US ARMY RDECOM

U.S. Army Research, Development and Engineering Command

J·S·S·A·P JOINT SERVICE SMALL ARMS PROGRAM

Malcolm Baldrige National Quality Award 2007 Award Recipient

ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER PICATINNY ARSENAL, NJ

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

Dr. Barton Halpern
JSSAP Science & Technology Program Update
NDIA 2013 Armament and Munitions Forum
12 November 2013

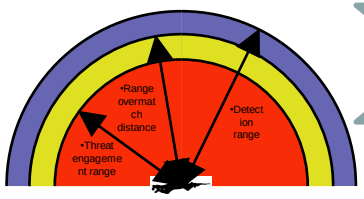
Joint Armaments Conference, Exhibition and Firing Demonstration

Agenda

- *FY 12- 15 Current Technical Approach*
- *Progress To Date On JSSAP Programs*
- *FY 16- 20 Technical Approach*
- *Deep Future Investments*
- *Summary*

FY 12- 15 Current Technical Approach

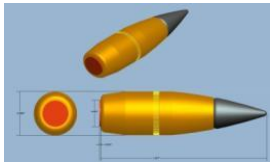
6.2 - Advanced Small Unit Small Arms Technology (ASUSAT)



Revolutionary S&T Investments

Small Arms Capability Gap Linkage: Breaching and Threat Engagement

6.2 Small Arms Material Process Technology (SAM&PT)



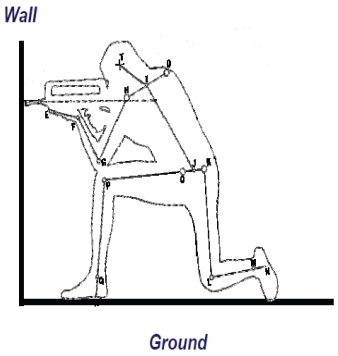
Small Arms Capability Gap Linkage: Weapon Detection and Operational and Maintenance Issues

6.3 - Small Arms Grenade Munitions (SAGM)

Phase I: "Small Fuze" – Complete

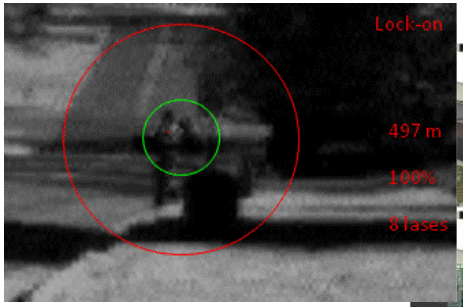
Phase II: "Smart Fuze" contracts Awarded to both contractors

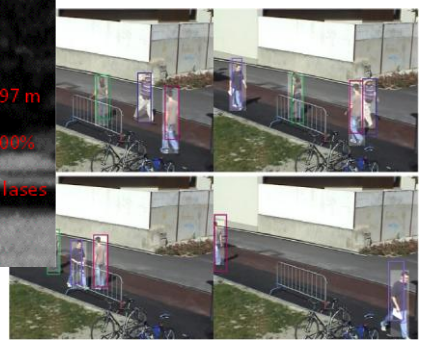
Phase III: "Integration" – Contract to be awarded Nov 13



Small Arms Capability Gap Linkage: Threat Engagement

6.3 - Small Arms Weapons & Fire Control (SAW&FC)





Small Arms Capability Gap Linkage: Target Acquisition

Progress To Date

ASUSAT:

– RMSL Active Stabilization
- Developed a closed loop fire control lab component M-4 weapon modification kit to compensate for solider wobble. Barrel and receiver are articulated independently from the shooter-interface components of the system, user-interface components is controlled via target tracking software (leverage SAW&FC) and embedded mobile processing hardware that optically monitor target position relative to point of aim.

- Ammunition Improvement Research
  - Developed and demonstrated advanced ammunition projectile technology
  - Successfully demonstrated increase in hard and soft penetration against target sets

SAM&PT:

– One Way Luminescence (OWL) Tracer
- Developed an integrated non-burning, one-way visible, full day/night tracer into current ammunition production products in order to improve warfighter capability, reduce logistical burden, and reduce ammunition cost.

– Anti Corrosion Coatings (Super-Hydrophobic Coating)
- Achieved a 2-fold corrosion resistance increase with initial investment with a goal of 5- fold corrosion resistance in order to dramatically decrease maintenance to weapons and ammunition due to shipboard corrosion and Ammunition & links subjected harsh saltwater environment.

