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**

# 13948 - *Advanced Small Unit Small Arms Technology Concepts Project*

**15 May 2012**

***Joint Armaments Conference, Exhibition and Firing Demonstration***

***15 May 2012***

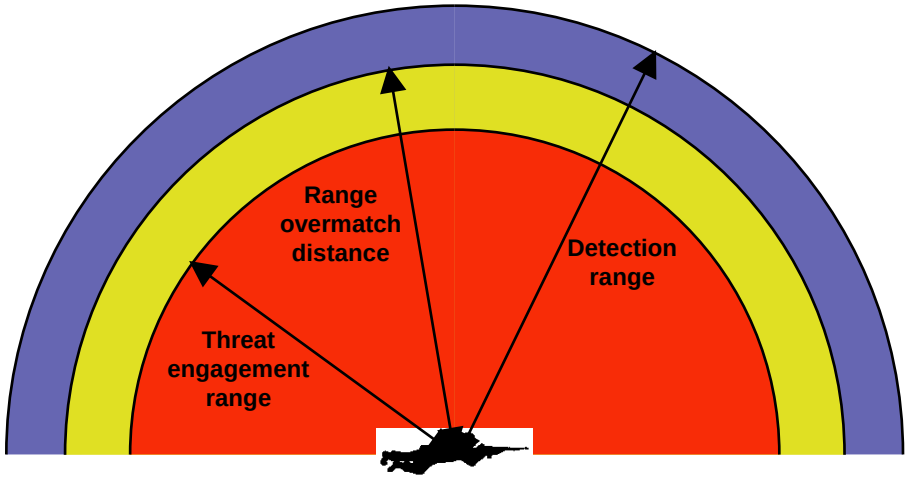
# Agenda

- *Advanced Small Unit Small Arms Technology Concepts*
- *Why ASUSAT*
- *Technical Approach (Metrics & Objectives)*
- *Technical Payoff*
- *Project Timeline*
- *Summary & Path Forward*

# Advanced Small Unit Small Arms Technology (ASUSAT) Research Project

## 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.




## How do we solve this problem

- Investments into non traditional approaches that :
  - Combine advanced technologies
  - Revolutionary concepts to double the maximum effective range of current weapons and increase Force Protection.

## Payoff

- Doubled maximum effective range of Door Breaching Munitions.
- Double maximum effective range for .50 Caliber Ammunition
- Increased Probability of Hit and Hard target Penetration
- Doubled Probability of Hit for rifles

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# Why ASUSAT?

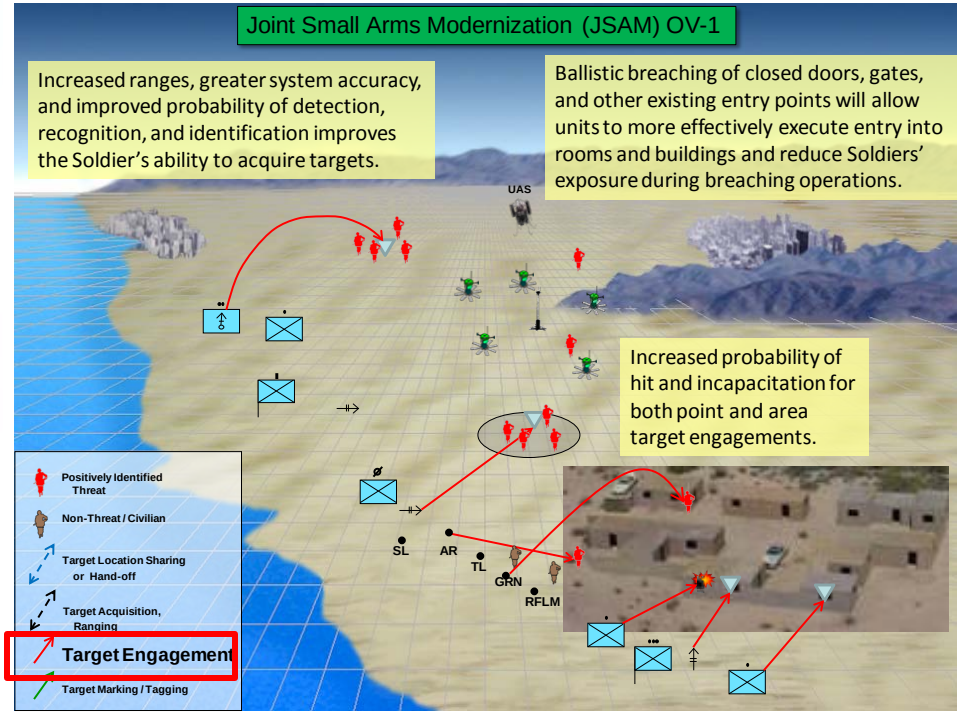
- **What Is Needed?**
  It is easy for a Soldier to say, “I want my rifle to be more lethal and hit targets at longer ranges,” but it is difficult to quantify and explain specifics.

