the target and predicted target location.
Circular Error Probable (CEP) the radius of a circle into which a warhead, missile, bomb or projectile will land at least 50% of the time.

Depicts 10 rounds fired at a target located with a device with 10m TLE accuracy w/6m CEP. Expect 50% of rounds to fall within one CEP.
 + = Actual Aim point to target due to TLE

Trends:

Target Types: Structures

of Rds/TGT: 2

Firing Platforms: Paladin & M777A2



Mission Roll Up

US-OIF

Rounds Delivered = 275
 MSNs Fired = 30
 Rds Fired = **50**
 Hits w/Detonation = 44
 Flew to BIP = 4
 Hit w/no high order = 2
 Unserviceable = 3
 Rounds Available = 208

US-OEF

Rounds Delivered = 72
 MSNs Fired = 2
 Rds Fired = 2
 Unserv. = 0
 Hits w/Detonation = 2
 Rounds Available = 70

Canada-OEF

Rounds Delivered = 27
 MSNs Fired = 2
 Rds Fired = 2
 Unserv. = 1
 Hits w/Detonation = 2
 Rounds Available = 25

54 Total Rds Fired
48 Hits
88.8% Reliability

Issues:

- PEFCS (service life extension in theater)
- EPIAFS PIK Upgrade (still on-going in theater)
- Blk 1a-2 IOTE Delay probable (March 2009)
- Blk 1b Request for Proposal published 7Mar08
 - Blk 1b CEP change 10m (T) 6m (O)

Assessment and Way Ahead

"Precision System of Systems"



✓ View our munitions capability gaps in this priority:

- Precision
- Lethality
- Range



- ✓ Distributed operations, precision munitions and rapid delivery may redefine the massing of fires
- ✓ Must have greater efficiency without sacrificing effectiveness
- ✓ Continue to explore alternatives to cluster munitions
- ✓ Need to increase the scalability of the terminal effects of our munitions
- ✓ Non-lethal effects like visual and infra-red illumination are still important
- ✓ Considerably greater gap in the indirect fires capabilities of the IBCF when compared with the HBCF or SBCF that we are working to reduce
- ✓ "Near precision" capabilities like PGK have a place—TLE is rapidly getting better but sometimes may not be there

Precision munitions have significantly added to our contribution to the current fight

Summary



- COIN environment has highlighted some unique challenges and capability gaps
- Most of our challenges are faced by many of our likely coalition partners
- Must also address capabilities for Full Spectrum Operations
- Current and programmed systems and munitions close or mitigate many of those gaps but we aren't there just yet
- Significant challenge to maintain the readiness of current capabilities while awaiting next generation capabilities
- Supplemental funding has been and remains very important to modernizing



Enabling Soldiers with the required capabilities—today and tomorrow

