



Lethality, Survivability, Mobility and  
Sustainment for America's Army

# **Non-Lethal Technologies for The Objective Force**

## **Briefing for the NDIA Firepower Conference**

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**Tank-automotive & Armaments COMmand**  
*Committed to Excellence*

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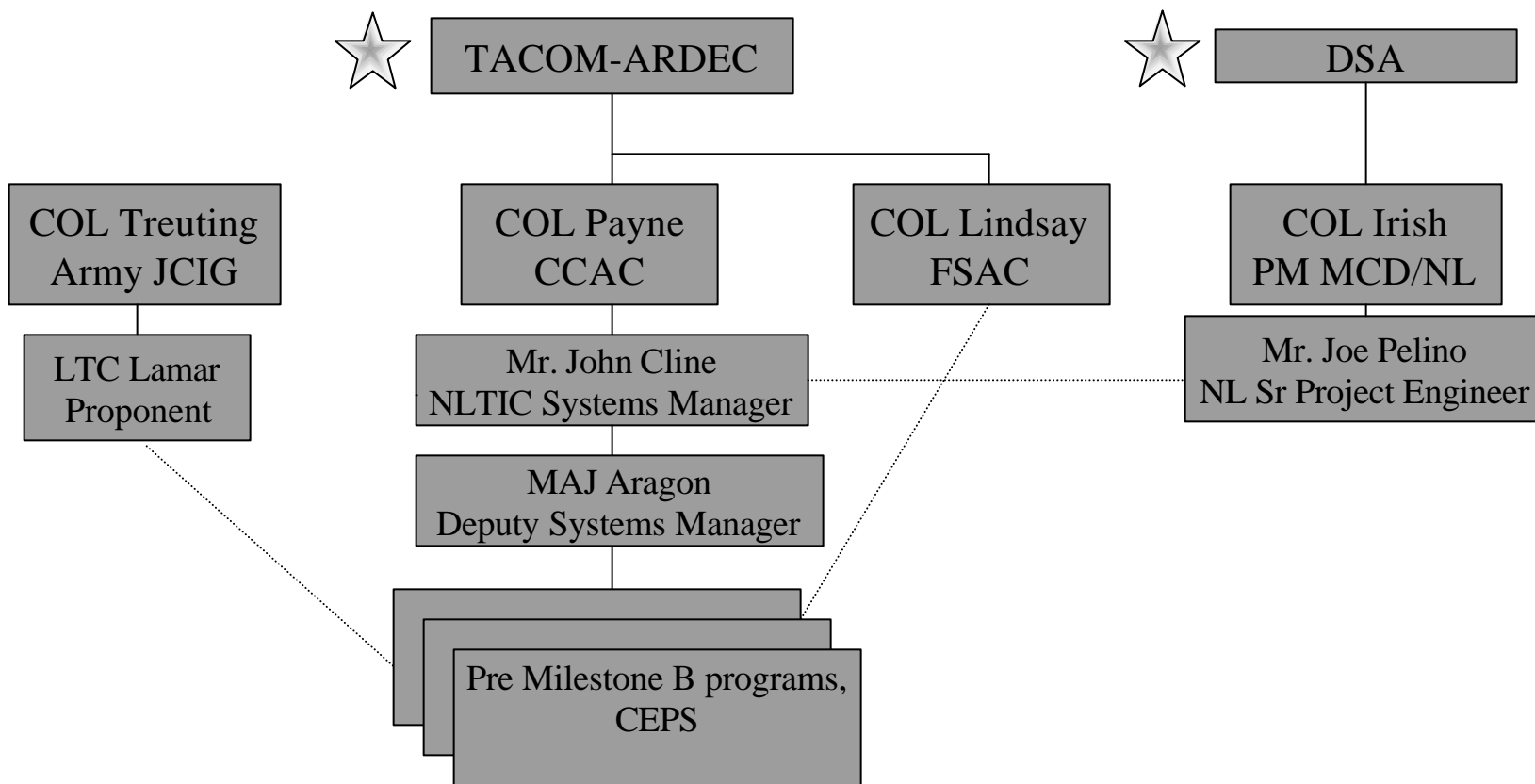
# OUTLINE

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- **Organization and Roles**
- **Army Lead Joint NLW Programs**
- **Army Proposed NL S&T for Future Combat System**
- **Conclusion**



# Army NL Organizational Structure



# US Army Roles in NLW

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## *Single Proponent for U.S. Army Non-Lethal Applications*



- The U.S. Army Military Police School (USAMPS, at Fort Leonard Wood, MO) designated single proponent for Army Non-Lethal Applications, effective 12 Sep 00.
- USAMPS will serve as the U.S. Army Training and Doctrine Command's single voice for all developments and initiatives to field NL capabilities.