– M240/249 Suppressor Design
- Designed a suppressor to be interoperable with The M240 (7.62mm) Machine Gun and The M249 (5.56mm) light Machine Gun
- Completed Breadboard testing (live fire verification of materials and key design features on early prototypes)
- Prototype fabrication underway
- Live fire verification testing planned
- Worked extensively with MCoE providing valuable input into the Small Arms Signature Reduction (SASR) CDD

- Lubricious Surface Treatment - ASL
  - Adaptive Solid Lubricants Identified through a Design of Experiment a COTS surface treatment that potentially eliminates the need to apply lubricant to the weapon components, reduces carbon fouling that builds up from weapon firing

Progress To Date

SAGM:

– ARDEC
- Phase I Completed successfully. – Small Fuze
- Phase II CDR Completed – Integrated Smart Fuze
- Phase II Competitive Shoot Off Scheduled 4th Quarter 2013

ATK
- Phase I Completed successfully. – Small Fuze
- Phase II CDR Completed – Integrated Smart Fuze
- Phase II Competitive Shoot Off Scheduled 4th Quarter 2013

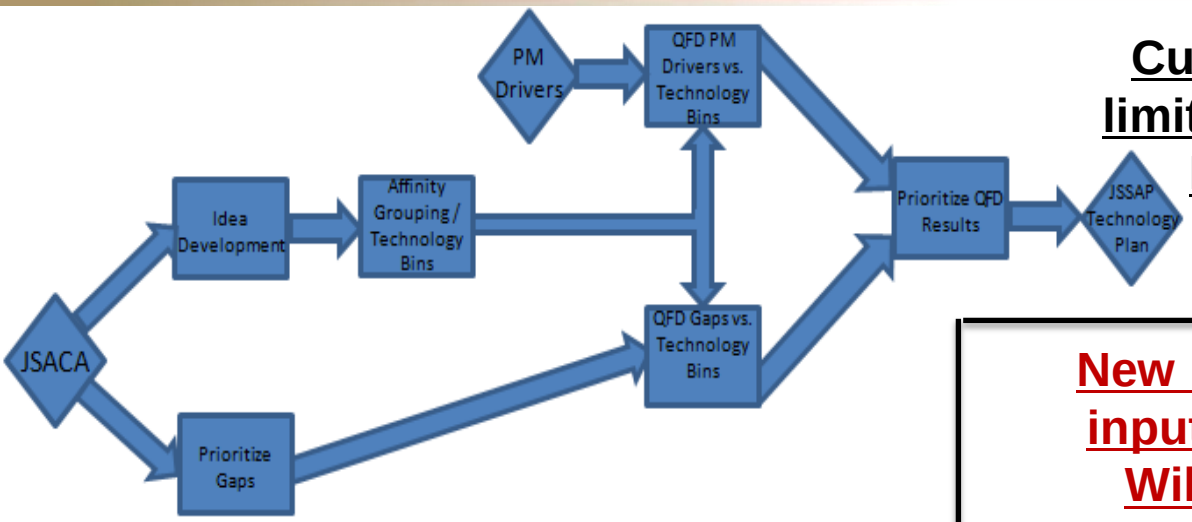
SAW&FC:

– IAI
- Phase II Contract was awarded on 2nd Quarter 2013
- Phase II Software Algorithm Evaluation completed on 4th Quarter 2013
- The CERDEC (NVL) videos were utilized for testing and the training of the Software Algorithms
- CDR Scheduled for 1st Quarter 2014
- Phase II Demonstrator Validation Testing Scheduled for 4th Quarter 2014
- Final Demonstration Scheduled for 4th Quarter 2015

LSAT:

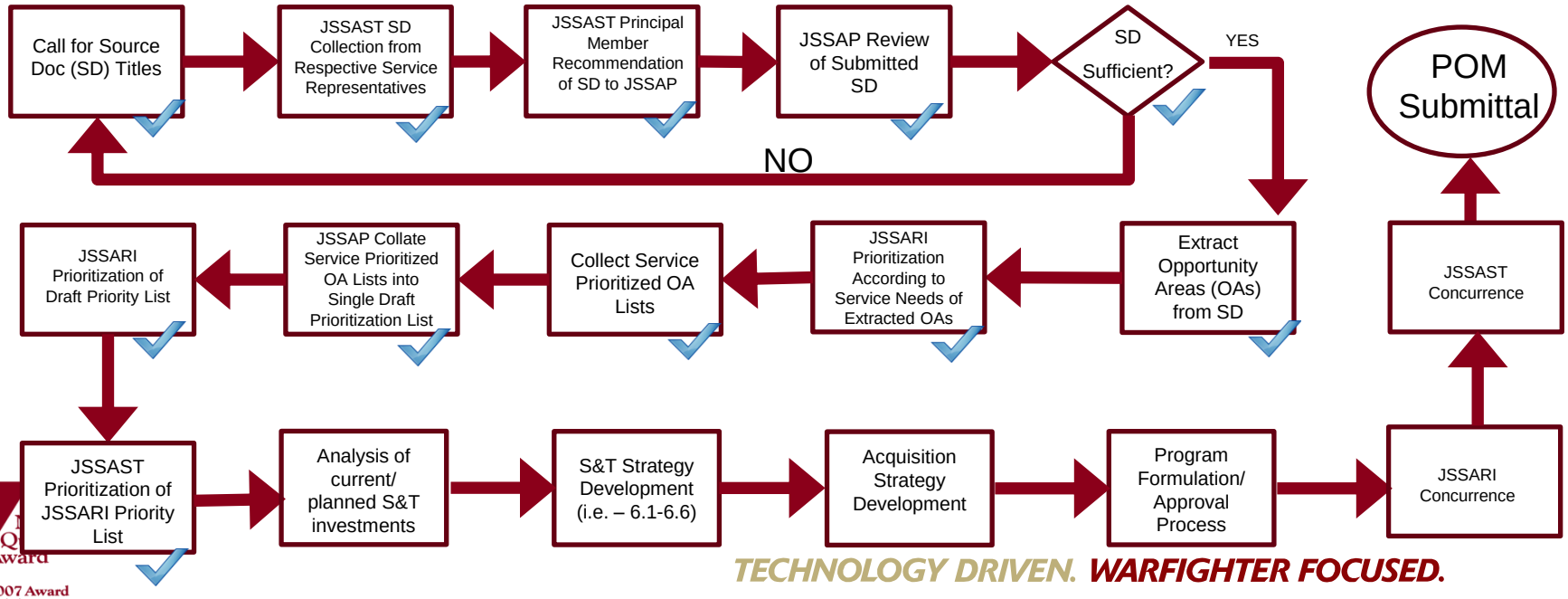
- Participated in Dismounted Non-Network Enabled Limited Objective Experiment
  - Prototype venue that is flexible in design and execution; ongoing review to determine necessary adjustments to future experiments.
  - Supports JCIDS process
  - Inform development and prioritization of requirements (KPPs/KSAs/APAs)
- 7.62mm CTA 7.62mm CTA
- Dismounted Non-Network Enabled Limited Objective Experiment Phase II

FY 16- 20 Technical Approach



Current LSS process involved limited inputs to develop Project Portfolio, not Repeatable

New LSS process involves multiple inputs to develop Project Portfolio, Will be updated in 2 year cycles



2007 Award Recipient

Deep Future Investments

- Ideation Series Investments:
  - The Army will continue to invest in technologies that will result in the development of revolutionary capabilities for small arms in the future.

- Deep Future of Small Arms Report – West Point Study
  - Ideation exercise led in the Fall of 2012 to conceive of S&T topics and possible future warfare scenarios in 2045
  - JSSAP has contracted with Battelle Memorial Institute to review the Deep Future Small Arms report and create a more robust scientific investment plan to help the Warfighter achieve the recommended possible outcomes.

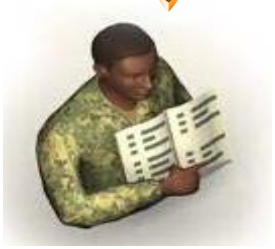
Summary

•Futures Conferences

•Capability Based Assessments

•Documented Requirements

•PM Gaps
•Tech Based Synchronization (6.1-6.6)



•Technology Information Exchanges

•DOTC Small Arms – Industry Push

•JSSAST

•Technology Shortfalls

•International Small Arms Activities

•Joint Service Small Arms Master Plan

JSSAP is providing Intensive management of the DoD small arms tech base

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