*Presented to:*

**NDIA 61st Annual Fuze Conference**

# US Army/AMRDEC S&T Overview



**TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.**

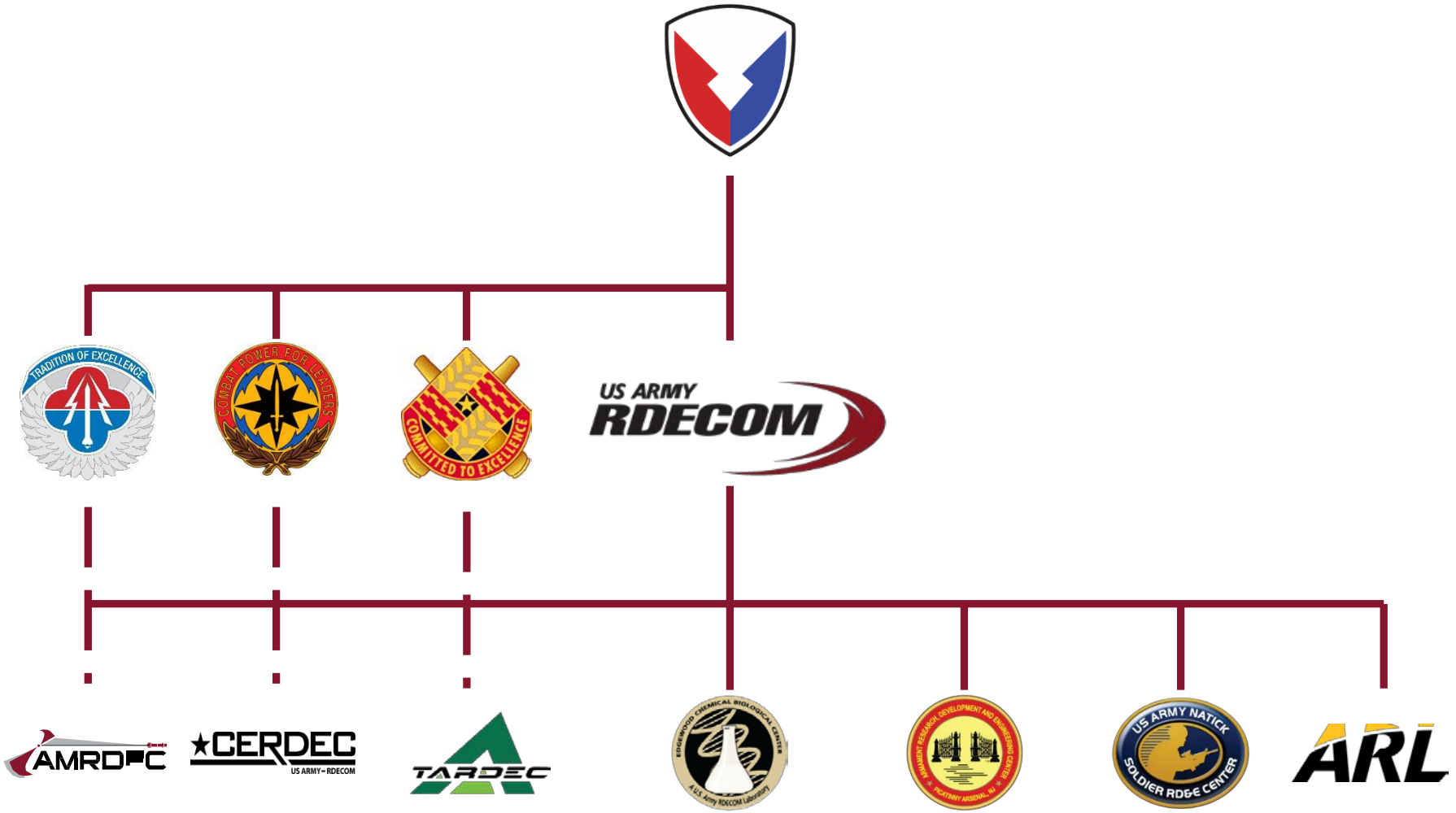
**16 May 2017**

*Presented by:*

**Mr. Shannon Haataja**

**U.S. Army Aviation and Missile Research, Development, and Engineering Center**

# AMRDEC Reporting Structure




TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

# Who is AMRDEC?

**~9,211** FY17 Strength

**2,945** Civilian

**16** Military

**6,250** Contractor

907 / 5343

SETA Non-SETA

FY17

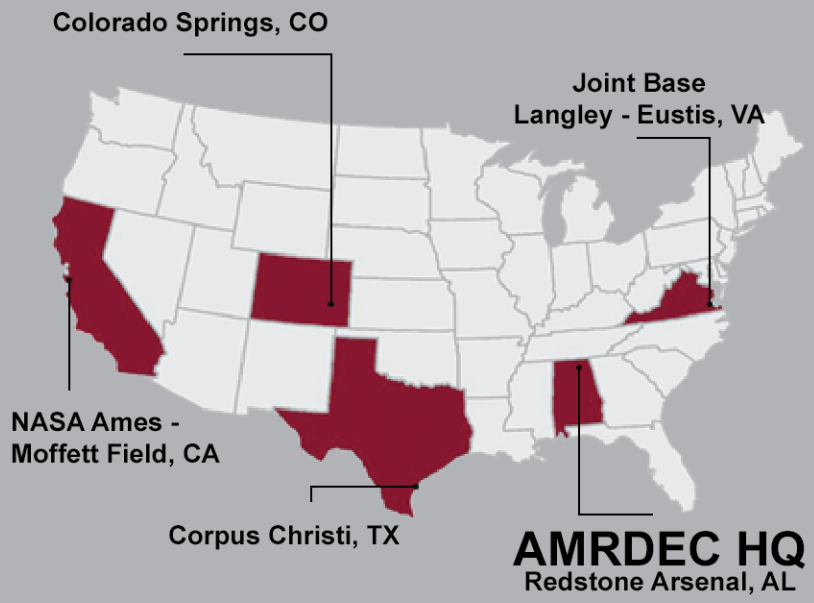
**$2,904M**

**6%** Aviation S&T

**7%** Missile S&T

**63%** Army

**24%** Other




## Core Competencies

- Life Cycle Engineering
- Research, Technology Development and Demonstration
- Design and Modification
- Software Engineering
- Systems Integration
- Test and Evaluation
- Qualification
- Aerodynamics/ Aeromechanics
- Structures
- Propulsion
- Guidance/Navigation
- Autonomy and Teaming
- Radio Frequency (RF) Technology
- Fire Control Radar Technology
- Image Processing
- Models and Simulation
- Cyber Security

# AMRDEC Mission

**Deliver collaborative and innovative aviation and missile capabilities for responsive and cost-effective research, development and life cycle engineering solutions.**

# AMRDEC Priorities



## #1: Readiness

Provide aviation and missile systems solutions to ensure victory on the battlefield today.

## #2: Future Force

Develop and mature Science and Technology to provide technical capability to our Army's (and nation's) aviation and missile systems.

## #3: Soldiers and People

Develop the engineering talent to support both Science and Technology and the aviation and missile materiel enterprise

