U.S. ARMY

DEVCOM AVIATION & MISSILE CENTER

U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND AVIATION & MISSILE CENTER

(U) COUNTER-UAS TECHNOLOGY USA	03 DECEMBER 2024

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POC:	Sarah Parker

DISTRIBUTION STATEMENT A.
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MS. SARAH PARKER | DEPUTY FOR MISSILE TECHNOLOGY

ARMY FUTURES COMMAND

AFC Mission Statement

AFC provides the Army solutions (integrated concepts, organizational designs, and technologies) IOT allow the Joint Force, employing Army capabilities, to achieve overmatch in the future operational environment.

Army Modernization Priorities

- LONG RANGE FIRES
- NEXT GENERATION COMBAT VEHICLE
- FUTURE VERTICAL LIFT (AVIATION)
- AIR AND MISSILE DEFENSE
- NETWORK
- SOLDIER LETHALITY

AFC HQs — Army Futures Command Headquarters, Austin, TX

CG | CSM

CoS

AFC Staff

AFC SB — AFC Support Battalion, Austin, TX

DCG | EDCG | DCG, AFC / FCC Director | DCG, AFC / A&S Director | DCG, AFC / ARNG

ASA(ALT) — 12x Program Executive Offices (PEOs)

Assigned
Direct Support
Coordination

AFC DCG's Terms of Reference Oversight
DCG
EDCG
DCG // FCC Director
DCG // A&S Director

CFT= Cross Functional Team
CDID= Capability Development Integration Directorates (CDIDs)

CAC — Combined Arms Center, Ft. Leavenworth, KS, Army Directive 2022-07

ATEC — Army Test and Evaluation Command, Aberdeen Proving Ground, md.

75IC — 75th Innovation Command, Houston, TX

LRPF CFT — Long Range Precision Fires CFT, Ft. Sill, OK

NGCV CFT — Next Generation Combat Vehicle CFT, Detroit, MI

FVL CFT — Future Vertical Lift CFT, Redstone Arsenal, AL

NET CFT — Network CFT, Aberdeen Proving Ground, MD

APNT/S CFT — Assured Positioning, Navigation, Timing & Space, Redstone Arsenal, AL

AMD CFT — Air and Missile Defense CFT, Ft. Sill, OK

SL CFT — Soldier Lethality CFT, Ft. Benning, GA

STE CFT — Synthetic Training Environment CFT, Orlando, FL

TRAC — The Research & Analysis Center, Ft. Leavenworth, KS

SWFAC — U.S. Army Institute for Software Development, Austin, TX

AI2C — Artificial Intelligence Integration Center, Pittsburg, PA

AAL — Army Applications Laboratory, Austin, TX

CSID — Combat Systems Integration Directorate, Austin, TX

S&T — Science & Technology, Austin, TX

UTDD — University Technology Development Division, Austin, TX

FCC — Futures & Concept Center, JBLE and Austin, TX

JMC — Joint Modernization Command, Ft. Bliss, TX

DOC — Director of Concepts, JBLE & Austin, TX

FID — Futures Integration Directorate, JBLE & Austin, TX

USASOC — U.S. Army Special Operations Command CDID, Ft. Bragg, NC

USASMDC — U.S. Army Space & Missile Defense Command CDID, Redstone Arsenal, AL

M-CDID — Maneuver CDID, Ft. Benning, GA

F-CDID — Fires CDID, Ft. Sill, OK

AV-CDID — Aviation CDID, Ft. Rucker, AL

I-CDID — Intelligence CDID, Ft. Huachuca, AZ

S-CDID — Sustainment CDID, Ft. Lee, VA, W3U210

MED-CDID — Medical CDID, Ft. Sam Houston, TX

MC-CDID — Mission Command CDID, Ft. Leavenworth, KS, W3U220

CY-CDID — Cyber CDID, Ft. Gordon, GA

CH-CDID — Chaplain CDID, Ft. Jackson, SC

MS-CDID — Maneuver Support CDID, Ft. Leonard Wood, MO

DEVCOM — Combat Capabilities Development Command, Aberdeen Proving Ground, MD

ARL — Army Research Laboratory, Adelphi, MD

AC — Armaments Center, Picatinny, NJ

GVSC — Ground Vehicle Systems Center, Warren, MI

SC — Soldier Center, Natick, MA

CBC — Chemical and Biological Center, Edgewood, MD

DAC — DEVCOM Analysis Center, Aberdeen Proving Ground, MD

AvMC — Aviation and Missile Center, Redstone Arsenal, AL

C5ISR — C2, Computers, Comms, Cyber, and ISR Center, Aberdeen Proving Ground, MD

MRDC — Medical Research & Development Command, Ft. Detrick, MD

USAARL — U.S. Army Aeromedical Research Laboratory, Ft. Rucker, AL

USAISR — U.S. Army Institute of Surgical Research, Ft. Sam Houston, TX

USAMRICD — U.S. Army Medical Research Institute of Chemical Defense, Aberdeen Proving Ground, MD

