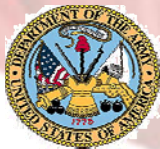




Joint Service Small Arms Technology Plan

May 9, 2007

*2007 National Defense Industrial Association's
Joint Services Small Arms Systems Annual Symposium*



Joint Service Small Arms Program Office
John Edwards
Program Management Officer



Why a Technology Plan



- Harmonizes/Coordinates Across Armed Services

JSSAP Mission

- Consolidated Small Arms Science & Technology

JSSAP Mission

– Operational Based

– PM Technology List (*total ownership cost*)

- Updated every 2 years

JSSAP SOP



Joint Service Small Arms Technology Plan



Background Requirements

- *Joint Capabilities Integration Development System (JCIDS)*
 - *Joint Service Small Arms Capabilities Assessment (JSACA)*
 - *Small Arms Capabilities Based Assessment (CBA)*
-
- **Annual Historical JSSAP Funding \$10-12 Million**

Outcomes

- ✓ *Recommendations of Operational GAPS to fulfill*
- ✓ **Briefed Senior Army Leadership of Need for Additional Funding**
- ✓ **\$17 M Increase for Small Arms S&T Over Fiscal Year 08-13 Period**



Lightweight Small Arms Technologies



Current Technology Objectives:

- ▲ 35% Reduction in Weapon Weight
- ▲ 40% Reduction in Ammunition Weight
- ▲ Maintain or Improve Performance
- ▲ Demonstrate in Light Machine Gun

Payoff:

- ▲ Increased Mobility and Maneuverability
- ▲ Decreased Logistics Burden
- ▲ Reduced Training and Maintenance

Transition and Fielding:

- ▲ Transition to PM Soldier Weapons FY09-10
- ▲ Fielding in 2015+

Risk Level:

- ▲ Medium

Lightweight Machine Gun Concept

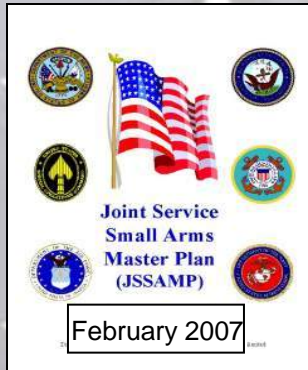


	M249	Goal	Caseless/CTA
Weapon	17.5 lb	11.4 lb	8.4/8.3 lb
Ammo (600 Rds)	20.4 lb	12.2 lb	10.2/13.2 lb
System (Wpn +Ammo)	37.9 lb	23.6 lb	18.6/21.5 lb

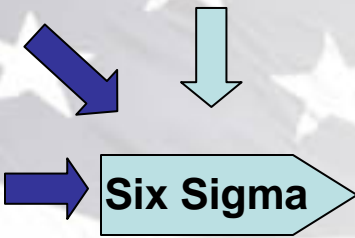




Development of Technology Plan



Combat Developer



Matériel Developer



JSSAP Technology Bins

- Technical Fire Control
- Tactical Fire Control
- New Concepts & Applications
- Smart Munitions
- Warheads & Energetics
- Lethality & Utility
- Materials & Processes
- Modeling & Analysis

New JSSAP ATO's

Advanced Fire Control

Advanced Lethality

Technology Themes Based On Joint Synthesis Process



Joint Small Arms Capability Focus



- **What is the problem?**
Defilade threat targets are hidden behind objects and US forces use cover from defilade firing positions to engage targets. Identified in JCIDS Small Arms Assessment.
- **What are the barriers to solving this problem?**
Precision Engagement is limited due to small size payload effectiveness. Weight reduction and recoil are additional barriers requiring coincident breakthrough.
- **How will you overcome those barriers?**
Improvements to small fragmenting payloads through directionality and materials for increased effectiveness. Proximity Fuze small size technology application. Low weight recoil survival coupled with other weight reduction to deliver more effective payloads.

