Transforming Army Indirect Fires

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Transforming Army Indirect Fires

- Robust mix of fire support systems is required to address the full spectrum of requirements and mitigate against surprise
- Volume, precision, responsiveness (24/7, all weather, all terrain), and range remain critical attributes of a fire support system
- Networked and precision fires offer opportunity to disrupt/destroy enemy capabilities at extended ranges and with greater precision

Army Brief to DEPSECDEF – Sep 02

Networked through battle command
Fully interoperable with Joint systems
Mobile (strategic and tactical)
Fully integrated with maneuver
Lethal (through precision and volume)
Precise effects with area options
Reduced logistics
Ability to mass effects
24/7, all weather, all terrain

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

Looking at Precision Needs

Precision Effects: *Capability* 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 precision effects Field Artillery needs:

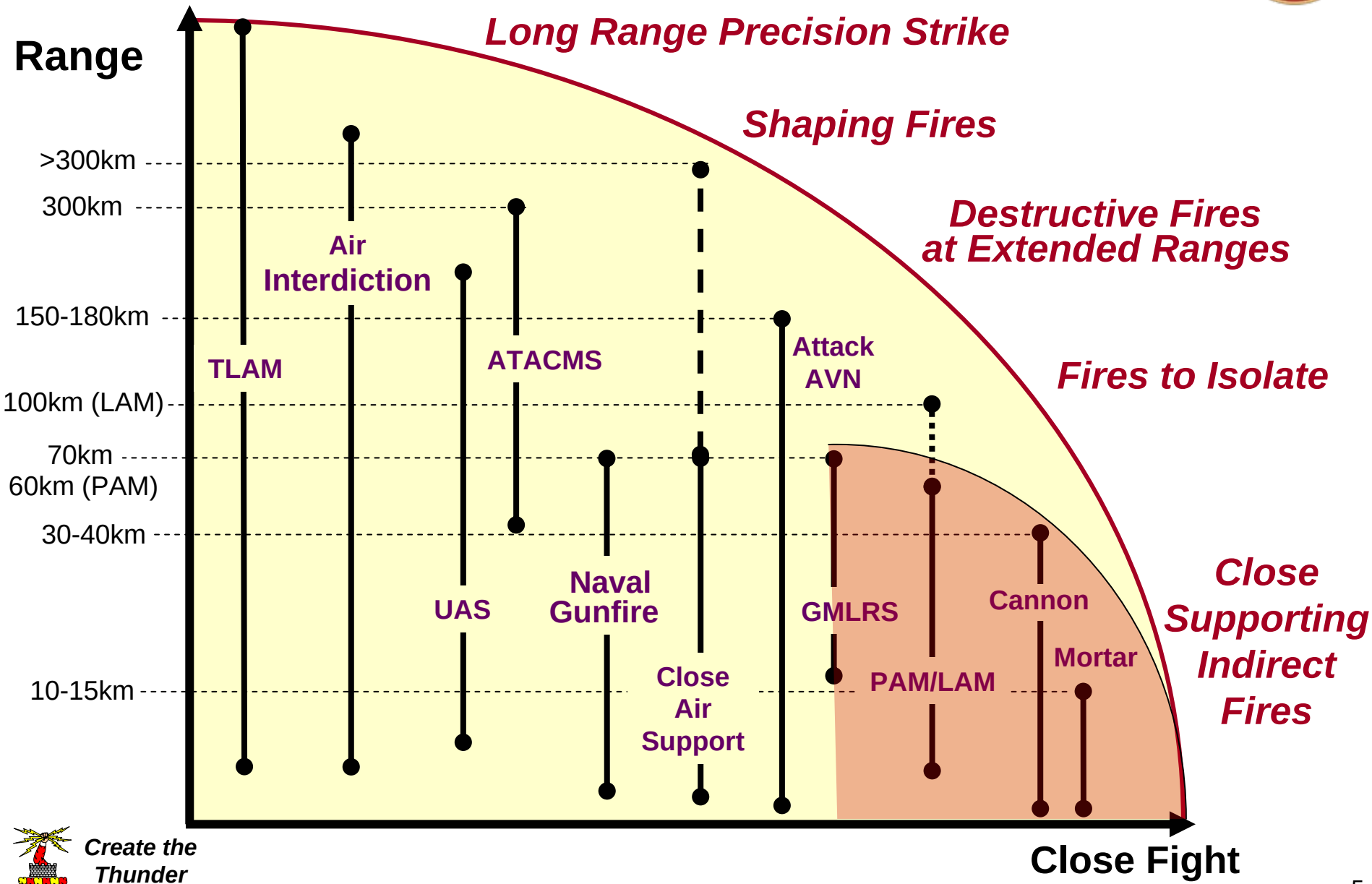
- *Accurate target location and size*
- *Accurate delivery system location and direction*
- *Timely and accurate meteorological data*
- *Accurate computational procedures*
- *Weapon and ammo information*

Current Operational Need

2. . . . ONS succinctly identifies an urgent need for improved munitions in IBCTs . . . Recent XVIII Airborne Corps experience in both Afghanistan and Iraq indicates that GWOT operations requires indirect fire munitions with greater lethality, increased range, and a precision guided capability that limits collateral damage.