USAMRIID — U.S. Army Medical Research Institute of Infection Diseases, Ft. Detrick, MD

USARIEM — U.S. Army Research Institute of Environmental Medicine, Natick, MA

USAWRAIR — U.S. Army Walter Reed Army Institute of Research, Silver Spring, MD

USATATRC — U.S. Army Tele-Medicine & Advanced Tech. Research, Ft. Detrick, MD

USAMRAA — U.S. Army Medical Research Acquisition Activity, Ft. Detrick, MD

USAMMDA — U.S. Army Medical Material Development Activity, Ft. Detrick, MD

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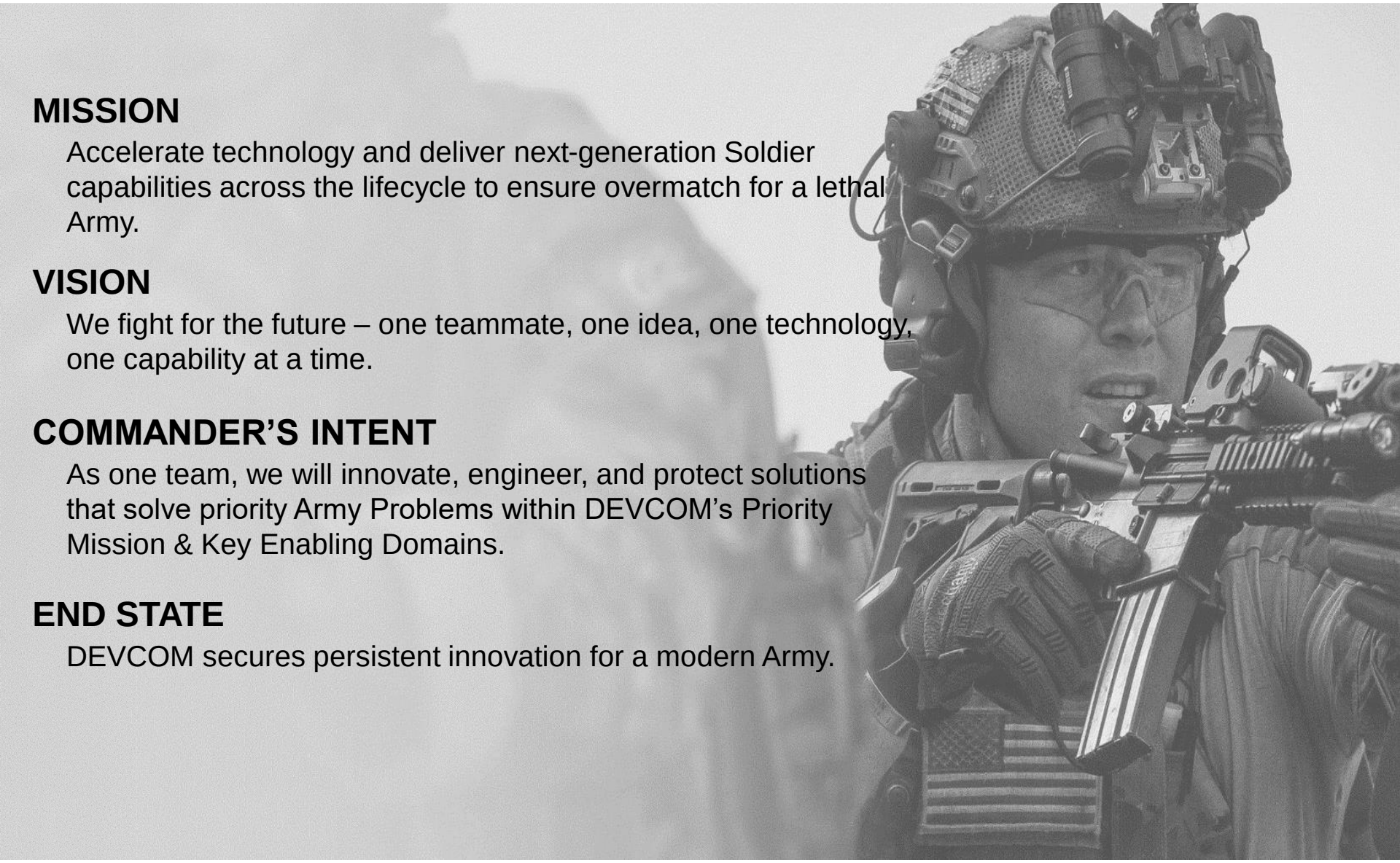
DEVCOM MISSION AND VISION



MISSION

Accelerate technology and deliver next-generation Soldier capabilities across the lifecycle to ensure overmatch for a lethal Army.

VISION

We fight for the future – one teammate, one idea, one technology, one capability at a time.

