



Precision and Non-Lethal Weapons (NLW)

Precision Strike & Targeting Symposium

19 October 2005

Purpose & Overview

- **Purpose**
 - Discuss Non-Lethal Weapons in Support of the Warfighter
- **Overview**
 - Non-lethal History & Background
 - Required Effects & Current Solutions
 - The Future: An integrated approach

Forces Facing Situations...

- **Characterized by:**
 - Little or no indications and warning
 - High frequency of occurrence
 - Large number of unknowns
 - Low tolerance for causalities and collateral damage
 - Restricted rules of engagement & political sensitivities
 - Mission time criticality
 - Success or failure often measured in minutes or hours
- ***3-Block war***
 - Humanitarian relief on one block, crowd control on another and limited combat on another

Real World Examples

- “U.S. Marines shot and killed the driver of a vehicle speeding toward a military checkpoint in Port-au-Prince, Haiti. The Haitian driver of the vehicle was apparently just innocently driving his brother home from the airport.”
- “U.S. soldiers shot into a crowd of thousands of demonstrators in a Baghdad slum on Wednesday, killing one civilian and wounding four ...”
- “An American soldier was shot [by sniper] in the head as he waited in line to buy a soft drink at Baghdad University today...”

Different Type of Need: NLW

DoD Directive 3000.3, 9 July 1996

- **Established the Joint Non-Lethal Weapons Program (JNLWP)**
- **Designated the Commandant of the Marine Corps as Executive Agent (EA) with the responsibility for:**
 - “...providing program recommendations and for stimulating and coordinating joint non-lethal weapons requirements.”

Joint NLW Directorate (JNLWD)

- **Marine Corps established JNLWD to support Joint NLW development**
- **Since that time the JNLWD & the services have:**
 - Conducted a number of concept exploration programs
 - Funded R&D initiatives
 - Fielded NL equipment

NLW Definition

Non-Lethal Weapons as defined by DoD Directive 3000.3 are:

“Weapons that are explicitly designed and primarily employed so as to incapacitate personnel or materiel, while *minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment.*”

Desired Effects

Category	Desired Effect	Examples
Counter Capability	Disable, Render Inoperable, Degrade, Suppress Equipment (reversible without external intervention)	<ul style="list-style-type: none">• Offensive Electronic Warfare• Jammers
Counter Materiel	Disable, Render Inoperable, Degrade, Suppress Equipment (reversible with external intervention)	<ul style="list-style-type: none">• Vehicle nets• Surface treatments
Counter Personnel	<ul style="list-style-type: none">• Distract and/or disorient• Incapacitate (Render individuals incapable of acting or reacting)	<ul style="list-style-type: none">• Blunt trauma• Flash-bangs, stun grenades• Riot Control Agents (RCA)• Neuro-Muscular Disruptors (NMD)

Not Much Out There...

Some Reasons:

- **Other financial priorities**
- **Warrior mindset**
- **Focus on making the effect non-lethal**
- **Chemical treaties**
- **ACLU – easier to develop lethal systems**
- **Defining human responses**
- **Scaleability**
- **Practicality of combining lethal with non-lethal**

WBB Recommended NLW Future

- **Not currently part of JNLWD strategy**
- **Based on supporting non-lethals over last 6 years**
 - Conducted multiple service & COCOM NLW Integrated Process Teams
 - Developed & analyzed Service Requirements
 - Developed Concepts of Employment
 - Conducted & analyzed user evaluations
 - Supported NLW Acquisition Community

Improving NLW Progress

Focus on meeting objective of DoD 3000.3 to minimize collateral damage, injuries & death

- Primary driver should be the desired end-state vice the means
- Adopt an integrated approach

Integrated Approach

1. Continue to Develop actual NL effects
2. Include development of enablers such as optics, target acquisition sensors, etc (not responsibility of JNLWD)
3. Improve precision of NLW
4. Employ precision lethal systems that meet the objective of DOD 3000.3

1. Continue to Develop NL Effects

Examples: ([graphic](#))

- **Neuro-muscular Disruptors**
 - Incapacitate personnel
 - Need extended range, multi-shot
- **Active Denial System (ADS)**
 - Dissuade effect – skin burning sensation
 - Need small, light weight



