

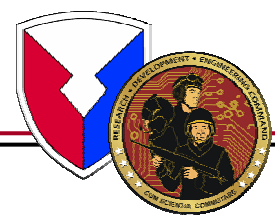
# U.S. Army Research, Development & Engineering Command

## Armaments Technology Seminar



**Dr. Robin L. Keesee  
Deputy to the  
Commanding General**

**Technology to the Warfighter Quicker**



# U.S. Army Research, Development & Engineering Command

**Mission: Get the right integrated technologies into the hands of warfighters quicker.**



**Strike  
(Exploit FCS Netted  
Fires)**

### What we do:

Technology Out of the Laboratories and into the Hands of Warfighters in the Shortest Time  
Direct Support of the Tech Base to Future Combat System (FCS) and Future Force  
Manage Speed and Complexity of Technological Change to Operational Needs  
Systems Engineering, Assessment, and Analysis  
Engineering support to PEOs/PMs, Materiel Management Centers and Current Force  
Identify Foreign Technologies for US Army Use

### What we manage:

8 Labs and Research, Development, and Engineering Centers (RDECs)  
Army Materiel Systems Analysis Activity (AMSAA)  
Foreign Comparative Testing & Defense Acquisition Challenge Program  
Regional International Technology Centers  
Capability & Technology Integrated Process Teams  
Agile Development Center

### The Magnitude:

Over 17.5K Military, Civilians, and Direct Contractors  
75% of Army Science and Technology Objectives  
All Army Advanced Technology Demonstrations (ATDs)  
6 of 13 Advanced Concept Technology Demonstrations (ACTDs)  
20 Foreign Comparative Testing (FCT) & 7 Defense Acquisition Challenge Programs (DACPs) with 13 different Countries



**Human Performance &  
Embedded Training**



**Sensory Enhancement**



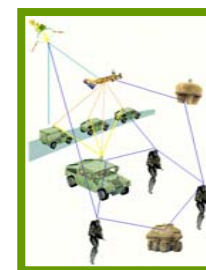
**Battery Charging  
Fuel Cell with Methanol  
Steam Reforming Unit**



**Robotics Interface**



**Future Force  
Warrior**



**Collaborative Networked  
Situational Understanding**



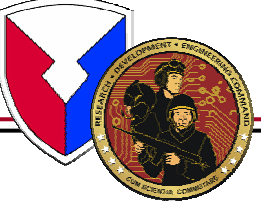
**Protective Mask &  
JLIST - Joint Service  
Lightweight Integrated Suit  
Technology**