Technology Bin Recommendation: Lethal Armament for Small Arms



Joint Small Arms Capability Focus



- **What is the problem?**

Threat targets are moving and then seek cover behind objects. 60% of aiming is from an unsupported firing position.

- **What are the barriers to solving this problem?**

Precision Engagement is limited due to tactical inaccurate range determination. Weight and multiple batteries required lead to lower weapon and reduced availability.

- **How will you overcome those barriers?**

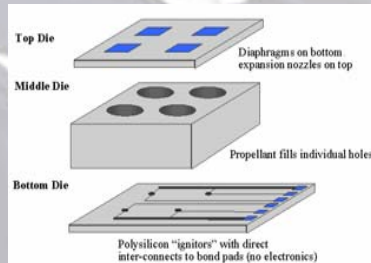
Laser Steering with Auto Target Tracking or Laser imaging in relevant breadboard demo/experiments.

Shared power source for low weight coupled with weapon imbedded sensors. Push weight from muzzle end to rear of weapon.

Technology Bin Recommendation: Technical Fire Control



Planned Work Package for Advanced Lethal Armament Technology for Small Arms



Note: Modeling & Simulations Activities are coincident with efforts

Schedule & Cost

Milestones	FY08	FY09	FY10
<u>Advanced Lethality Component</u>			
• Concept small warheads with modeling.	2		
• Experiment geometric & directionality warheads			
• Breadboard lethal & frag concepts comp.			4
• Miniature Proximity fuze electronics	3		
• Demo critical electronic comp.		4	
• Develop adv. recoil concepts	2		
• Tradeoff materials and recoil absorption technology. Experiment with recoil absorption			3
• Critical breadboard of weapon launch survivability			4

Purpose:

To demonstrate advanced lethal armament component technology for providing improved munition effectiveness to targets.

Product:

- Demonstrate advanced lethality components spiraling to weaponization includes terminal effectiveness trades.
- Miniaturize Proximity electronics for 40 mm application. Integration of improvement to SWAP of proximity fuze for small arms.
- Demonstration of technical material components improving durability, reliability and weight to include Recoil attenuation technical advancement components
- Modeling and Simulation assessments integrated with critical technology demonstrations

Payoff:

Multiple critical technology demonstrations enabling maturity measurement and component transition to Product Managers enhancing broad small arms capability gaps.



Planned Work Package for Advanced Fire Control Technology for Small Arms



Target Tracker & Laser steering



Note: Modeling & Simulations Activities
are coincident with efforts

Schedule & Cost

Milestones	FY08	FY09	FY10
<u>Adv. Fire Control & Range Finding</u>	2		
• Concept Studies			
• Component Experimentation			
• Component analysis/define parameters			
• Critical breadboard proof of concepts			
• Selection for breadboard fabrications			
• Integration of breadboard components			
• Component banding/maturation			
			3
			4

Purpose:

To demonstrate advanced fire control component technology determining correct range to moving targets and further power sharing within weapon for current and future warfighters.

Product:

- Harvest and target, for small arms, the technologies of automatic target detection, laser steering to increase the soldier's ability to accurately determine range to non cooperative moving targets. Improved lethality in direct and indirect fire situations for unsupported firing positions.
- Develop range determination overcoming man machine 1.5 hertz wobble human hold.
- Investigate weapon wireless net centric access coincident with power sharing mounting rails.

Payoff:

• Critical technology demonstrations enabling component transition to Product Mangers fulfilling broad small arms capability gaps.



