



**U.S. ARMY ARMAMENT RESEARCH,
DEVELOPMENT, & ENGINEERING CENTER
(ARDEC)**



TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

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13919 - Joint Service Small Arms Program Office Technical Base

Integration into NATO LCG-1 Weapons and Sensors Roadmap

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Joint Armaments Conference, Exhibition and Firing Demonstration

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Our #1 initiative is the successful transition of technology for small arms related technology to PM Programs of Record

- Achieve this through a balanced portfolio strategy
- Focused on Capability Gaps as identified in the Joint Small Arms Capability Assessment and Army Small Arms Capability Based Analysis
- Focused on identified requirements from through the Joint Service Small Arms Master Plan
- Focused on leveraging :
 - Technology
 - Academia
 - Industry
 - Weapon concepts feasible for further research and development
- International Development Programs





- Intensive management of the DoD small arms tech base
- Harmonization of requirements





- **Rapid NATO Response Force**
- **Multinational Task Organization**
- **Technology Advanced**
- **Deployable with in 5 days**
- **Sustainable for 30 days**
- **Trained and equipped to common standards**



	Rifle upgrade	CCO	GL FCS	Handgun	Suppressor	LAM	Magazine
BEL	X	X		X			
CAN	X	X	X	X	X	X	X
CZE	X						X
DEU	X	X	X			X	
DNK				X	X		
ESP			X	X	X		
EST	X	X		X	X	X	
GBR	X	X	X	X		X	X
HUN	X						
ITA			X				
NLD	X	X			X		X
NOR	X	X	X	X	X	X	X
SWE	X	X	X		X	X	X
USA	X	X	X	X	X		
Σ	11	9	8	8	8	6	6

CCO = Close Combat Optics

GL FCS = Grenade Launcher Fire Control System

LAM = Laser Aiming Module



- Supporting the development of NATO Staff Requirements:
 - Defining for Industry new NATO Staff Requirements for: Handgun, PDW, Grenade Launcher, Assault Rifle and a Machine Gun
 - Harmonized Requirements
 - Common Acquisition across NATO
 - Interoperability for the Soldier
 - Maximizing Industry IR&D

- Supporting the development of NATO STANAG for the “Powered Rail” :
 - Defining for Industry a NATO requirement for the powered interface to the NATO Accessory Rail (STANAG 4694)
 - Voltage range
 - Max current
 - Data protocol
 - Typical grabber design
 - Spring pressure
 - Sealing / coating

Advanced Small Unit Small Arms Technology Concepts R.AR.D.2012.03

Purpose:
Identify and advance technologies leading to the ability to improve Small Unit Level effectiveness. Utilize new small arms technological concepts to improve range overmatch capability against like-sized threat elements.

Results:
• TRL 2 Concept development
• TRL 3 Demonstrations of components and technologies
• TRL 4 Concept tests
• Critical new concept designs

Payoff:
• Dramatic increase in range overmatch over current small arms systems
• Maximized Operational Utility and Survivability
• Assured Lethality

Schedule & Cost

	FY(12)	FY(13)	FY(14)	FY(15)
Solicitation of Concepts	[Green bar]			
Contract Awards (~8 to 14)	[Green bar]			
Concept & Application Studies Formulated	[Green bar]			
Design of Experiment		[Green bar]		
Component Analysis/M&S Simulation Validation			[Green bar]	
Component Proof-of-Concept Critical Function				[Green bar]
Component/Breadboard Validation in Lab Environment				[Green bar]

Last update: 01-APR - 11

• Leveraging S&T Investments:

1. Advanced Small Unit Small Arms Technology (ASUSAT) Concepts Research Program

- Purpose: Identify and advance technologies leading to the ability to improve Small Unit Level effectiveness. Utilize new small arms technological concepts to improve range overmatch capability against like-sized threat elements.

Small Arms Material & Process Technology R.AR.D.2012.04

Purpose:
Assess and develop state-of-the-art material and process component technology to enhance the operability and maintainability of small arms weapons for current and future warfighters.

Product:
• Target and harvest state-of-the-art material and processes applicable to weapons, ammunition, optics, suppressors and barrels that increase the useable life, decrease weight, reduce signature and improve reliability of small arms weapons.