2. Include Enablers

- **Intelligence, Surveillance & Reconnaissance**
 - Enhanced Situational Awareness
 - “See/sense” through walls ([graphic](#))
 - Determine intent
 - Target acquisition sensors
- **C2**
 - Enhanced connectivity with individual & small unit

3. Improve Precision of NL

- **Increase precision of**
 - Current non-lethal weapons
 - Future non-lethal weapons (graphic)



**Bomber ?
Ring leader ?
Innocent ?**

4. *Employ Precision Lethal*

- **Directed Energy**
 - Advanced Tactical Laser (ATL)
 - Pulsed Energy Projectile (PEP)
 - Laser Guided Energy (LGE)
- **Kinetic Energy Weapons**
 - Individual or crew served weapons that use precise targeting

Benefits of an Integrated Approach

- **Accomplishes Mission**
- **Reduces Risk to Warfighter by Providing:**
 - More situational awareness to friendly forces
 - Less reaction time to threat
 - Improving targeting and precision of lethal systems
 - More certain results - instantaneous
- **Reduces Unintended Effects (Personnel & Infrastructure)**
- **Reduces Risk of Catastrophic Consequences (lethal if necessary)**

Benefits (cont)

- **Applicable to Entire Spectrum of Conventional Warfare**
- **Minimize Log Burden – scaleable effects in integrated approach**
- **Simplifies Shooters Decision Process - “Lethal vs NL”**
- **Builds Confidence in Warfighter**

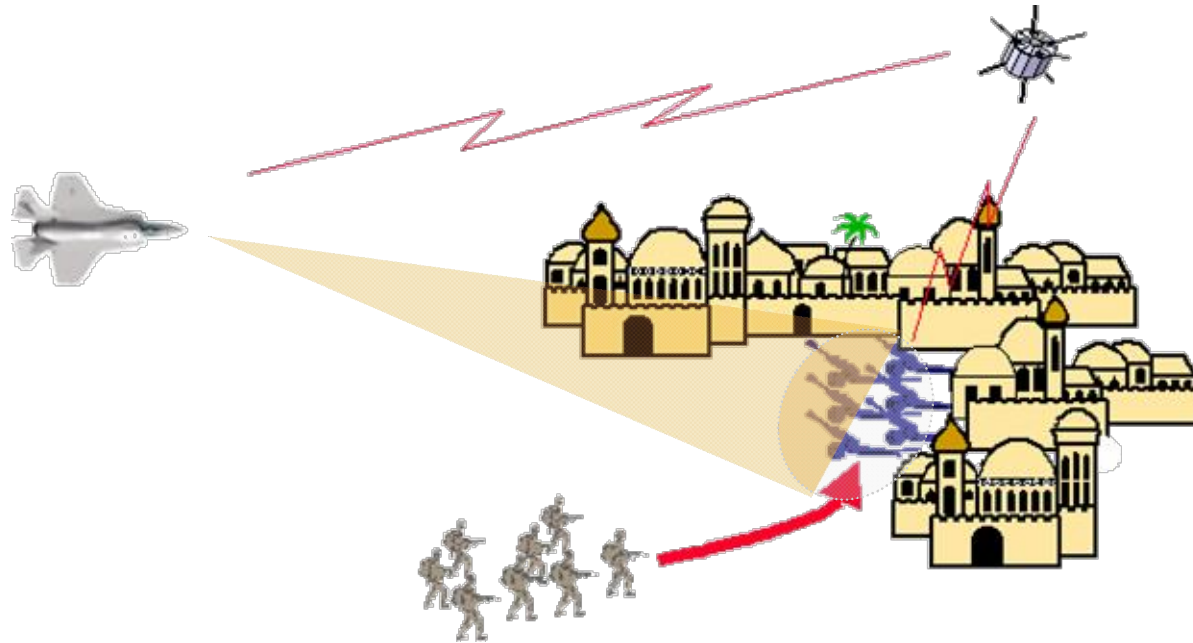
Keeps the fight in warfighter

Summary

- **NLW Program trying to meet DoD 3000.3 objective to minimize collateral damage, injuries & death**
- **Current status**
 - Many factors contribute to slow progress
 - Requirements just beginning to be documented in new Joint Capabilities Integration & Development System (JCIDS)
 - ADS ACTD and some DE R&D being conducted
- **Future**
 - JCIDS Requirements established
 - Commitment by Services & Industry to expand development and fielding of integrated NLW solutions