# AMRDEC Missile S&T Alignment to Army Modernization Priorities

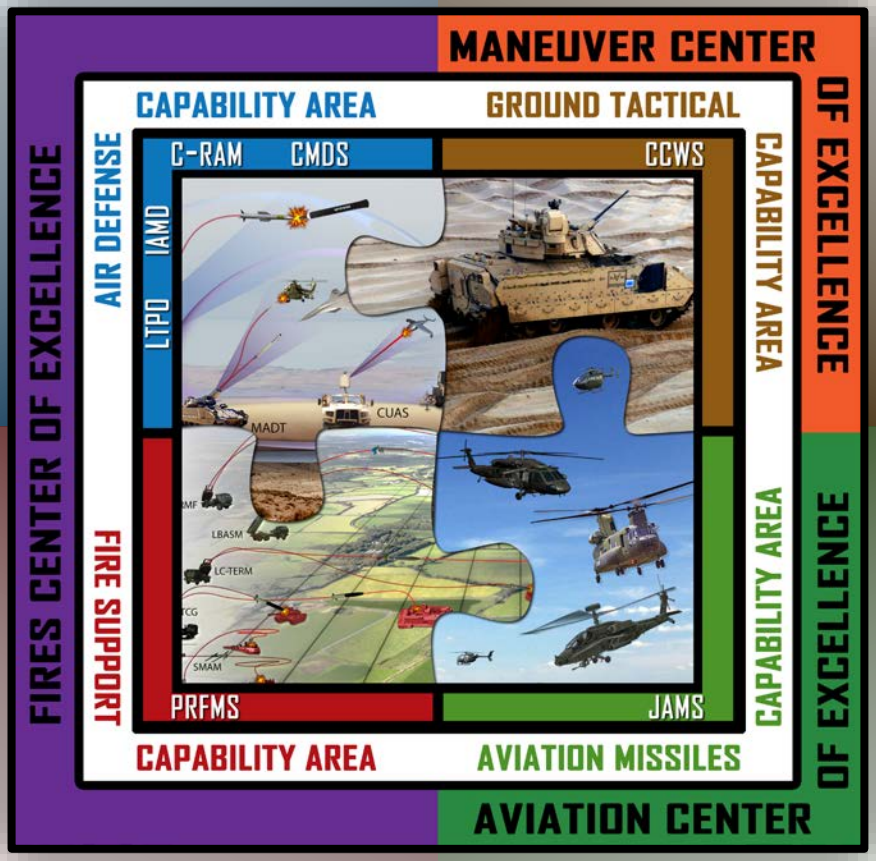
## Army Modernization Priorities

### Air & Missile Defense

Technologies for the development of mobile air defense systems that reduce the cost curve of missile defense, restore overmatch, survive volley-fire attacks, and operate within sophisticated A2AD and contested domains

### Long Range Fires

Technologies for the development, integration and delivery of long range fires at the tactical, operational, and strategic echelons to restore overmatch, improve deterrence, and disrupt A2AD on a complex, contested and expanded battlefield.




### Next Generation Combat Vehicle

Technologies for active protection systems that will increase our ability to survive and win in the complex and densely urbanized terrain of an intensely lethal and distributed battlefield where all domains are continually contested.

Technologies for enhanced lethal effects that will increase our capability to win in the complex and densely urbanized terrain of a lethal and distributed battlefield.

### Future Vertical Lift

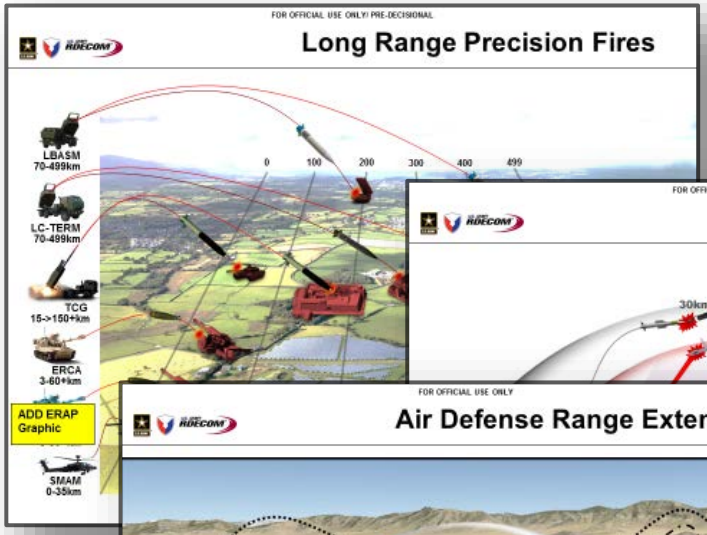
Technologies for the development, integration, and delivery of aviation launched air-to-ground and air-to-air missile systems to restore overmatch within sophisticated A2AD and contested domains