XVIII ABC ONS for Improved 105mm Artillery Projectiles
21 Nov 05

Joint Fires Capabilities



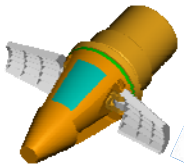
Army Munitions Attributes

Non-Precision (Area) Munition	***Precision*** Munition	***Precision Guided*** Munition	***Precision Smart*** Munition
Munition/ submunitions subject to all ballistic conditions on the way to the AIMPOINT.	Munition corrects for ballistic conditions using guidance and control up to the AIMPOINT or submunitions dispense *with terminal accuracy less than the lethal radius of effects*. Submunitions subject to ballistic conditions to AIMPOINT.	Munition senses *energy reflected from a target* and uses *guidance and control* to the TARGET. Requires a *laser designator* in the loop for target designation.	Munition/ submunitions *autonomously searches, detects, classifies, selects, and engages* TARGET(s). *Has a limited target discrimination capability.*

Available or Programmed

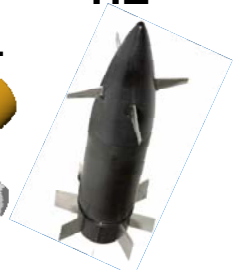
Area Munitions with CEPs > 150M at 2/3 range

PGK INC 1



50M CEP

M982 HE



< 10M CEP GPS

NLOS-LS with PAM

< 10M CEP GPS
< 1M CEP with SAL

HIMARS with GMLRS-U

< 10M CEP IMU

M270A1 with ATACMS QRU

< 10M CEP IMU

Rg

40 70 270 300

Lethality Spectrum

Dominant target in theater today for indirect fires

Create the Thunder

Looking at Responsiveness

		Required Responsiveness (minutes)			
		2	10	60	>60
Range to Target	0 – 15 Km	27	8		15
	15 – 40 Km	4	5	1	24
	40 – 60 Km				24
	60+ Km	9		1	22
	NA			1	
Total Mission Profiles		40	13	3	85

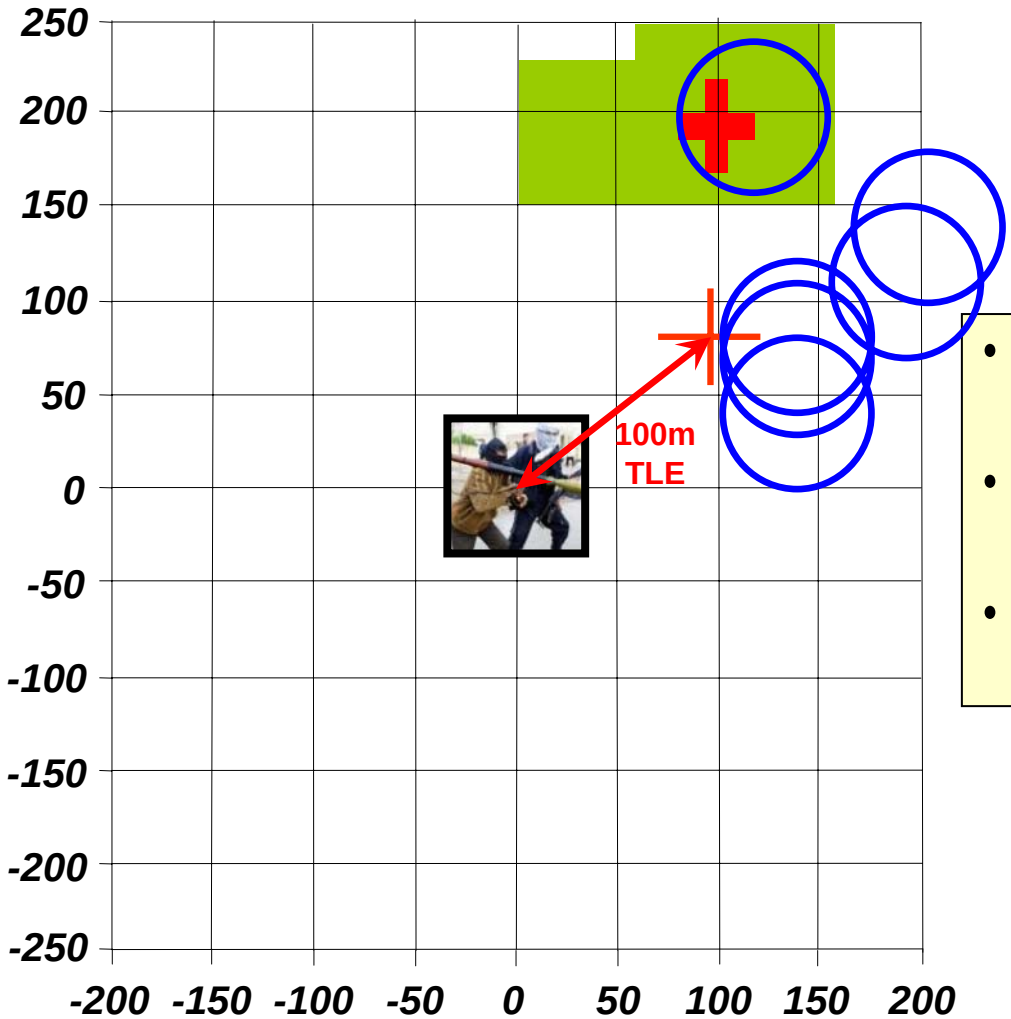
Of the 141 mission profiles:

- 40 required less than 2 minutes
- 13 required more than 2 but less than 10 minutes
- 3 required more than 10 but less than 60 minutes
- 85 required more than 60 minutes

For an FCS-equipped BCT to execute its concept, high payoff targets and most dangerous targets required very responsive fires:

- 28% of the mission profiles required 2-minute responsiveness and 38% required a response within 10 minutes
- 68% of the targets that required a response within 2 minutes were in the range band of 0-15km

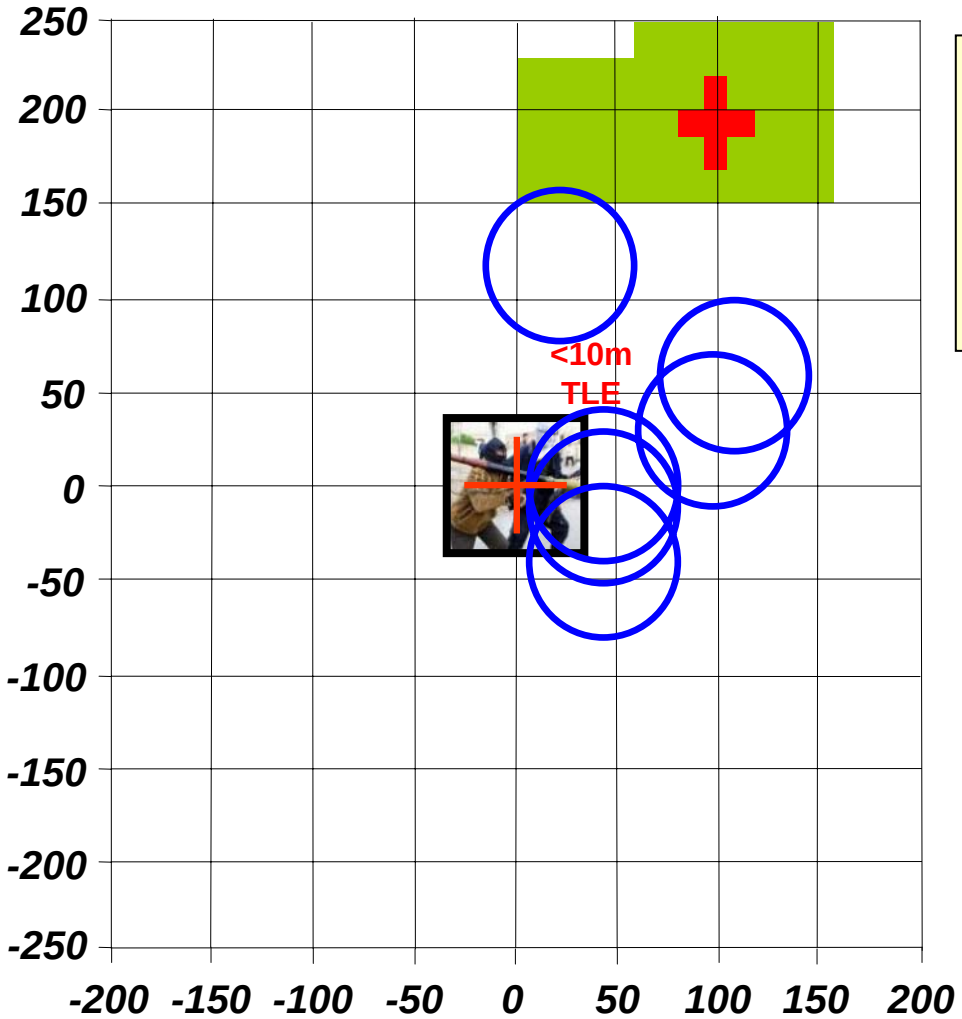
Where We Were . . . .