**RDECOM  
Operates  
World-wide**

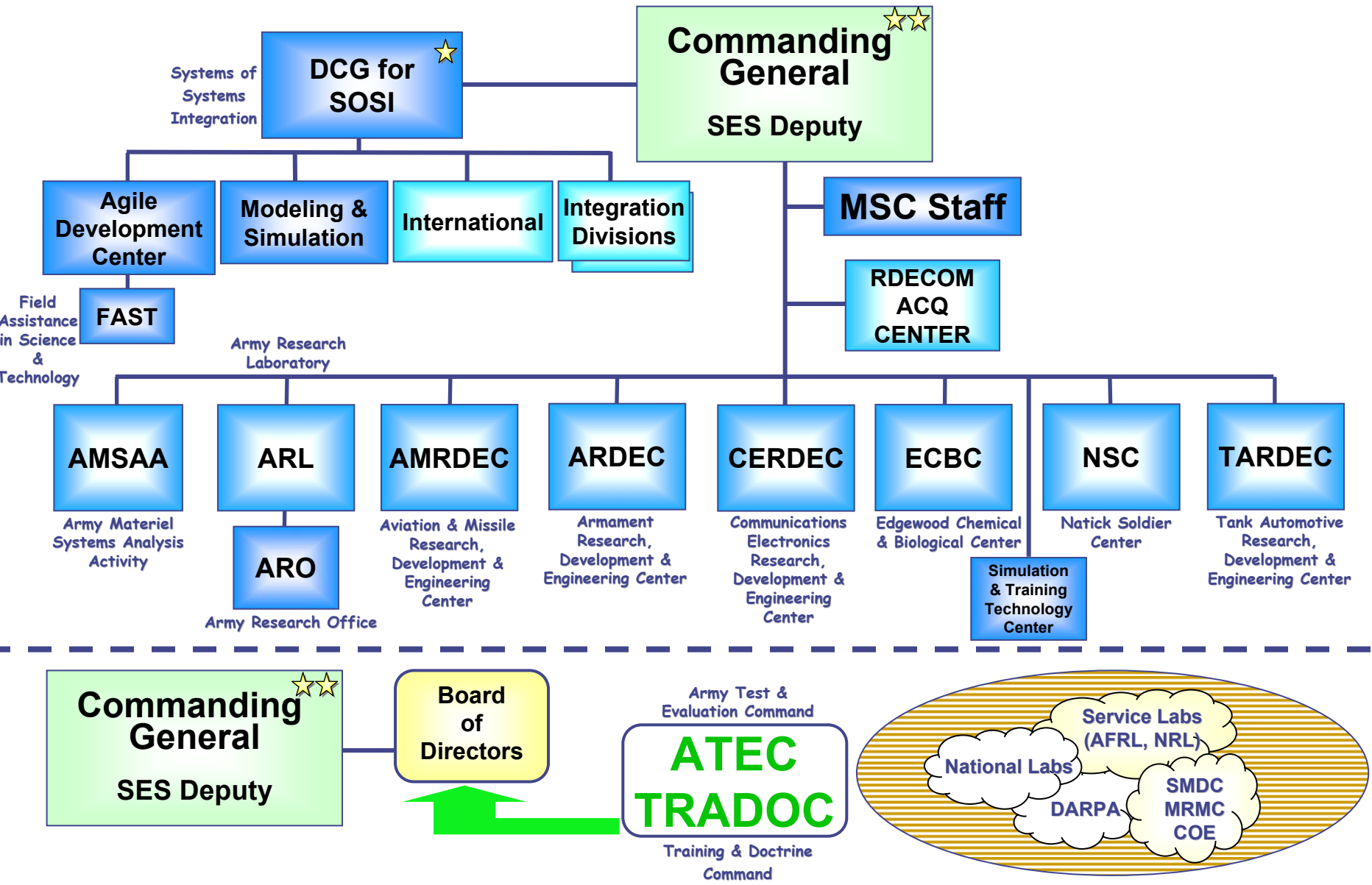


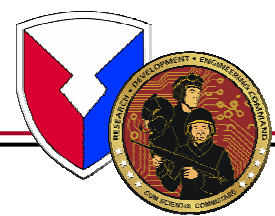
**Over 300 International Agreements  
Linkage to Combatant Commanders - FAST Teams  
Engineer and Scientist Exchange Program**