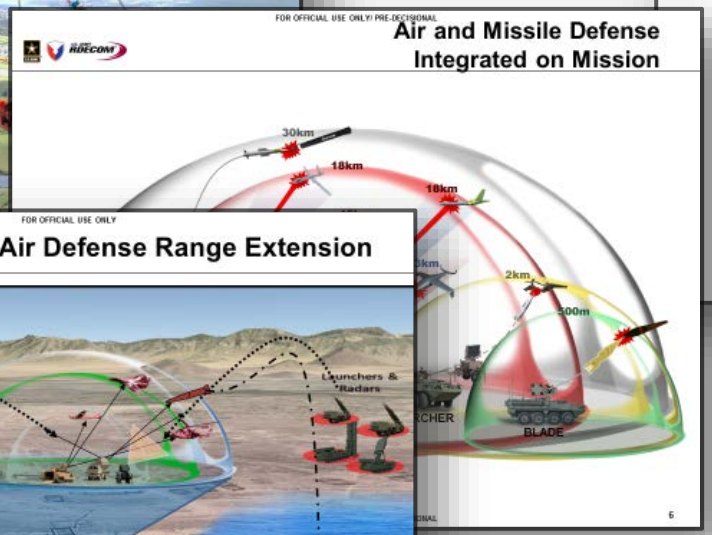
**Engage First** **Expand the Dome** **On the Move**

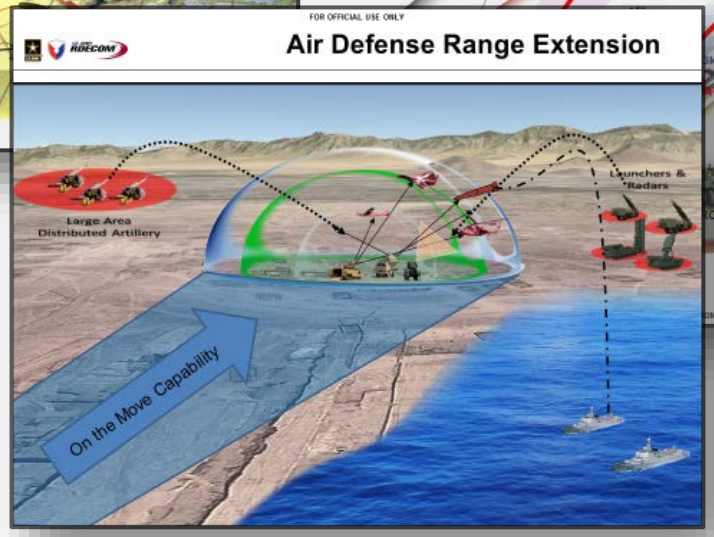
*TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.*

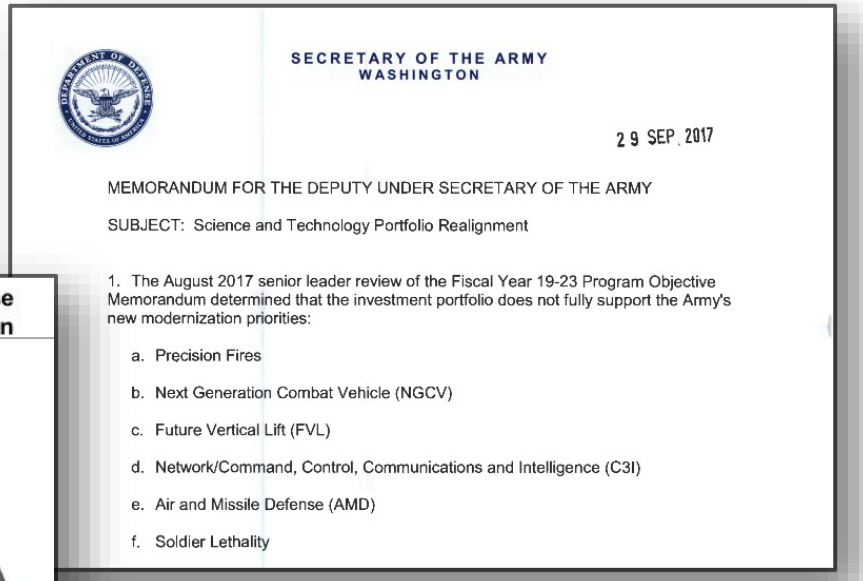
# Missile S&T Addressing the CSA Priorities