- High probability of collateral damage
- Low probability of achieving desired effects on target
- Large expenditure of ammunition to have high fractional damage

. . . no precision targeting with area munitions

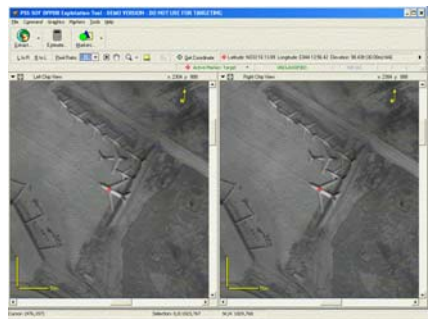
Where We Are . . . .



- Probability of collateral damage precludes use in most urban engagements
- Larger munition expenditures required to achieve desired effects

Fire Support Sensor System – 9M TLE at 10 KM

Precision Strike Software – Special Operating Forces

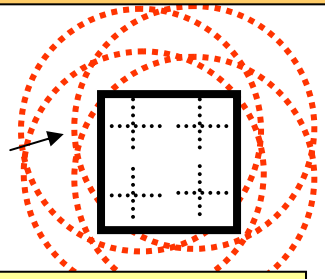


. . . precision targeting with area munitions

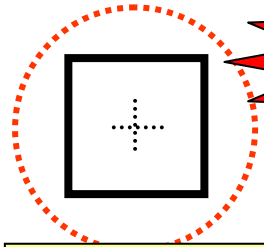
Create the Thunder

Looking at Aiming Points

Area Target – Aim point selection



Conventional Aiming: Accounts for delivery errors (PEr & PEd) to ensure target coverage