Payoff:
• Increased weapon lifetime
• Reduced maintenance or lubrication
• Increased reliability
• Decreased weapon signature
• Reduced weight
• Transition to PM Soldier Weapons or other technology programs


Schedule & Cost

	FY(12)	FY(13)	FY(14)	FY(15)
Solicitation of Concepts	[Green bar]			
Contract Awards (~8 to 14)	[Green bar]			
Concept & Application Studies Formulated	[Green bar]			
Design of Experiment		[Green bar]		
Component Analysis/M&S Simulation Validation			[Green bar]	
Component Proof-of-Concept Critical Function				[Green bar]
Component/Breadboard Validation in Lab Environment				[Green bar]

2. Small Arms Material Process Technology (SAM&PT) Research Program

- Purpose: Assess and develop state-of-the-art material and process component technology to enhance the operability and maintainability of small arms weapons for current and future warfighters.

Demonstration Small Arms Grenade Munitions Integration and Evaluation D.AR.D.2012.02



Purpose:
Demonstrate integration of component technologies and improve effectiveness of 40mm Low Velocity Grenade.

Product:

1. Integrated small fragmenting payloads through directionality and materials for increased effectiveness leveraging breadboard technologies developed under Advanced Lethal Armaments ATO-R
2. 40mm Low Velocity Grenade (TRL 6) with the following improvements over M433:
 - Better engage targets in defilade
 - Increased probability of incapacitation
 - Enhanced fuze initiation
3. Drawings and Specifications

Payoff:
Multiple critical technology demonstrations enabling increased Probability of Incapacitation for the Soldier, Squad and Platoon against non armored combatants in defilade.

Schedule & Cost

Tasks	FY(12)	FY(13)	FY(14)
Award 2 Contracts	◆		
Mature MEMS Fuze & Sensor Technology	◆	◆	
Improve Warhead Fragmentation	◆	◆	
Integrate Fuze & Warhead	◆	◆	
Shoot Off/ Down Select		◆	◆
Optimize Interior, Exterior & Terminal Effects		◆	◆
Test System in Relevant Environments			◆

High Technology Army ARMY S&T

• Leveraging S&T Investments:

3. Small Arms Grenade Munitions (SAGM) Integration and Evaluation Demonstration Program

Purpose: Demonstrate integration of component technologies and improve effectiveness of 40mm Low Velocity Grenade.

4. Small Arms Weapons and Fire Control Integration (SAW&FC) Demonstration Program

Purpose: To demonstrate the integration of advanced fire control component technology which improves capability to determine range, track moving targets, and increase probability of hit. System will be evaluated on relevant current and developmental small arms weapons.

Product:


- Integrated Fire Control system leveraging breadboard technologies developed under Advanced Fire Control ATO-R
- Dynamic target tracking & range finding components
- Adaptive polymer zoom lens subsystem

Payoff:

- Critical fire control technology demonstrations addressing small arms capability gaps for acquiring targets, determining range to target, and engaging threats in open and defilade.

Components will be demonstrated with a day electro-optic sensor on relevant current KE weapons.

Small Arms Weapons & Fire Control Integration D.AR.D.2012.03



Purpose:
To demonstrate the integration of advanced fire control component technology which improves capability to determine range, track moving targets, and increase probability of hit. System will be evaluated on relevant current and developmental small arms weapons.

Product:

- Integrated Fire Control system leveraging breadboard technologies developed under Advanced Fire Control ATO-R
- Dynamic target tracking & range finding components
- Adaptive polymer zoom lens subsystem

Payoff:

- Critical fire control technology demonstrations addressing small arms capability gaps for acquiring targets, determining range to target, and engaging threats in open and defilade.

Schedule & Cost

Tasks	FY(12)	FY(13)	FY(14)	FY(15)
Contract Negotiation/Award of Two (2) Contracts	◆			
Mature Fire Control Component Hardware Technologies	◆	◆		
Improve Target Tracking Algorithms	◆	◆		
Down-select to One (1) Contractor		◆	◆	
Integrate Component Technologies into Fire Control System		◆	◆	
Test, Assess & Redesign (Relevant Environment)			◆	◆

Last update: 01-APR-11

High Technology Army ARMY S&T

- Supporting the mission of NATO
- Investigating interoperability between the different weapons attachments
- Standardization of connecting and power sources
- Ensuring our Warfighter has the Capability they need