- **Engage First [Long Range Precision Fires]**
- **Expanding the Dome [Air & Missile Defense]**
- **On the Move [LRPF & AMD]**



SECRETARY OF THE ARMY
WASHINGTON

29 SEP 2017

MEMORANDUM FOR THE DEPUTY UNDER SECRETARY OF THE ARMY

SUBJECT: Science and Technology Portfolio Realignment

1. The August 2017 senior leader review of the Fiscal Year 19-23 Program Objective Memorandum determined that the investment portfolio does not fully support the Army's new modernization priorities:

a. Precision Fires

b. Next Generation Combat Vehicle (NGCV)

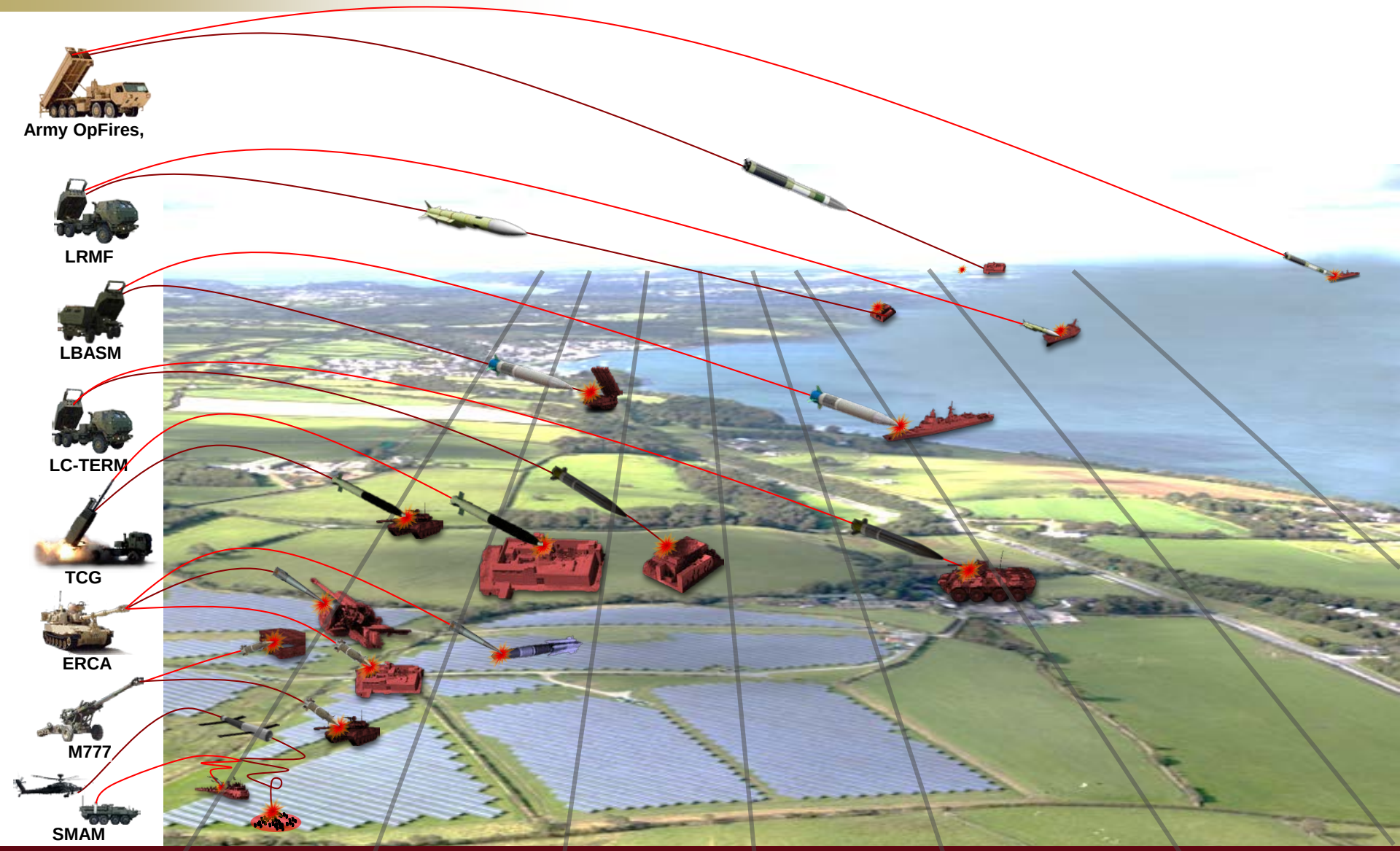
c. Future Vertical Lift (FVL)