**Technology to the Warfighter Quicker**

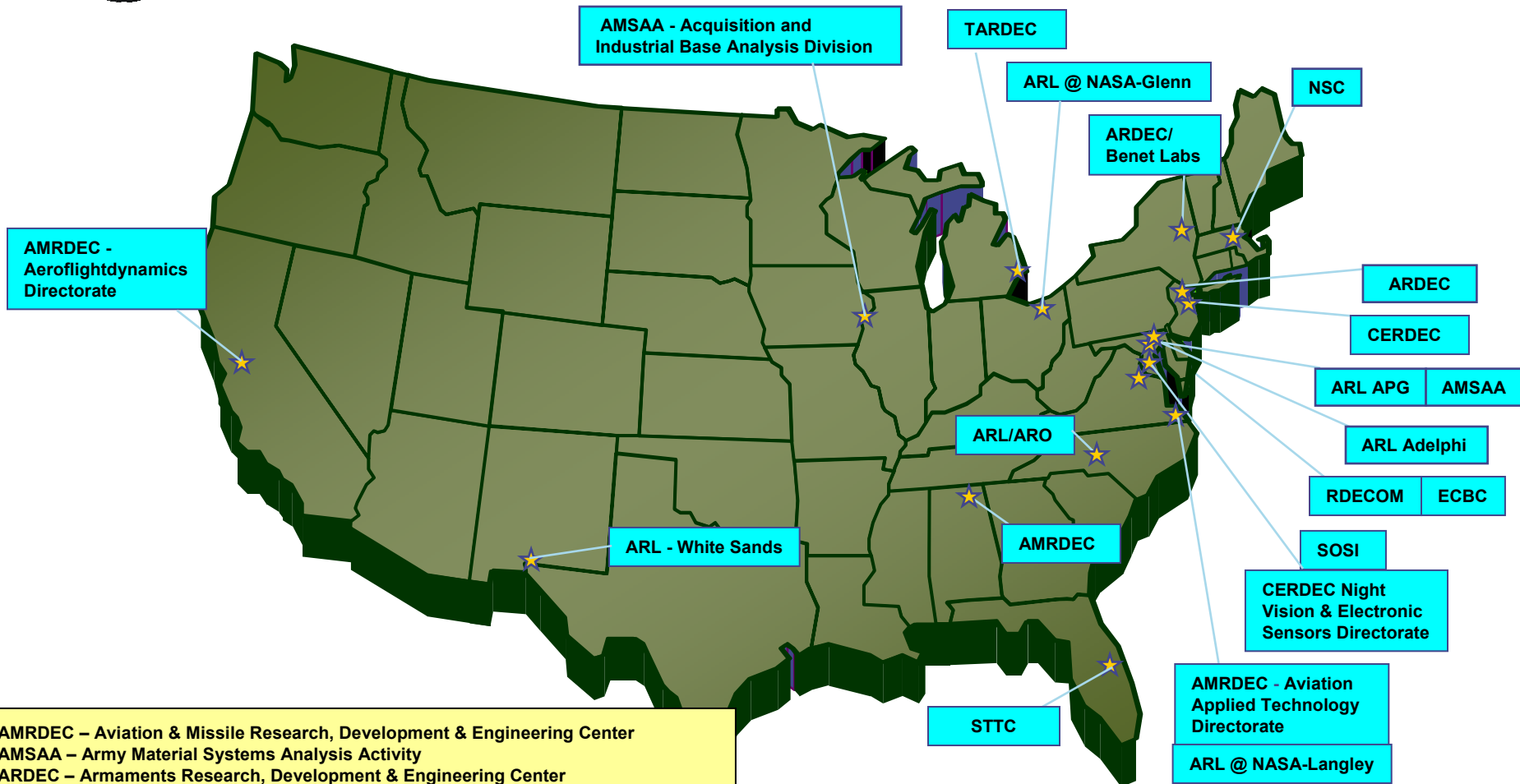


# Research, Development and Engineering Command





# RDECOM Organization



- AMRDEC – Aviation & Missile Research, Development & Engineering Center
- AMSAA – Army Material Systems Analysis Activity
- ARDEC – Armaments Research, Development & Engineering Center
- ARL – Army Research Lab
- ARO – Army Research Office
- CERDEC – Communication - Electronics Research, Development & Engineering Center
- ECBC – Edgewood Chemical Biological Center
- NSC – Natick Soldier Center
- SOSI – System of Systems Integration
- STTC – Simulation and Training Technology Center
- TARDEC – Tank and Automotive Research, Development & Engineering Center

# Support to Current Operations

HMMWV  
Doors



Pacbot



Tear-off  
Windshield  
Film



Shelf-Stable  
Pocket Sandwich



Predator  
Hellfire  
Integration



Cooperative  
Defense Initiative



Omni-Directional  
Inspection System



40mm  
Thermobaric  
Cartridge



Zinc-Air Battery



Bunker Defeat Munition



Aerial  
Delivery



Interceptor Body Armor  
& Advanced Combat Helmet:  
Dozens of Lives Saved  
During OEF/OIF