# U. S. Army Roles in NLW

(cont)



## *Project Manager for Mines, Countermine and Demolitions*



- The Project Manager – Mines, Countermine and Demolitions (PM-MCD), located at Picatinny Arsenal, NJ, has program management responsibility for Army Non-Lethal Materiel Acquisition programs, and establishing the Army's Non-Lethal Capability Sets. PM-MCD sits on NATO LG 9 on Combat Engineering.



## *Systems Manager for U.S. Army Non-Lethal Technology Integration*



- The Tank-automotive and Armaments Command - Armament, Research, Development and Engineering Center (TACOM-ARDEC), Close Combat Armaments Center (CCAC), located at Picatinny Arsenal, NJ, has responsibility for leading coordination of Army NL Technology development within AMC. CCAC sits on NATO LG 3, Close Combat Infantry.

# DoD Joint NLW Program

## Legacy Army Lead Materiel Programs



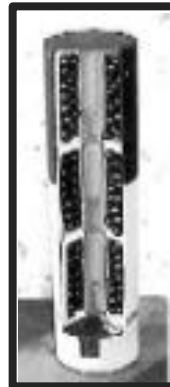
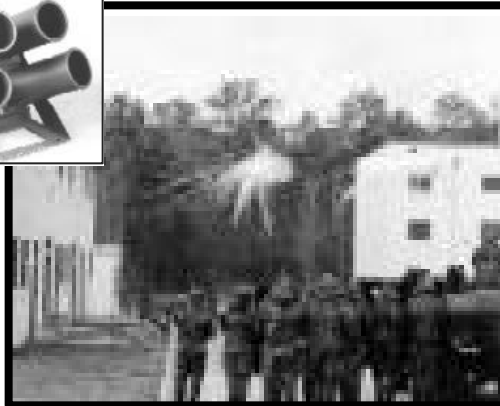
*Army's 1st "TC-Std" NL  
Area Target Munition*



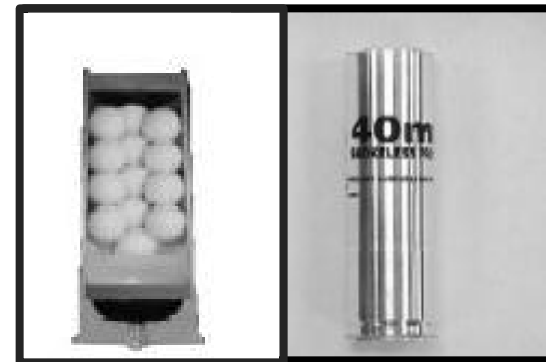
**M5, Modular Crowd  
Control Munition  
(MCCM)**