d. Network/Command, Control, Communications and Intelligence (C3I)

e. Air and Missile Defense (AMD)

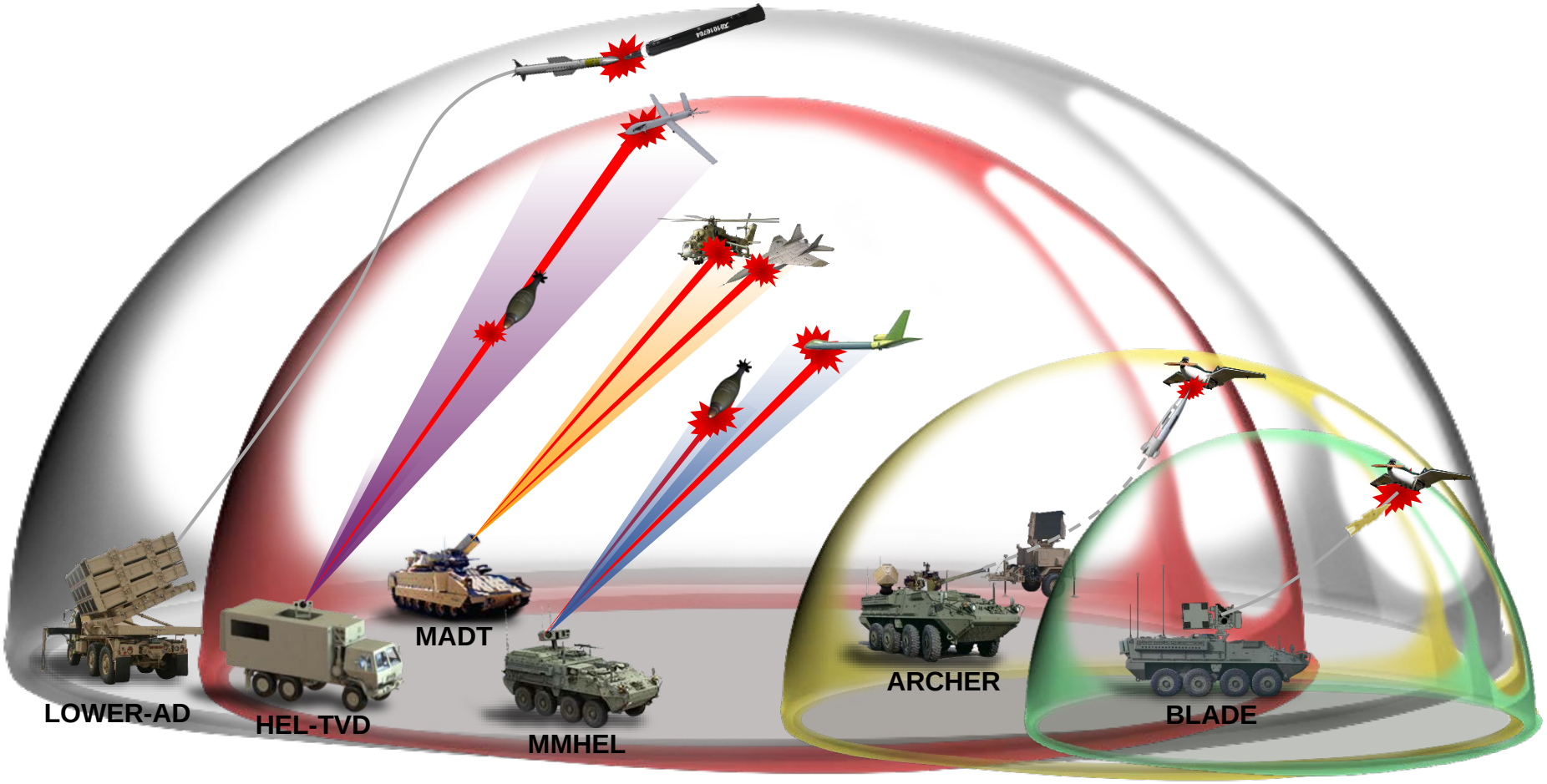
f. Soldier Lethality

# Long Range Precision Fires Objective




**PROVIDE CAPABILITY TO ENGAGE TARGETS AT EXTENDED RANGE**

# AMD Objective




**Provide Capability to Engage Targets at Extended Range**

# AMRDEC Missile S&T Aligned to Army Priorities

## LONG RANGE FIRES

Tail Controlled GMLRS (TCG) Tech Insertion

Low-Cost Tactical Extended Range Missile (LC-Term)

Land-Based Ship Missile (LBASM)


Long Range Maneuverable Fires

Enhanced Single Multi-Mission Attack Missile (E-SMAM)

Multiple Simultaneous Engagement Technologies (MSET)

## NEXT GENERATION COMBAT VEHICLE

Hard Kill Active Protection System (APS)

## FUTURE VERTICAL LIFT

Modular Missile Technologies (MMT)
Open Systems Architecture

Next Generation Air-to-Ground Missile

## AIR & MISSILE DEFENSE

Low-Cost Extended Range Air Defense (LowER AD)

Digital Array Radar Testbed (DART)

Maneuver Air Defense Tech

NexGen Lower Tier Missile Technologies

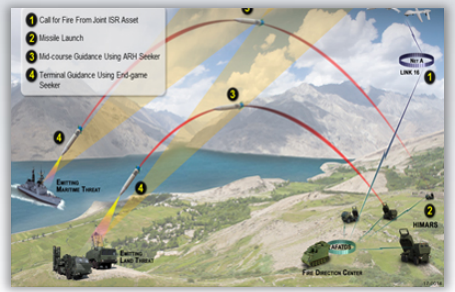