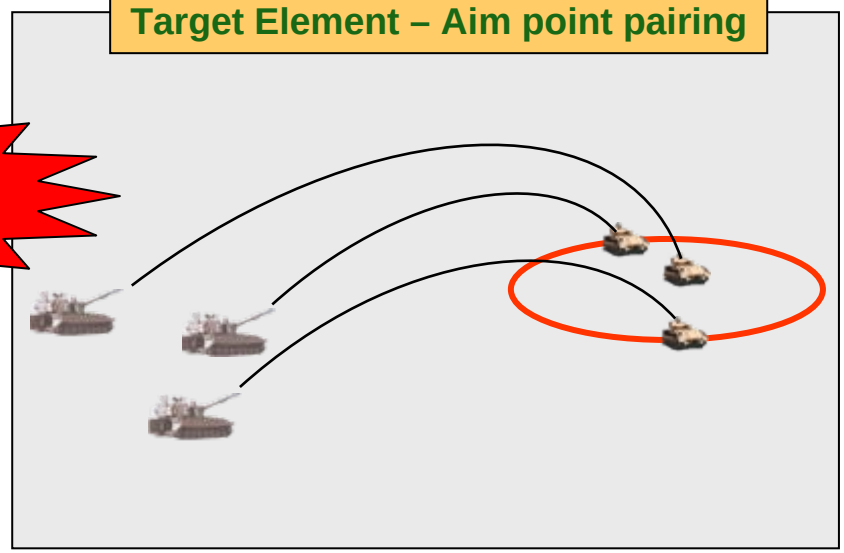


Precision Aiming: Reduced # of aim points & munitions

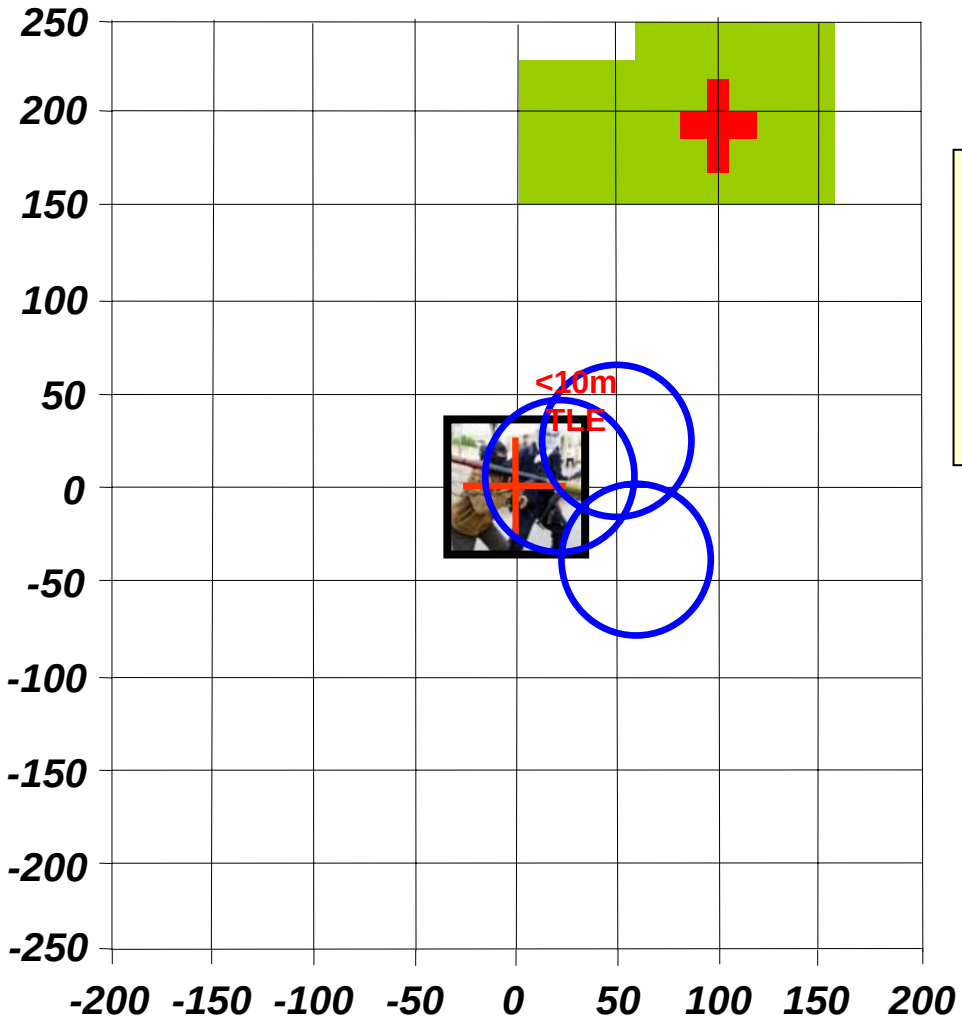
Less rounds for desired effect

Target Element – Aim point pairing

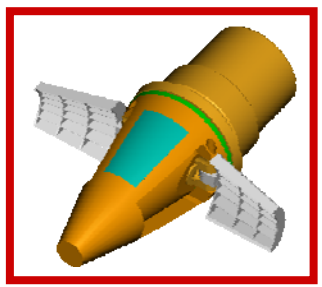
Enables precision targeting



Where We're Headed . . . .



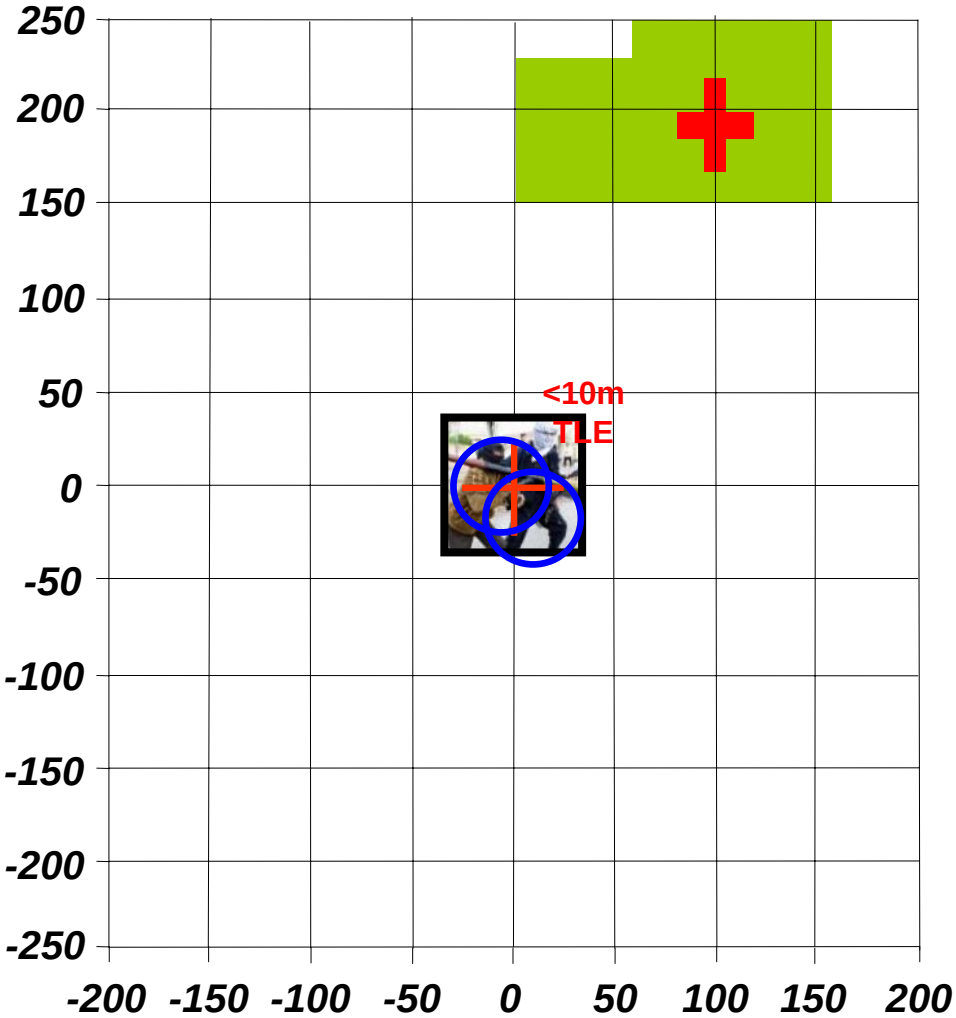
- Reduces CEP to enable more engagements in most urban environments
- Reduces expenditures required to achieve desired effects