Backup

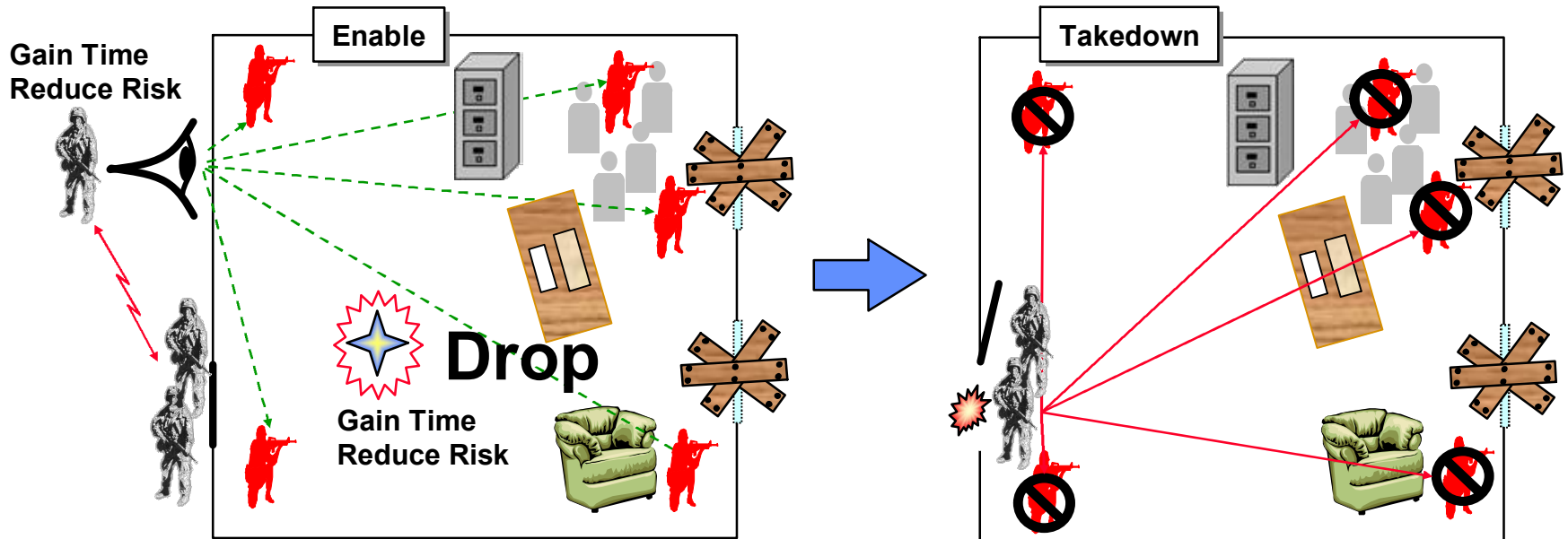
Area Target Example



- Plan a coordinated attack with NLW in support
- Employ standoff non-lethal effects that render the entire threat battery and occupants ineffective
- Send in assault team to destroy artillery weapons and eliminate threat