**M1, Portable Vehicle  
Arresting Barrier (PVAB)**



**66mm Vehicle Launched  
NL Grenades (XM98 Distraction,  
XM99 Blunt Trauma)**

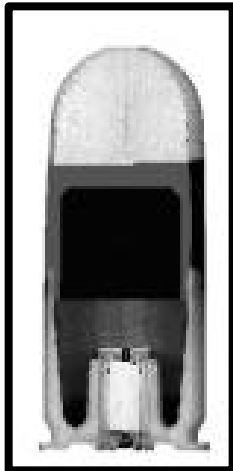


**40mm NL Crowd  
Dispersal Cartridge (CDC), XM1029**

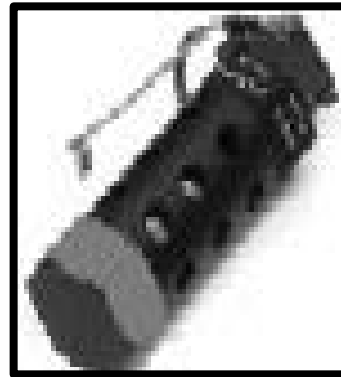


# Army Soldier Enhancement Programs

**40mm M1006  
Non-Lethal Cartridge  
(Sponge Grenade)**

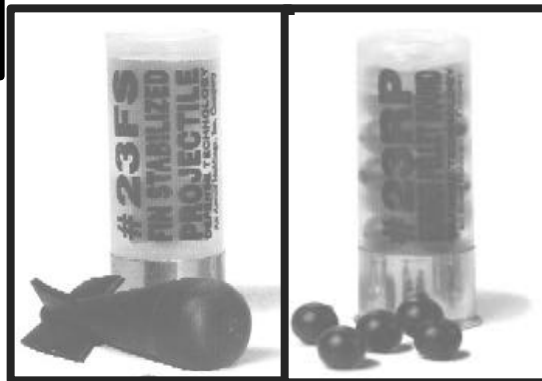


*Army's 1st  
TC-Std NL  
Point Target  
Ctg*

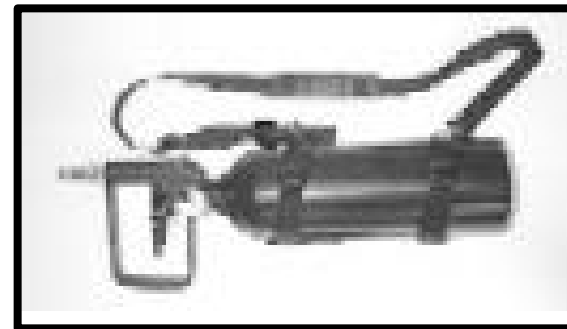


**M84 Stun Grenade**

**5.56mm XM95  
Rifle Launched  
Non-Lethal Munition**



**12 Gauge  
Non-Lethal Munitions  
XM1012, XM1013**



**M37 Mid Size  
Riot Control Dispenser**







# Urgent Fielding to Balkans



In the military  
weapons pack powerful

**Kosovo  
April 2000  
Feb 2001**



**LTC Brown, Battalion Commander, Bn 709th (Task Force Falcon Provost Marshall)**  
***“Bottom line is that our new equipment works well and the NLM kept us from having to kill someone as well.”***

**Joint Non-Lethal Weapons  
Program  
US Army Lead Activities**

# Why Non-Lethal?

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DoD Directive 3000.3, 9 Jul 96  
Policy for Non-lethal Weapons (NLW)

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. . . **Designates** . . . Commandant of the Marine Corps  
Executive Agent for the DoD NLW Program . .

. . . **Defines NLW** . . . “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.”

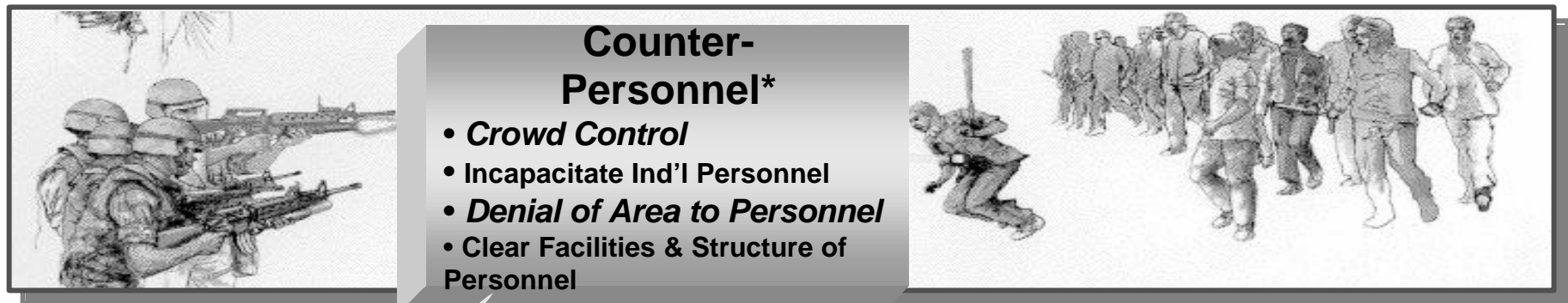
. . . **Directs** . . . Services to participate in NLW program



# DoD Joint NLW Core Capabilities & Functional Areas

## - Joint Mission Area Analysis (JMAA) -

DOD 3000.3: Policy for Non-Lethal Weapons - "NL Weapons 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."



**Counter-Personnel\***

- *Crowd Control*
- Incapacitate Ind'l Personnel
- *Denial of Area to Personnel*
- Clear Facilities & Structure of Personnel



**Counter-Materiel\***

- *Denial of Area to Vehicles*
- Disable/Neutralize Equipment

\* Functional Areas / Tasks  
Prioritized by all CINCs at  
1996 DoD NLW User's Conference;  
Joint Concept for NLW's  
&  
Per JMAA Jan 2000

# Area Denial-Personnel CEP



## Primary Mission Tasks

To deny an area to personnel in

- Urban/suburban environment
- Rural/open terrain environment

## DESCRIPTION

- Joint NLWP formal Phase 0 CEP assigned to Army as lead
- Identify, develop, and evaluate alternative concepts that satisfy the requirements of Area Denial to personnel NL functional area. mission task
- Not limited to pre-emplaced systems or munitions

## MILESTONES

- |                |                         |
|----------------|-------------------------|
| • MNS approved | Mar, Oct 96 (USMC, USA) |
| • Milestone 0  | 3Q FY00                 |
| • CRD          | 1QFY02                  |
| • Milestone B  | 3QFY02                  |
| • Milestone C  | TBD                     |
| • FUE          | TBD                     |

# Crowd Control CEP



## Primary Mission Tasks

- Contain or stop the crowd from advancing
- Disperse a crowd between 50-1000 meters
- Direct the crowd movement
- Isolate specific individual(s) within a crowd
- Separate Belligerents
- Disperse a crowd within 0-50 meters