- <50M CEP Initial
- <30M CEP Threshold
- <10M CEP Objective
- Both 155mm and 105mm

. . . precision targeting with Precision Guidance Kit

Where We Need to Be . . .



- Preferred choice when collateral damage must be minimized
- Vertical trajectory desired
- Need scaleable lethality
- Ability to discriminate without designation
- Significantly fewer rounds expended to achieve desired effects

. . . precision targeting with precision munitions

Other Requirements

Common:

- Location
- Direction
- Elevation

Improved Positioning and Azimuth Determining System

- Meteorological data on demand
- < 30 minutes staleness
- Target area met capability

Profiler

- Routine digital operations
- All members of the team

Create the Thunder


1093

Create the Thunder

Precision Munitions Mix Analysis

- The FY08 HBCT forces and the FY14 HBCT and FCS BCT forces will be able to accomplish their missions with *a subset* of the Army's collection of precision munitions programs.
- Employing a subset of Army precision munitions (APM) can cause a greater reliance on joint capabilities.
- APM can be layered into 4 tiers based upon PMMA findings, Threat and operational considerations:

  - Tier 1: those *central to any mix*, capable of engaging multiple *likely* mission profiles and that clearly dominate mix lethality.
  - Tier 2: those that best augment Tier 1 to engage the *most likely* Threat behaviors or dispositions.
  - Tier 3: those that *mitigate risk to the force* in case of *less likely* Threat behaviors or dispositions.
  - Tier 4: those that *provide a marginal capability* to the force under prevailing conditions.

Tier 1: Excalibur (U), Hellfire, MRM, GMLRS (U)	
Tier 2: PGMM, PGK	
Tier 3: PAM or CSS	
Tier 4: APKWS Blk I, GMLRS (D)	

- APM mixes *reduced* the overall *logistics burden*.

Enhanced Delivery

Paladin

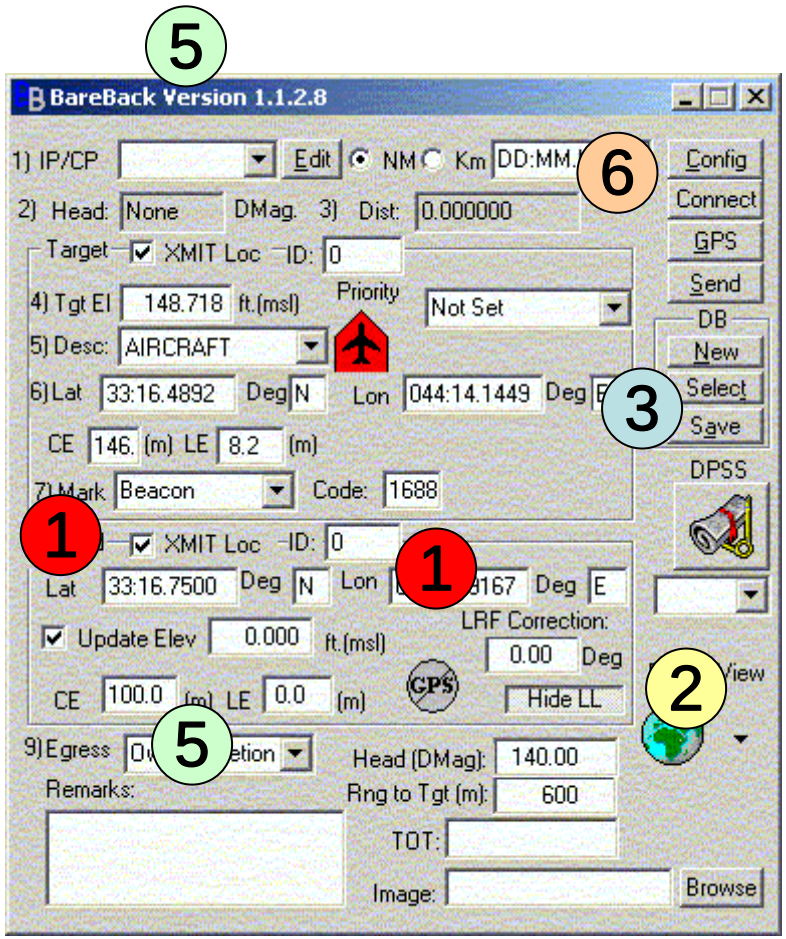
- Remains a great system
- Challenge is to ensure keep it operationally viable for many years to come
- Probably the system in Fire Brigades for at least 30 more years