Armed Unmanned Weapon Platforms



WelCam



Phraselator



Mobile Lab



Field Expedient Protection  
for Ground Vehicles



Slat  
(Bar)  
Armor



# *The Environment - "The Perfect Storm"*

## Army Strength

30,000 to  
100,000  
additional troops

## GWOT

One month  
OPTEMPO =  
one year design  
life

## Resources

Supplementals ?  
Return to Core  
Budget

## Modularity

Increase from 33  
to 43 (?) UAs

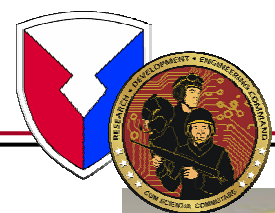
## BRAC

## Transformation (Modernization)

QDR  
Gain/Divest  
Missions

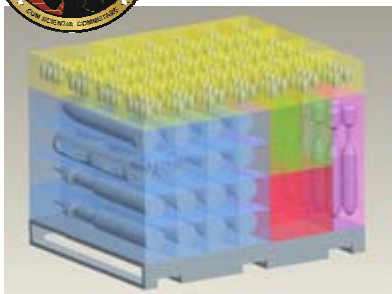
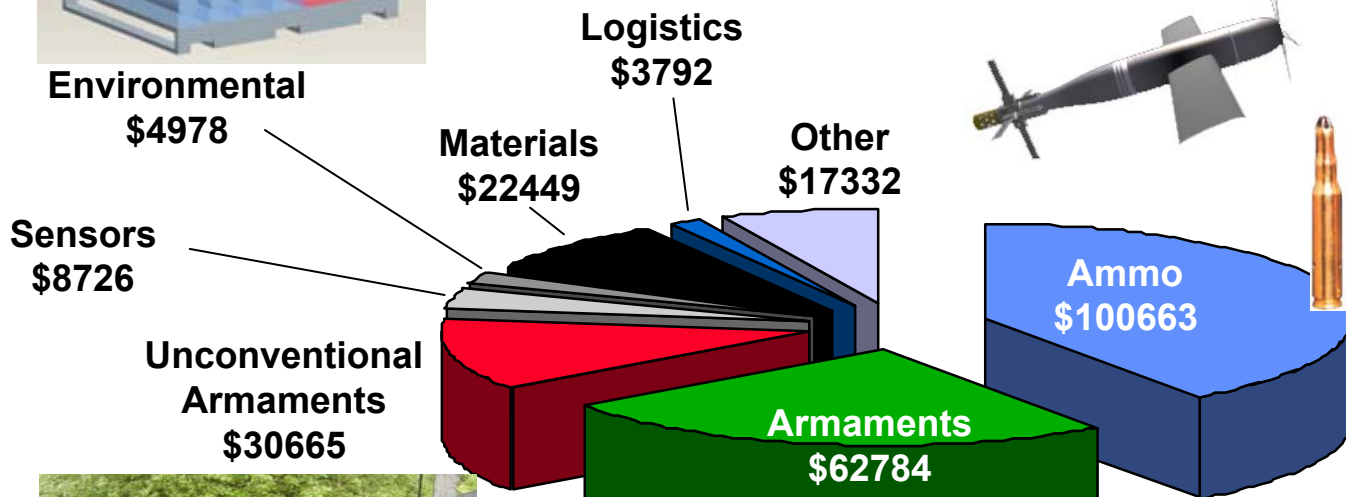
## S&T ?