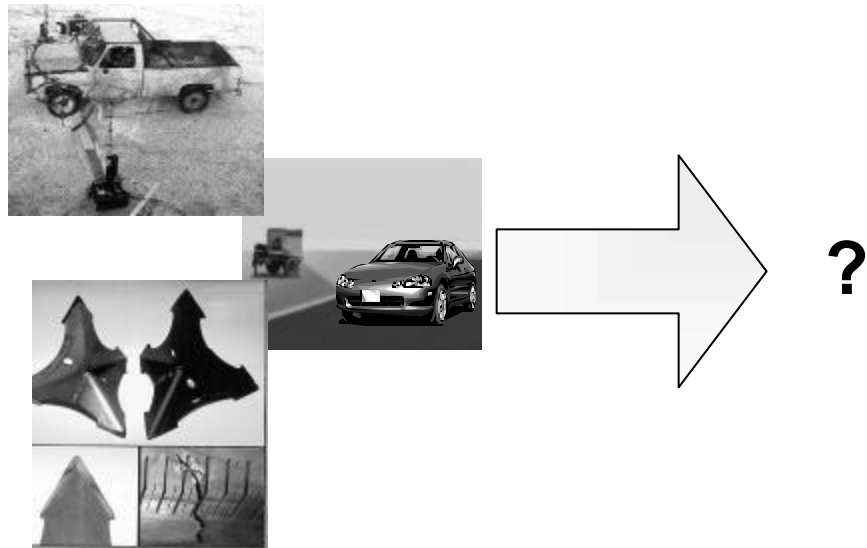
## DESCRIPTION

- Joint NLWP formal Phase 0 (A) CEP assigned to Army as lead
- Identify, develop, and evaluate alternative system concepts that satisfy the jointly scoped mission tasks of the Crowd Control NL functional area
- Not limited to pre-emplaced systems or munitions

## MILESTONES

- |                         |               |
|-------------------------|---------------|
| • MNS approved          | Oct 96 (Army) |
|                         | Mar 96 (USMC) |
| • Milestone A           | 2QFY01        |
| • ORD to Staffing       | 2QFY03        |
| • Mid-Phase A Dec'n Rev | 2QFY03        |
| • Milestone B           | TBD           |
| • Milestone C           | TBD           |

# AD-V CEP



## Primary Mission Tasks

- Deny an area to land vehicles
- Stop a vehicle-urban/suburban environment
- Channelize vehicles
- Stop a vehicle-open/rural environment

## DESCRIPTION

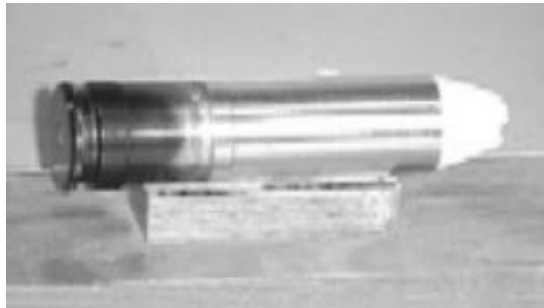
- Joint NLWP formal Phase 0 (A) CEP assigned to Army as lead
- Identify, demonstrate, and evaluate alternative concepts that satisfy NL Area Denial to vehicles mission task
- Not limited to pre-emplaced systems or munitions

## MILESTONES

- |                         |         |
|-------------------------|---------|
| •MNS approval           | FY96    |
| •Milestone A            | 2Q FY01 |
| •ORD to Staffing        | 2QFY03  |
| • Mid-Phase A Dec'n Rev | 2QFY03  |
| • Milestone B           | TBD     |
| • Milestone C           | TBD     |

# NL Airburst Round for OICW

## JNLWP – Army Lead Pre-MS A Program



### USER PAYOFF

- Counter Personnel or Materiel Payloads
- Range Determinant NL Airburst Capability
- NL Rd for M203 Replacement
- Maintains separate L / NL system capability

### DESCRIPTION

- Joint NLWD program
- Non-kinetic NL Small Arms Capability
- Exploit the ability of airburst munitions to emplace or employ NL concepts.
- Capable of dispensing liquids, aerosols, powders, objects (post MS A)
- Scalable to other calibers / systems

### MILESTONES

- |                |                |
|----------------|----------------|
| • MNS approved | Mar 96, Oct 96 |
| • Milestone A  | 4QFY02         |
| • ORD approved | -----          |
| • Milestone B  | 1QFY04         |
| • Milestone C  | TBD            |
| • FUE          | FY09           |



# Non-Lethal Mortar Round

## JNLWP – Army Lead Pre-MS A Program



### USER PAYOFF

- Long Range NL Capability
- Deployable from Existing Platform
- Potential Variable Payloads