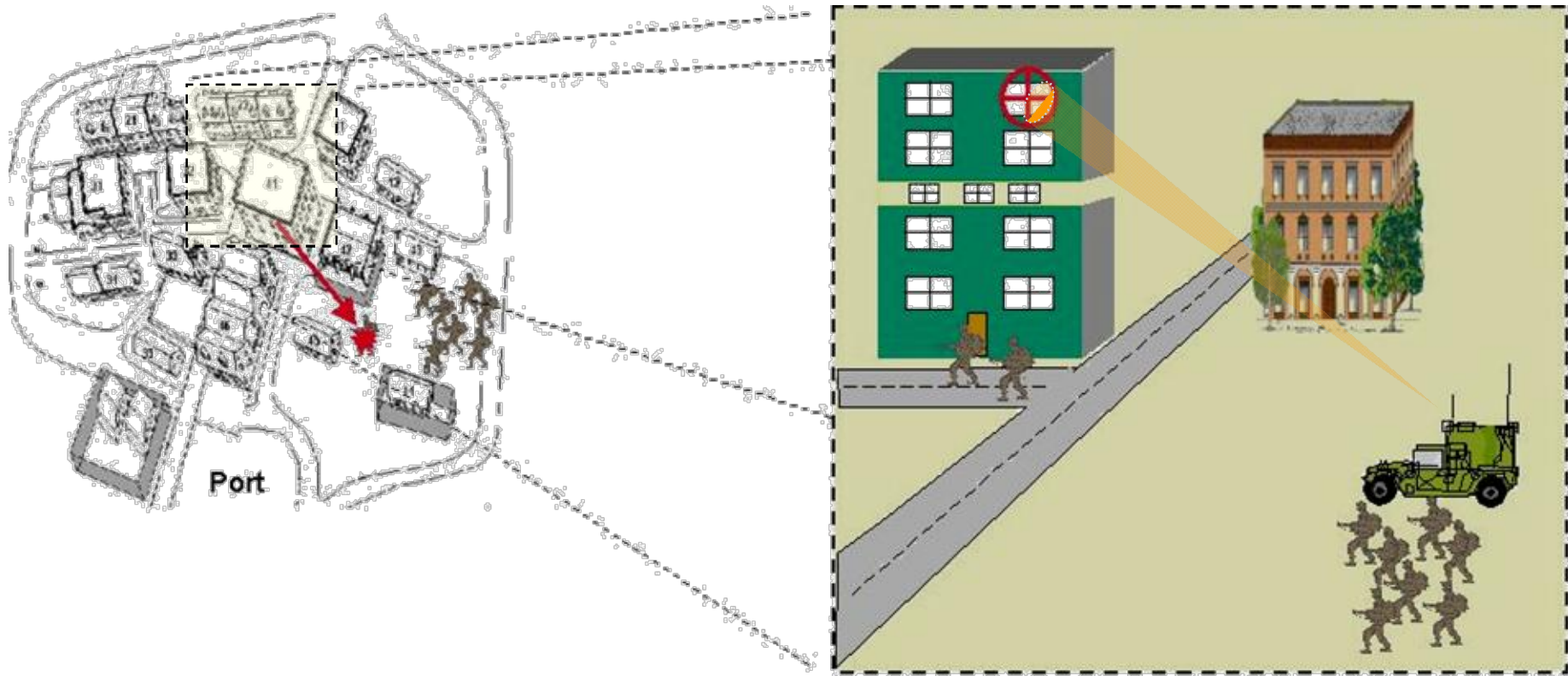
Clear Space by Entering Example



- Obtain situational awareness (sense through walls)
- Introduce a setup device to Incapacitate
- Enter & identify threat target
- Engage with takedown device (NLW or precision lethal weapon)



Point Target



- Determine Forward Observer location through intelligence & other means
- Engage and render ineffective with standoff effects that can be used among noncombatants



Advanced Tactical Laser (ATL)

Description

- Modular high-energy laser weapon system on C-130 aircraft (AFSOC Mission Scenarios)
 - Day/Night capability
 - Adjustable laser dwell time

Military Applications

- Area delay/denial to vehicles
- Vehicle interdiction
- Counter capability/material
- Ultra-precision strike

Mission Tasks

- Deny/defend area
 - Engage threat
-



ATL C-130



Pulsed Energy Projectile (PEP)

Description

- Mobile
- Extended range
- NL, counter-personnel
- Multiple/tunable target effects (distract, deter, disable)
- Creates plasma detonation close to body. Effect depends on power

Military Applications

- Delay, Distract/disorient, Incapacitate
- Denial to Controlled Areas
- Separate Belligerents

Mission Tasks

- Crowd Control
- Engage Threat
- Deny/defend area



PEP Integration CONCEPT



Rules of the Game Changed...



**11
September
2001**

- **Mission environment**

- Foreign soil
- Small scale, localized

- **Rules of Engagement**

- Very Strict
- Positive Identification
- Zero collateral damage
- Eliminate risk to own force and non-combatants

- **NLW focus**

- Weapons/effects for small units/individuals

- **Mission environment**

- Universal
- Global war

- **Rules of Engagement**

- Less strict
- Identification
- Minimize collateral damage
- Minimize risk to own force & non-combatants