# Missile S&T Collaboration

## Notional Way Ahead

- The Army Futures & Modernization Command will stand up July 2018 (IOC), with FOC by July 2019
- Modernization strategy has one focus: make Soldiers and units more lethal to win our Nation's wars and come home safely.
- Process will leverage commercial innovations, cutting edge science and technology, and warfighter feedback.
- AMRDEC has a key role in 3 of the 6 identified capabilities

## Long Range Precision Fires

- Low-Cost Tactical Extended Range Missile (LC TERM)
- Seekers
- Precision Target Acquisition Seeker (PTAS)
- Land-Based Anti-Ship Missiles (LBASM**)**
- Long Range Maneuverable Fires (LRMF)

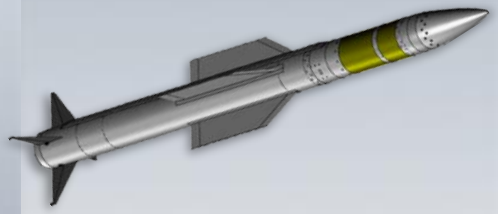



## Future Vertical Lift

- Joint Multi-Role Technical Demo (JMR-TD)
- Modular Open System Approach
- Modular Missile Technology
- NexGen Tactical UAS
- Multi-Role Small Guided Missile (MR-SGM)
- Single Multi-Mission Attack Missile (SMAM)
- Degraded Visual Environment-Mitigation

## Air & Missile Defense

- Low-cost Extended-Range Air Defense (LowER-AD)
- Maneuvering Air Defense Technologies (MADT)
- Digital Array Radar Testbed (DART)