### DESCRIPTION

- Follow-on to Joint NLW TIP program (USA, USMC)
- Composite, Frangible, or Combustible Case Mortar Ctg, Electronic Fuze, Para- or Drag chute(s) for NL impact
- Payload TBD

### MILESTONES

- |                        |                |
|------------------------|----------------|
| • Service MNS approved | Mar 96, Oct 96 |
| • Milestone A          | 2QFY02         |
| • Draft ORD            | 1QFY03         |
| • Milestone B          | 3QFY04         |
| • Milestone C          | TBD            |
| • FUE                  | TBD            |

# Ground Vehicle Stopper (GVS)

## JNLWP – Army Lead Pre-MS A Program



### USER PAYOFF

- Stand-off Vehicle (Engine) Stopper
- Low Target Effect Signature
- Potentially reversible target effect
- Non-barrier / Mobile

### DESCRIPTION

- Joint NLW funded program (USA, USMC) Ground Vehicle Stopper (GVS)
- “Scaled Down Outdoor Demo” in FY01
- Vehicle Stopper system that acquires vehicles at standoff ranges without damage to occupants (or vehicle)
- Only Army led NL DEW system

\* JNLWP: “Technology Immature – Army S&T Needed”

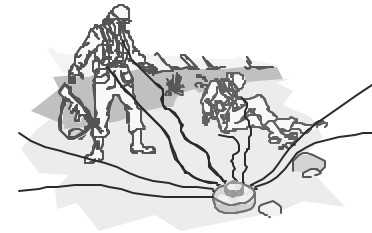
*Demo  
Completed:  
1 May 01  
@ APG*

# Technology Investment Programs (TIP) JNLWP Army-Lead

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## - Taser (Electric Stun) Anti-Personnel Munition

ARDEC GDOTS (PRIMEX) Demo'd: 8 Mar 00



## - Overhead Liquid Dispersion System

ARDEC GDOTS (PRIMEX) Demo'd: 8 Mar 00



## - 81mm NL Mortar Rd\*

ARL /ECBC UDLP Demo'd: 25 May 00

*\* - Follow-on Joint NLW, Army-lead, Program  
initiated in FY00: 2nd Demo in Apr 01*