- **NLW focus**

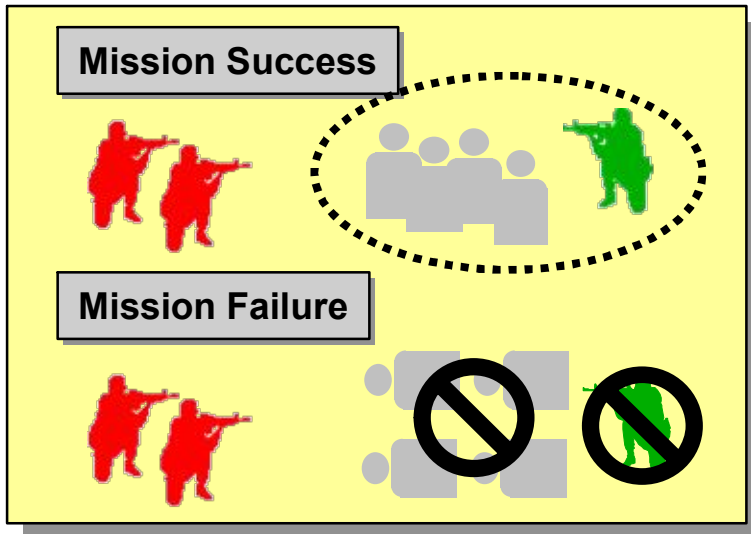
- Broad, holistic, integrated & interoperable Family-of-Systems

...and the Stakes Were Raised

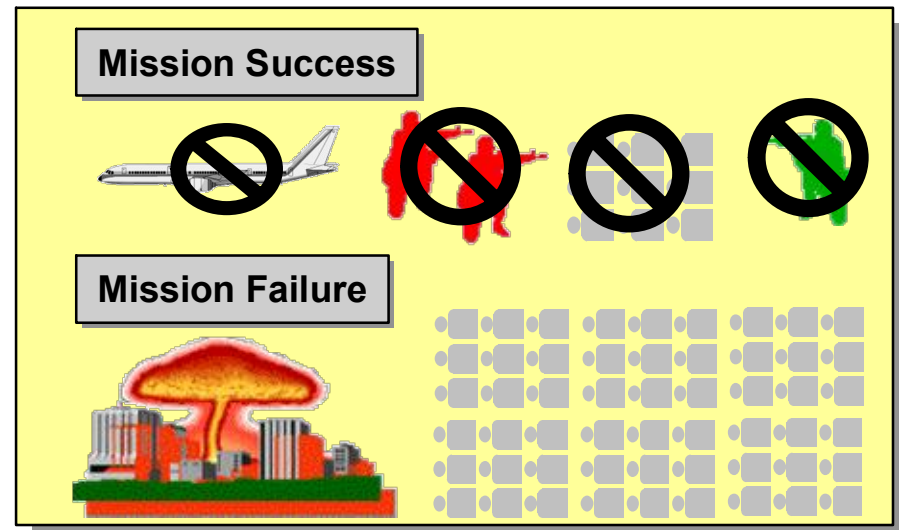
Example: Hijacking

11 September 2001

Before



After



- **Mission Success**

- ✓ Non-combatants safe
- ✓ No friendly casualties

- **Mission Failure**

- ✓ Non-combatant casualties
- ✓ Blue Force casualties

- **Mission Success**

- ✓ Eliminate threat (deny, degrade, disrupt, disable, destroy)