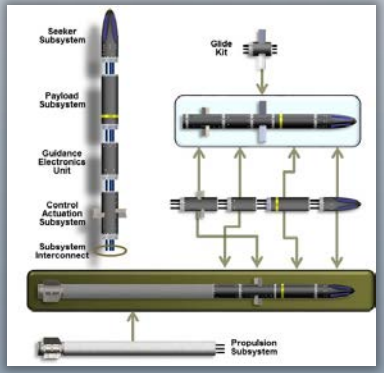


## Airworthiness

- Safely attain, sustain, and complete flight in accordance with approved usage limits
- Deliver responsive airworthiness solutions throughout the system life cycle

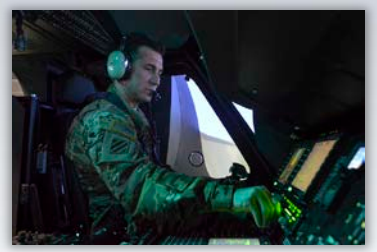
## Modular Missile Technologies (MMT)

- Based on a Modular Open Systems Architecture for guided missiles
- Consists of two different airframe types: a canard-controlled forward firing missile and a tail-controlled drop/glide munition




## Simulations, Trainers, & Integration Labs

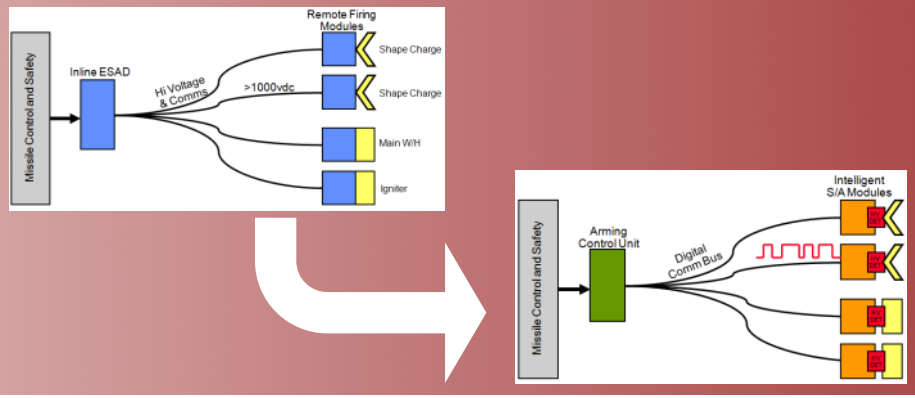
- New methods include creating a PVI that closely replicates the actual aircraft
- Optimal mix of tactical and simulated hardware to keep trainers concurrent with aircraft



## Lethal Miniature Aerial Missile System (LMAMS)

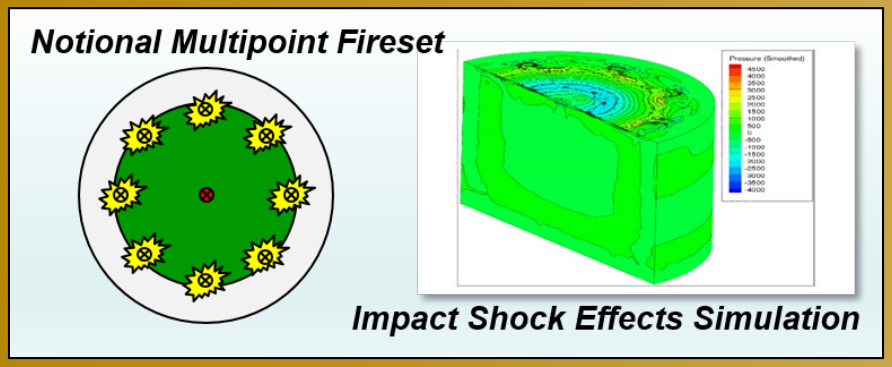
- Soldier-carried, Soldier-launched precision weapon system
- Allows precision engagement of enemy combatants without exposing the Warfighter to direct enemy fire

## *"Design Guidelines for Implementing a Low Voltage Distributed Fuzing System"*




**Mark Etheridge**
**Session TBD, Open Session**
**Wednesday, 1:20 PM**

## *"Hardened Selectable Multipoint Fuze"*




**Michael Connolly**
**Session TBD, Closed Session**
**Thursday, 9:20 AM**

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