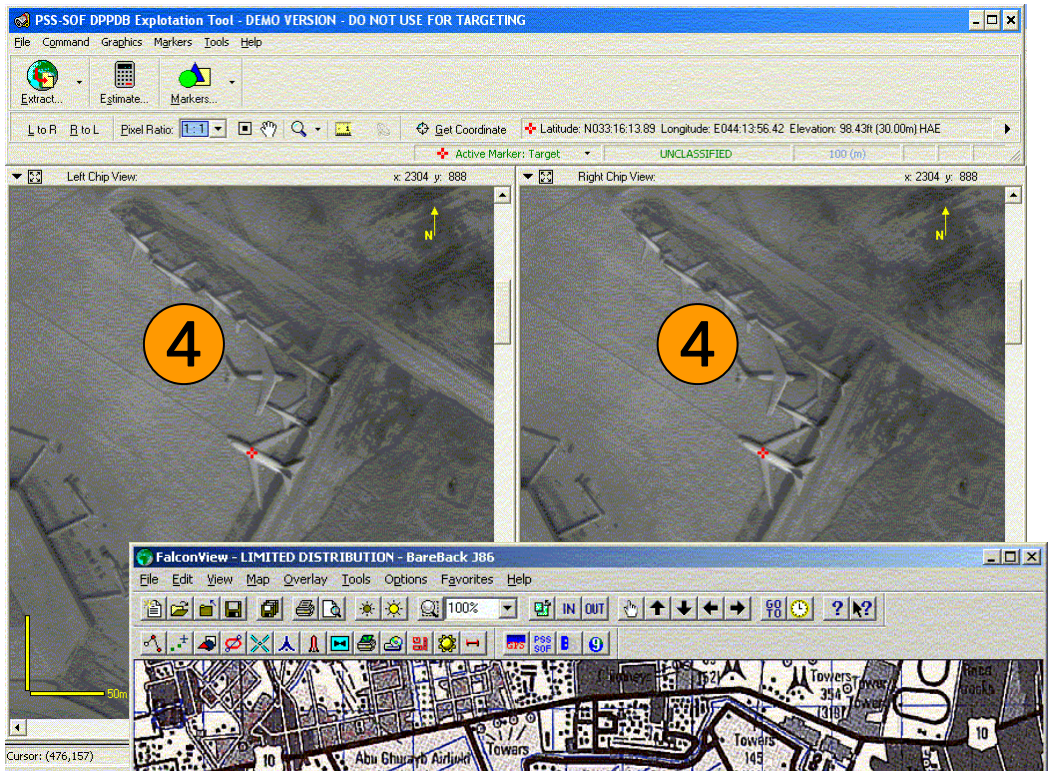
FCS NLOS Cannon

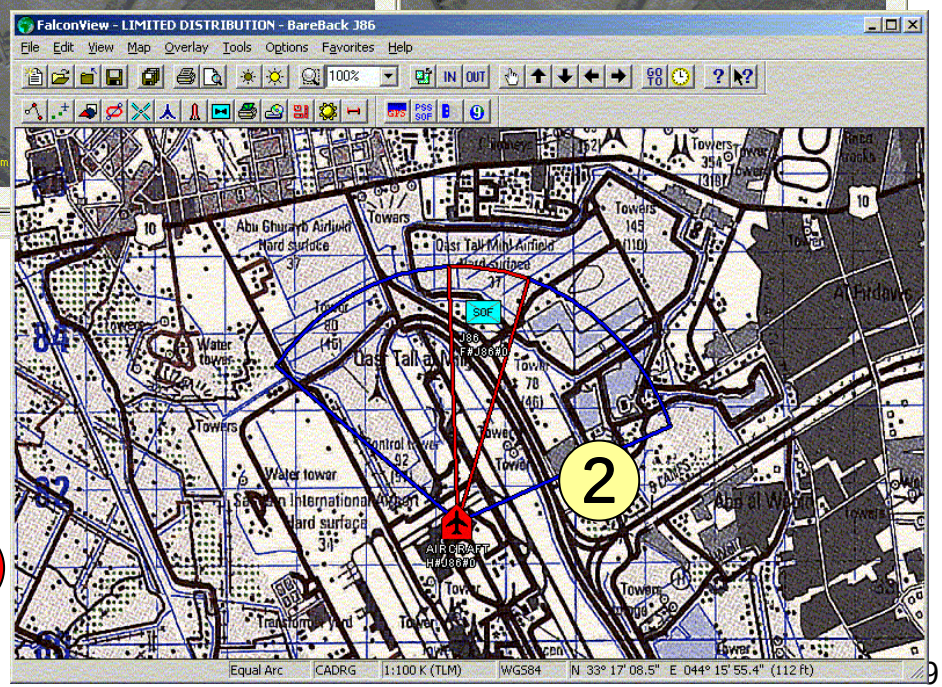
- Prototype delivery begins in FY 08
- Challenge is to maintain commonality with other MGV
- Migrate to Stryker BCT at some point