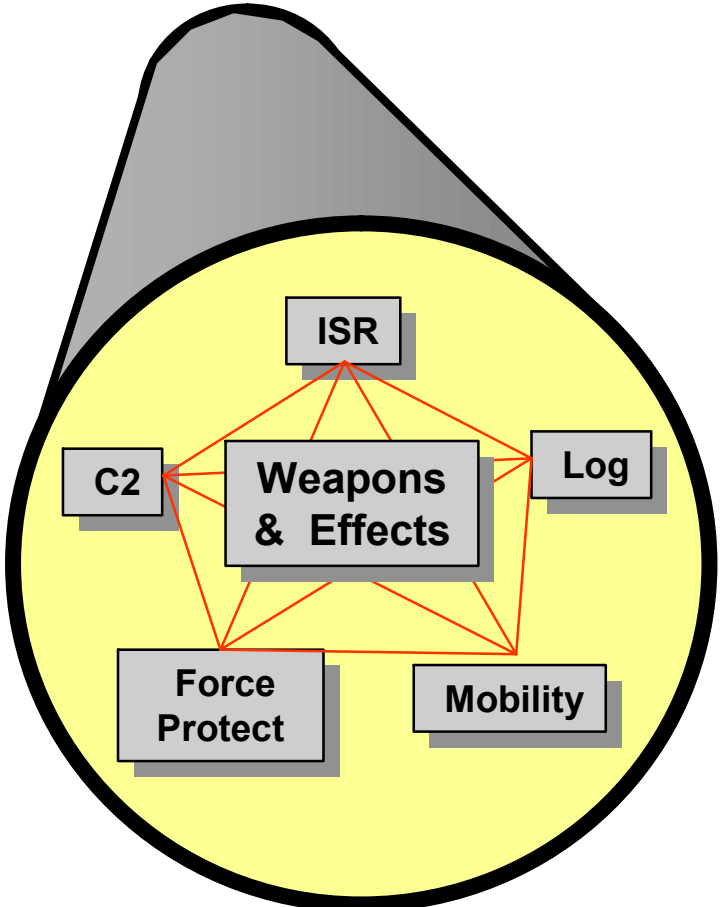
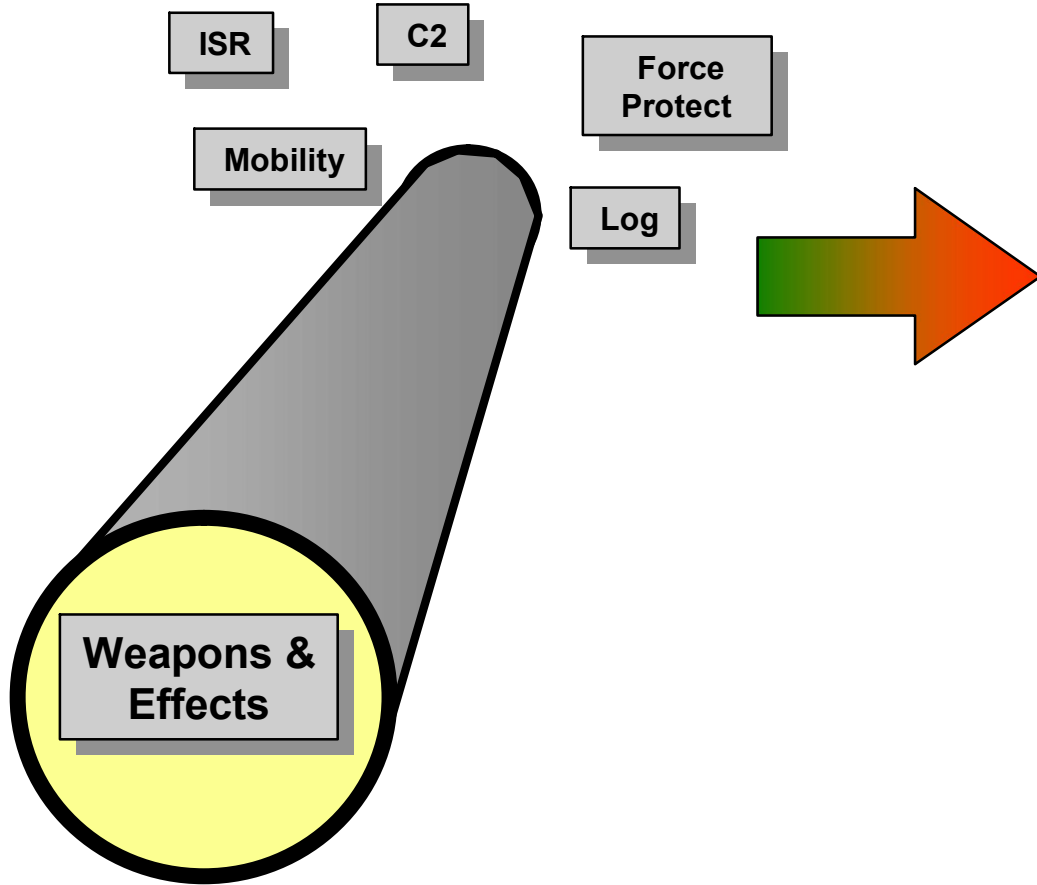
- **Mission Failure**

- ✓ Terrorist accomplishes mission

To Achieve Goals - Focus Must be Integrated

Non-Lethal Weapons (NLW)

Family-of-Systems for a Precise Response



Yesterday's Focus

Today's Focus