- **Technical Objectives based on Lean Six Sigma**
  Six Sigma program management tools were used to assess the proposed concepts and technologies to form a technology plan and the technical approach

# Why ASUSAT?


## Capability Required

Breach Existing Entry Points




## Capability Required

Engage Threat Personnel with SA Fire

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# ASUSAT Technical Approach

## (Metrics and Objectives)

| Measure | Current | Prog Obj | Army Obj | TRL |
|---|---|---|---|---|
| Maximize Effective Range | Based on Category Weapon | Double current effective range | Defined in Small Arms Capabilities based Assessment | Start TRL 2<br>End TRL 4 |
| Time to complete mission objective | Based on Category Weapon | Half of Current Time | Defined in Small Arms Capabilities based Assessment | Start TRL 2<br>End TRL 4 |

# ASUSAT Technical Approach

## (Metrics and Objectives)

| Capability | Effort Objective | Joint Project Goal |
|---|---|---|
| Maximize Effective Range Door Breaching Capability | Increase the maximum range to breach a door | Doubled maximum effective range of Door reaching Munitions. |
| Maximize Effective Range Penetration Capability | Increase hard and soft target penetration capability | T: 50% increase in capability |
| | | O: 100% increase in capability |
| Maximize Effective Range Launch Velocity | Increase muzzle velocity | T: 25% increase in muzzle velocity |
| | | O: 50% increase in muzzle velocity |
| Maximize Effective Range Probability of Hit - P(h) | Reduce dispersion attributed to the weapon in order to increase p(H) | T: 10% reduction in MoA |
| | | O: 25% reduction in MoA |

# ASUSAT Technical Payoff

**Payoff :**

1. Increased Muzzle Velocity
2. Increased Maximum Effective Range based on: Task, Condition and Standard
3. Increased Probability of Hit
4. Increased Probability of Incapacitation

# ASUSAT Project Timeline

- Four year Research Project
- Five Technical Efforts to be initially funded:
  - Three Contracts to be Awarded May 2012 through DOTC
  - Two Joint Government Research Efforts (ARDEC/ARL) funded in FY12
- Technical efforts to funded for TRL 2-4 research
- Projects to be refreshed in ASUSAT as they transition to 6.3 and 6.4 funded programs

# Summary & Path Forward

- **ASUSAT Project Established to increase range overmatch for Dismounted Soldiers**
  - Four (4) year research effort to invest in applied sciences to Increase in Weapon Maximum Effective Range (TRL 2 – TRL 4)
  - Five Technical Efforts to be initially funded:
    - Three Contracts to be Awarded May 2012 through DOTC
    - Two Joint Government Research Efforts (ARDEC/ARL) funded in FY12
- **Technologies to transition to 6.3 funded programs**
  - Transition projects to PM in FY14-16 to Army, Navy, Air Force, Marines, Coast Guard and SOCOM

*JSSAP is delivering an integrated Small Arms R&D Capability Package by attacking the documented capability gaps of Threat Engagement, Target Acquisition, Breaching, Weapon Detection and Operational and Maintenance Issues for Small Arms.*