JSSAP Technology Base Planned Implementation



Technology Development Approach

▲ National Small Arms Center

Provides Innovative Industry & Academia Technologies

- ❑ Applied Research and Development for Small Arms
 - ❑ Consortium collaboration is beneficial
 - ❑ Promotes more ideas encompassing varying technologies and risk levels
 - ❑ Multiple JSSAP Tech Concept Agreements
 - ❑ “seed efforts” based on Request for Project Proposals

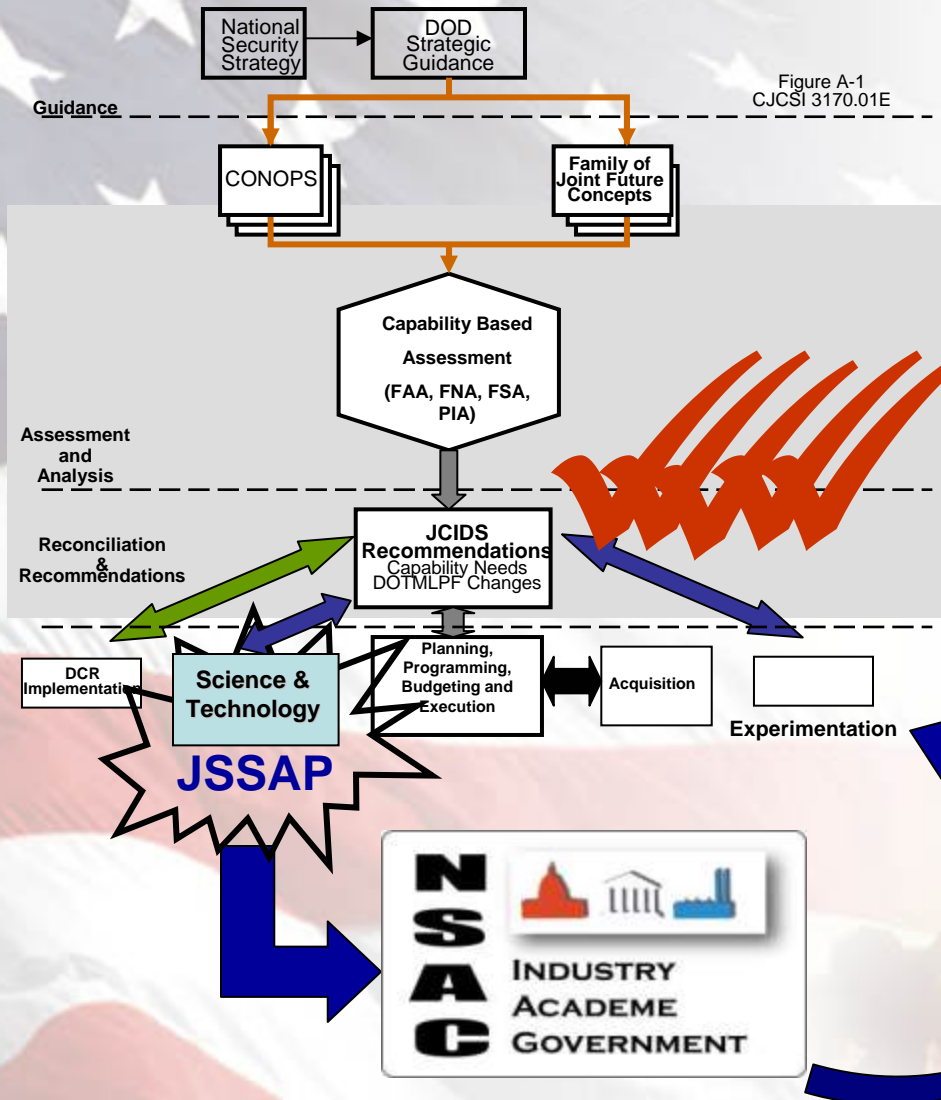




JSSAP Tech Plan Implementation



Top Down Capability Need Identification Process



Each OTA Effort successfully filling gaps

✓ *Enhances the warfighters capability*

New Approach

More Opportunity

Faster Technology Response

Warfighter Focus



JSSAP Technology Activities



How Can You Get Involved?

Look for NSAC Request for Project Proposal (RPP)

1. Submit your ideas
 - a. Alone
 - b. Collaborate (Industry, Academia or Govt)
 - c. Become NSATC member
2. Submit your ideas again and again
See a. and b. above



JSSAP Tech Activities



Questions ?