Fires
An Operational Perspective
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“Our Army at War -- Relevant and Ready”
CHALLENGE

- Synchronization Of Effects
  - Time and Space

- Ground Maneuver Is **Event** Driven
  - Multiple Echelons

- Flexibility Is Key
  - Multiple Decisions

- Persistance

- Minimize Collateral Damage

**Responsiveness Is Essential**
Ground Commander’s Requirement for Fires

**Shaping Fires**
Isolate the close fight
Shape the next fight
Protect the force
Prepares battlespace for decisive operations

**Counter Strike**
Focus is preemptive – attack before he fires
Target enemy’s total strike system

**Close Supporting Fires**
Attack enemy troops, weapons & positions
Fix the enemy & ensure freedom of maneuver
Synchronized

**Counter Insurgency (COIN)**
Precision fires in urban and complex terrain
Limit collateral damage
Persistant

**Ground Commander’s Requirement for Fires**
Emerging Battlespace Perspective

From Battlefield to Battlespace

Conventional

- Massed Forces
- More Deconflicted than Integrated
- Attrition Warfare
- Military to Military
- Symmetrical

An ADDITIVE Conflict Environment

- Massed Electrons
- Smaller Formations
- Lethal & Non-Lethal Fires, Forces
- All Elements of National Power
- Rapid & Asymmetric Action
- Simultaneous Operations
- Smaller Operations
- Effects Based Operations
- Flexible, Dynamic Command & Control Relationships
- Operational and Strategic Seams

Air

Ground

Corps

Marine Expeditionary Force (MEF)

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5/7/2007
Army Indirect Fires – The Way Ahead

Transforming Fires

From

• Linked
• Access to Joint systems
• Connected to sensor outputs
• Less Agile / Heavy
• Support to Maneuver
• Lethal (through mass)
• Area effects with limited precision
• Large logistics burden
• Ability to mass fires
• 24/7, all weather

To

• Networked battle command
• Interdependent with Joint systems
• Dynamic Sensor to Shooter linkages
• Strategic and tactical mobility
• Fully Integrated with maneuver
• Lethal (through precision and volume)
• Precise effects with area options
• Reduced logistics requirement
• Ability to mass effects; lethal and non-lethal
• 24/7, all weather & all terrain

to achieve Destructive, Suppressive, Protective and Special Purpose Effects
ACCURATE and TIMELY EFFECTS

Target Location Error (TLE)
+ Robust Network
+ Circle Error Probable (CEP)
+ Processing Procedures
+ Clearance

Responsiveness Is Essential
Joint Fires Application Issues

Circular Error Probable (CEP)

- Radius of circle within which half of the projectiles are expected to fall
- CEP depends on type of weapon/munition e.g.
  - Artillery/mortar (wind, range, weather)
  - Laser guided (bad designation, laser sensor errors/limitations/graze angle)
  - GPS guided (GPS errors, target movement, guidance and control errors)

Target Location Error (TLE)

Difference between the actual and the expected location.
- TLE is 3-dimensional and affected by range to target, self-locating ability of the sensor, GPS accuracy, environmental conditions, etc...

Weapon Effect Burst Radius

The area within which a weapon achieves a certain level of lethality (Probability of Kill) against the intended target.
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Munitions Terminology

Precision Munitions
Capable of self locating and maneuvering to a **specific location** with an accuracy sufficient to yield a high probability of destruction within its inherent capabilities.

Smart Munitions
Self-contained capability to search, detect, acquire, and engage individual targets by **detecting** the general target characteristics in order to provide terminal guidance for the munition or submunitions.

 Discriminating Munitions
Self-contained capability to search, detect, acquire, and engage individual targets by **distinguishing** specific characteristics of the target to selectively identify and engage only the desired target types.