# Armament RDEC (ARDEC)

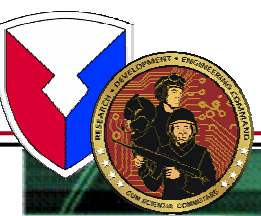
**Armaments + Ammo = \$194,112 M**



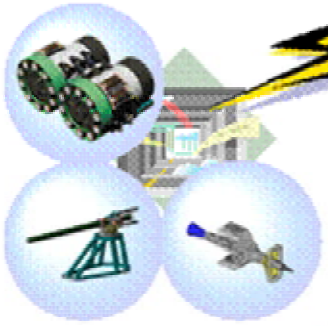
**Environmental**  
\$4978



# Top ARDEC Programs



**EM Gun**  
An opportunity to  
revolutionize firepower

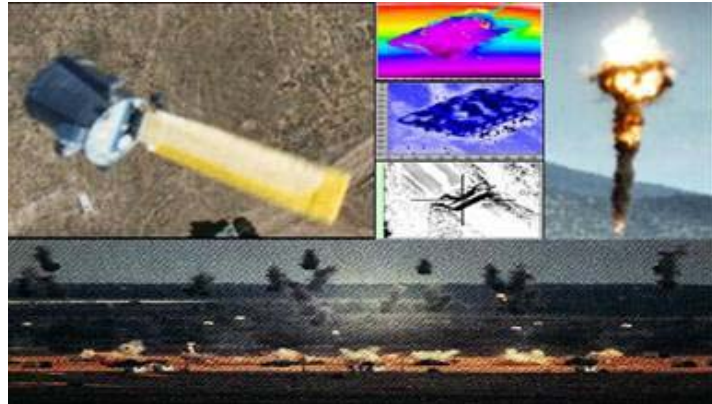


Harnessing currents,  
forgoing chemicals.