## - Malodorant Study & Cultural Ranking

SBCCOM/ECBC

Final Report: Sep 00



## -NL Chem Payloads Front End Analysis

SBCCOM/ECBC

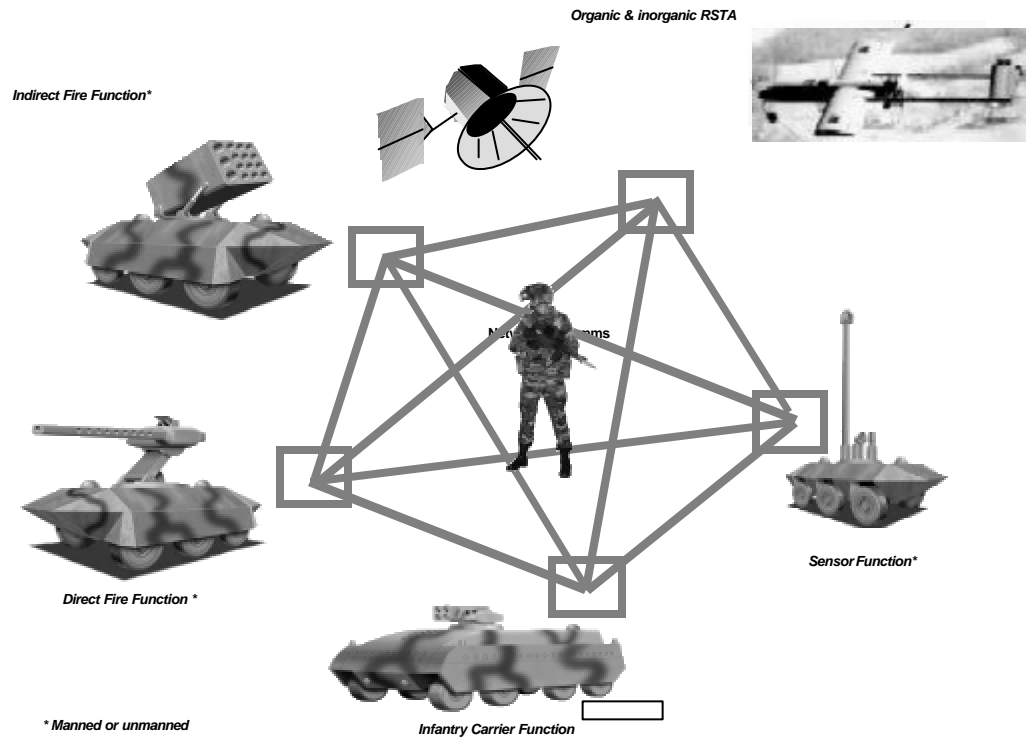
FY01 Start

**Non-Lethal Integration  
into  
Objective Force  
and  
Future Combat Systems**

# Future Army Requirement Driving Need for NL Technology

## Future Combat Systems (FCS) Munitions/Armament

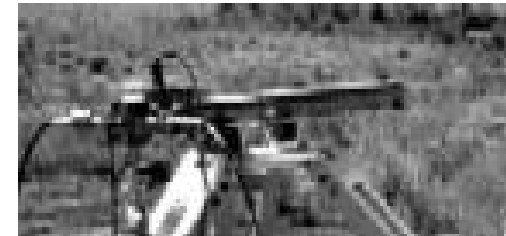
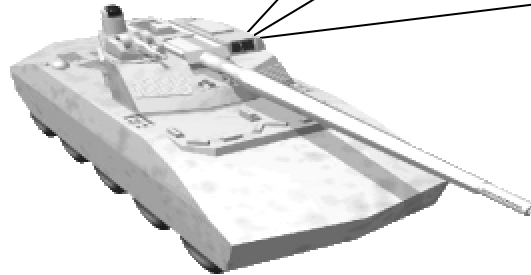
- Family of Systems for the Army Objective Force
- **#1 Army Modernization Priority**
- Mission Needs Statement: **FCS “will...include precision and non-lethal capabilities to minimize collateral damage.”**
- Army/DARPA funded development program
- FUE FY12



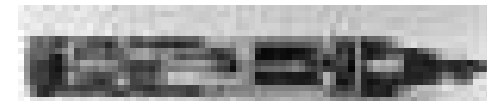
# Potential Army NL S&T Opportunities for FCS

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- **Aversive Audible Acoustics**
- **“NL Fires” Warhead / Payload Technology**  
for:
  - **Objective Force Precision**
  - **Area NL Effects**
- **Non Lethal Counter Materiel**
  - **RF-DEW**