- *Fewer types of systems*
- *Enhanced deployability*
- *Enhanced sustainability*

PSS-SOF Targeting



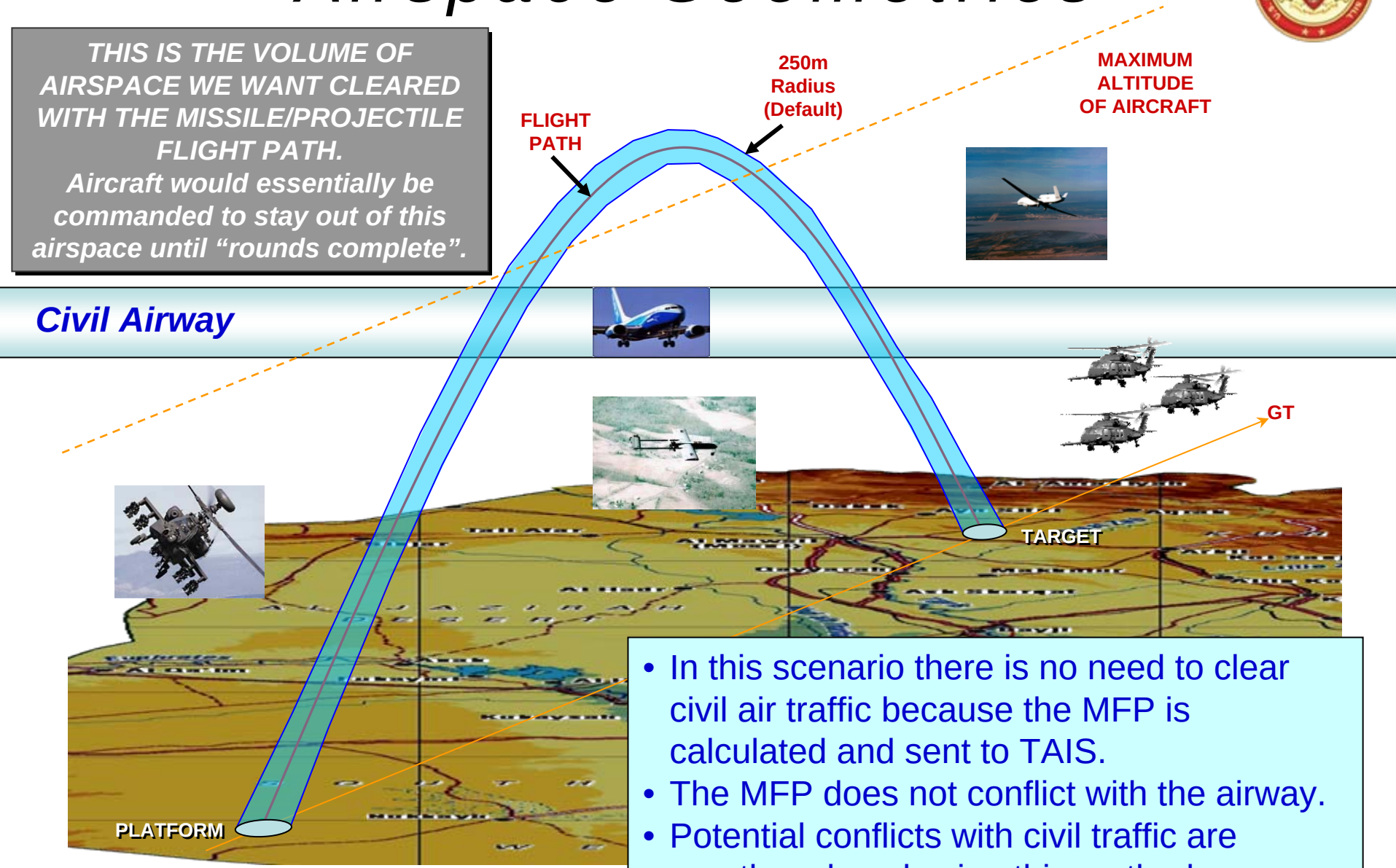




Create the Thunder

Airspace Geometries

THIS IS THE VOLUME OF AIRSPACE WE WANT CLEARED WITH THE MISSILE/PROJECTILE FLIGHT PATH. Aircraft would essentially be commanded to stay out of this airspace until "rounds complete".



- In this scenario there is no need to clear civil air traffic because the MFP is calculated and sent to TAIS.
- The MFP does not conflict with the airway.
- Potential conflicts with civil traffic are greatly reduced using this method.

Create the Thunder