**Electromagnetic Gun (EM)**

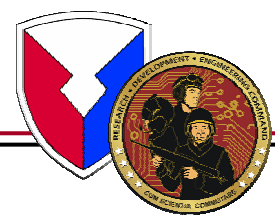


**Lightweight Handheld Mortar  
Ballistic Computer, XM32**



**Common Smart Submunition**

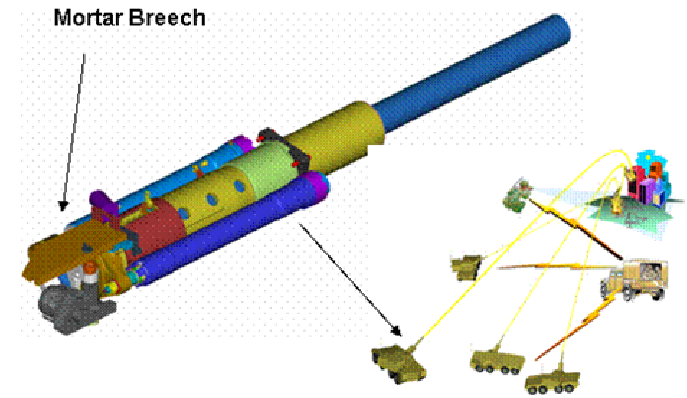




# Top ARDEC Programs



**Lightweight Machine Gun  
And Ammunition**

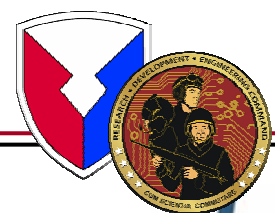


**Objective NLOS  
Mortar Technology**

**Special Weapons Observation  
Remote Direct Action System**



# Top ARDEC Programs



*Enhanced MRM*



*LOS MP*



*Accuracy  
Enhanced KE*

## MCS Ammunition System Technologies (MAST)



**CROWS-Light**



*Accel Cluster  
(shown mounted in  
vibration isolator)*

*MicroProcessor, I/O, &  
Power Regulation*



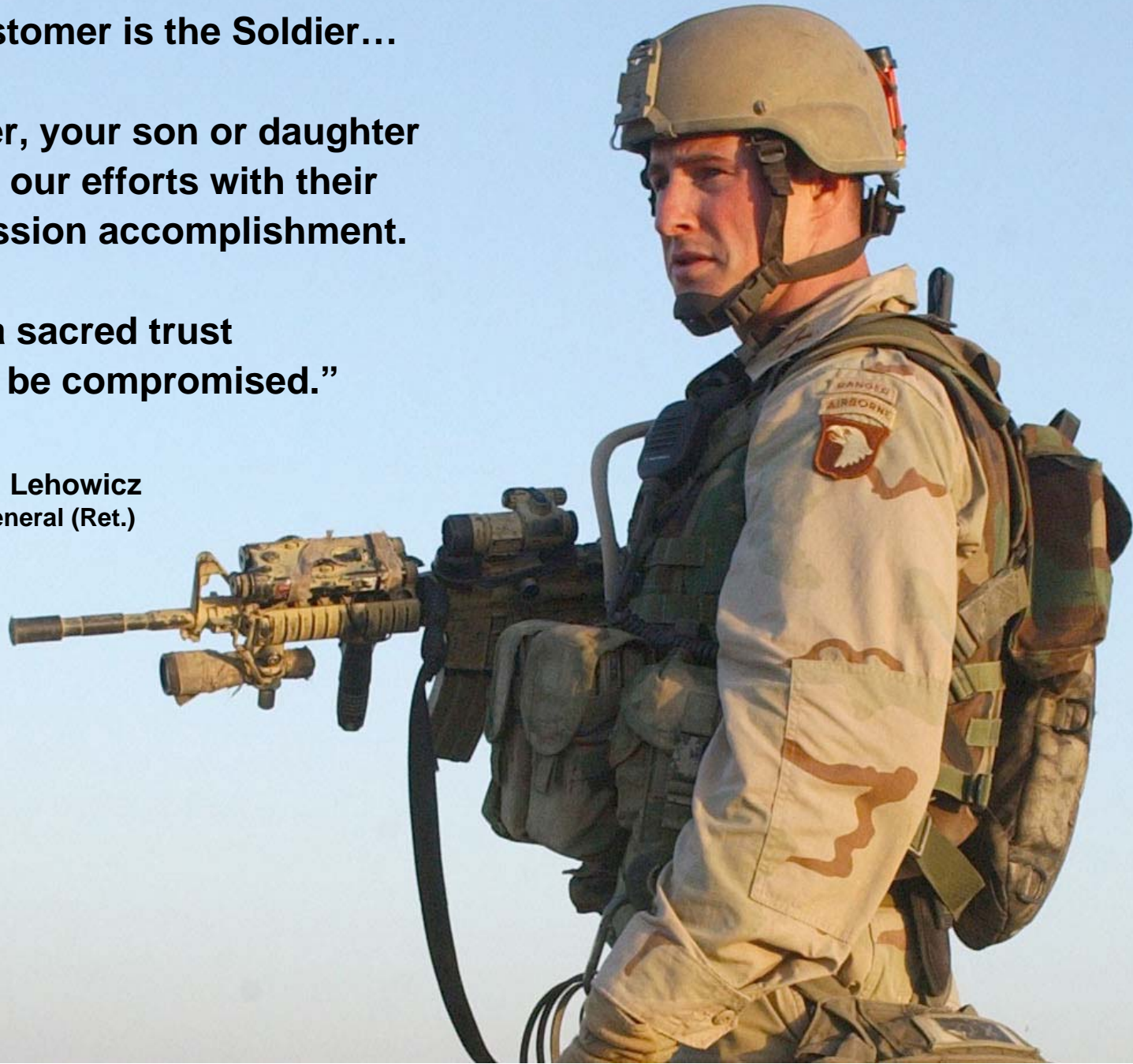
## *Low Cost, High-G, Micro Electro-Mechanical Systems (MEMS), Inertial Measurement Unit (IMU)*

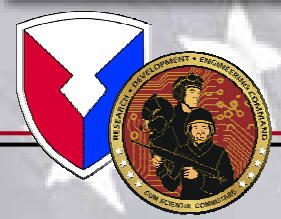
**“Our ultimate customer is the Soldier...**

**My son or daughter, your son or daughter  
...who will judge our efforts with their  
lives and their mission accomplishment.**

**This is a sacred trust  
which will not be compromised.”**

**Larry G. Lehowicz  
Major General (Ret.)**





## In Closing ...

- The Picatinny community has been extraordinary in -
  - Supporting ammunition production
  - Speedily re-engineering technology to meet Warfighter needs
  
- Challenges for us all -
  - Taking UA perspectives balancing lethality, deployability, and life-cycle costs
  - Aiming advancing technologies at armament's greatest obstacle: weight