**Non-Kinetic, Anti-Personnel  
Delay, Deterrence, Aversion**

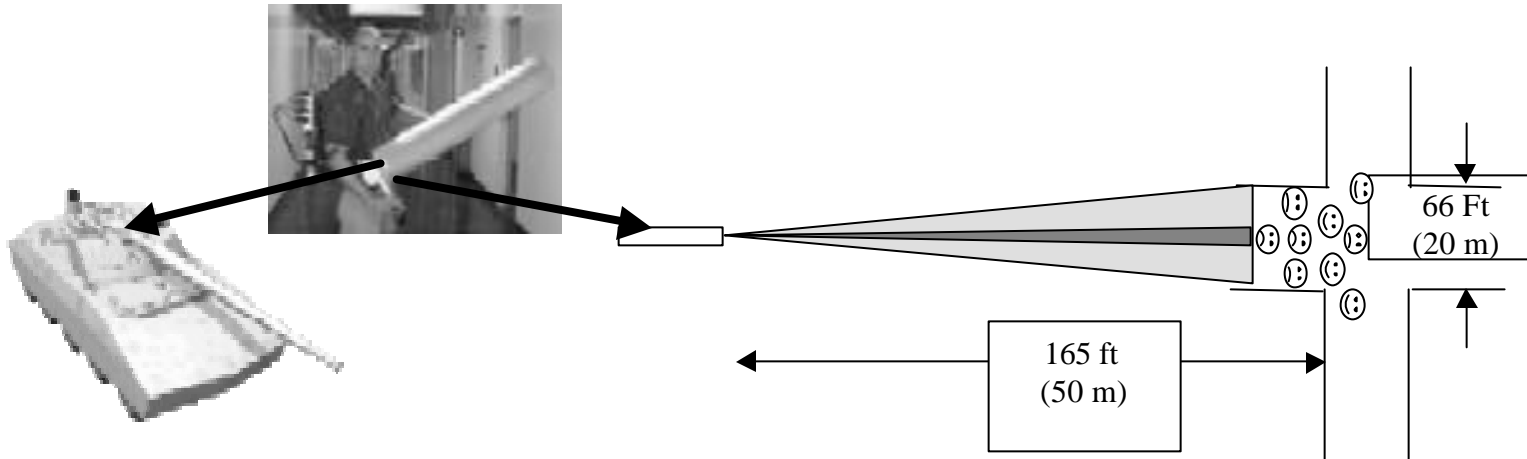


**“Tunable fires”**



**Reversible Effect, Standoff  
Vehicle Stoppers**

# Audible Aversive Acoustic Device for FCS

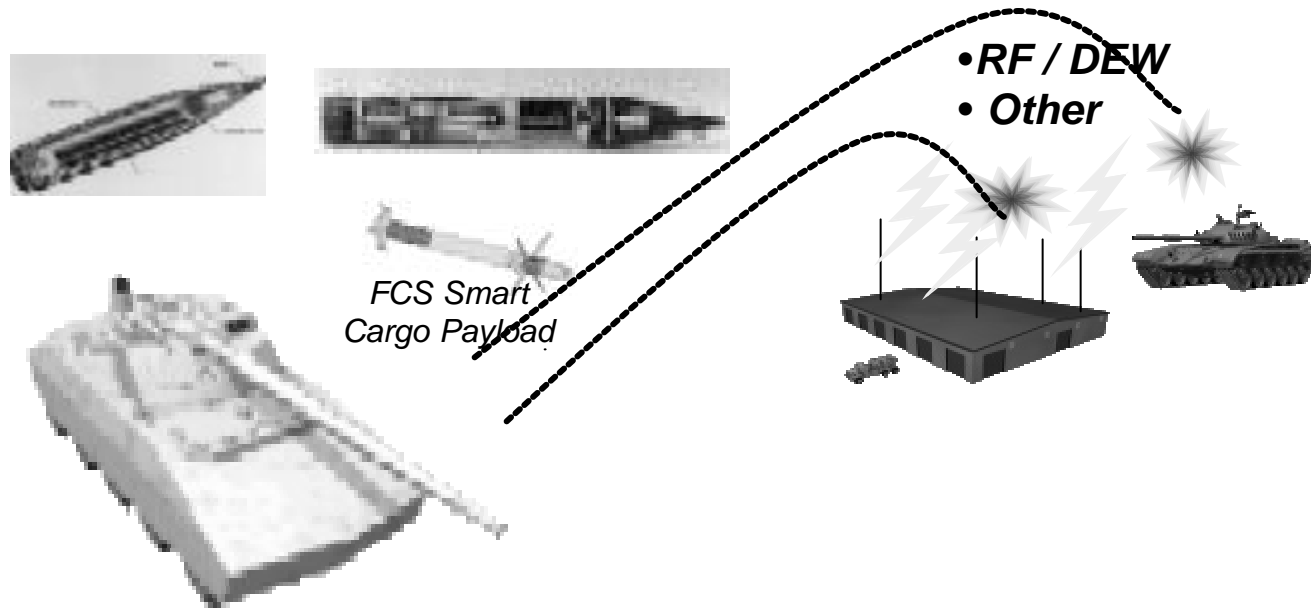


## DESCRIPTION:

- Vehicle Mounted or Hand-Held
- Sound Emission Below OSHA Standard for Permanent Hearing Damage
- Area Broadcast or Narrow Beam Modes
- Non-Kinetic, NL Counter-Personnel Device (“CNN Acceptability”)
- Aversive to Target with No Fatality / Injury
- Deep Magazine, Reduced Logistics (Rechargeable from Vehicle Power)
- Low Cost, Mounted / Dismounted Capability
- Engagement Range: 50 – 75m
- Environmentally Benign (No Clean-Up, No Energetic Materials)

# NL Fires Capability for FCS

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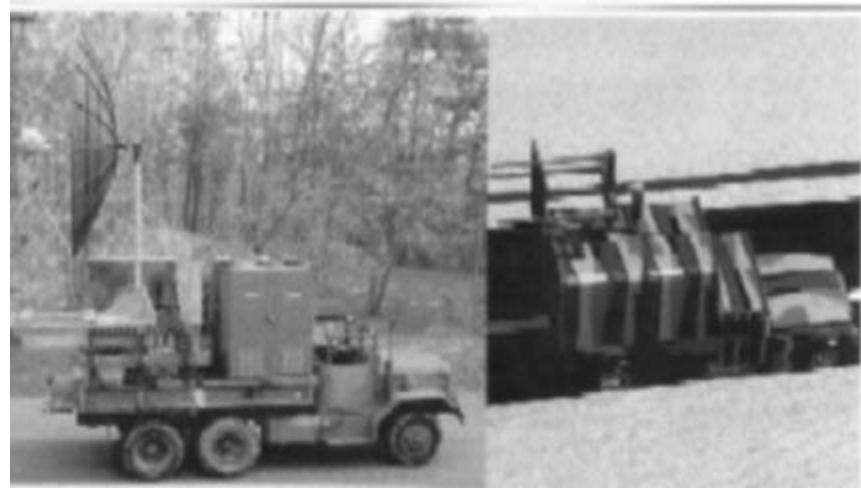
## DESCRIPTION:

- NL Counter-Materiel Capability for FCS Smart Cargo Rd
- Multi-Threat Capable (Electronic Components, Vehicles)
- 2 to 50 km Engagement Range
- Reduced Logistics Burden from Potential Selective Effect Munition
- Provide NL Counter-Materiel Payloads for Line-of-Sight / Beyond LOS Delivery from FCS Smart Cargo Rd



# NL Multi-Mission Counter Materiel Capability for FCS

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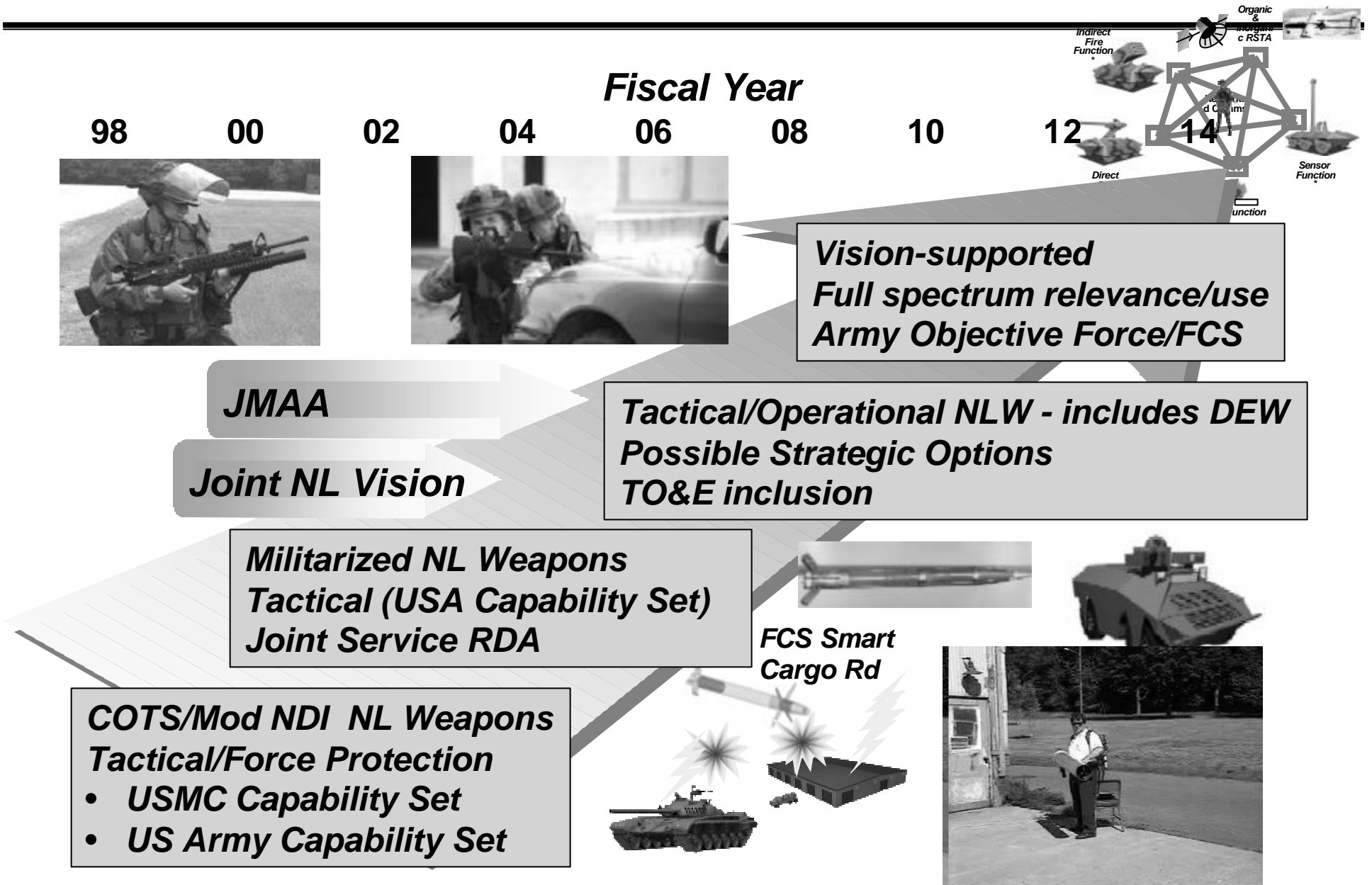


## DESCRIPTION:

- Standoff Vehicle/Equipment Stopping Capability
- 250m to 500m Engagement Range
- No Fatality / Injury to Occupants, Bystanders
- Potentially Reversible Effects on Vehicles
- All Weather, Multi-Threat Capable (C4I, Vehicles, etc)
- Reduced Logistics Burden
- Rapid, Affordable Reuse



# Future NLW Pathway



# Conclusions

**Develop technology for longer-range NLW**

**Invest Army S&T Funds in NL Capabilities for Future Combat System (FCS) & Objective Force**

**Integrate NLW Capability into the Objective Force**

**Provide Army with enhanced NL capabilities for FCS across the Full Spectrum of Conflict**

**Develop a True Rheostatic Weapon**





# **Non-Lethal Technologies for The Objective Force**