COMMANDER'S INTENT

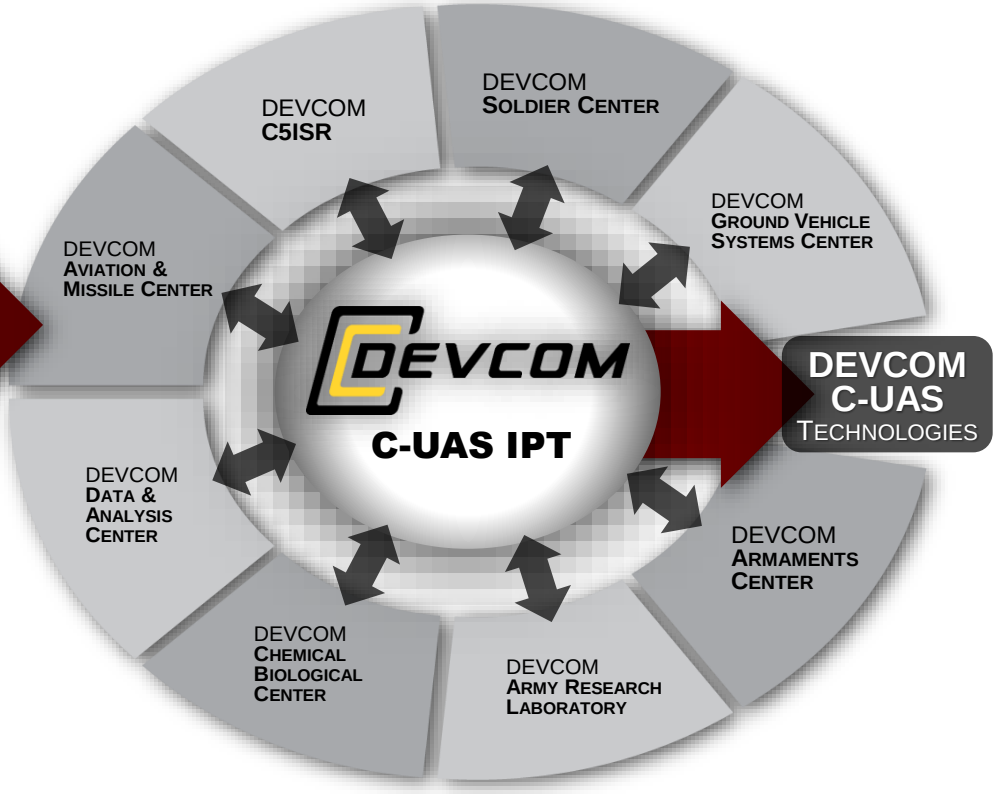
As one team, we will innovate, engineer, and protect solutions that solve priority Army Problems within DEVCOM's Priority Mission & Key Enabling Domains.

END STATE

DEVCOM secures persistent innovation for a modern Army.

DEVCOM C-UAS IPT OVERVIEW

MISSION:
Enable the planning and development of required C-sUAS capabilities by coordinating, synchronizing and leveraging S&T efforts across the command in accordance with the Army C-sUAS Framework and Strategy



OBJECTIVES:

- Coordinate with strategic partners to identify gaps and threat priorities for use by the IPT to refine the C-UAS strategy
- Increase collaboration among C-UAS efforts with common objectives
- Identify complimentary C-UAS capabilities across DEVCOM that can be integrated for optimal performance and efficiency

ARMY C-SUAS S&T STRATEGY

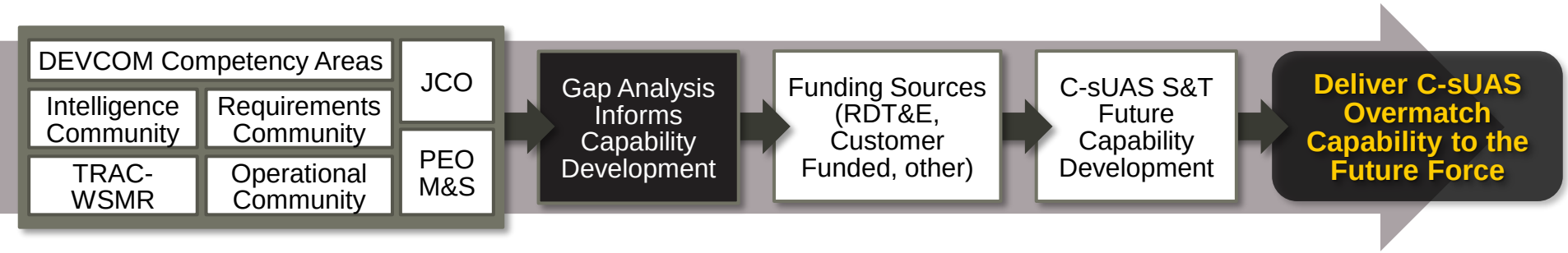
SCOPE: C-sUAS S&T growth in advanced technology to support acquisition programs in the mid-term (through 2034), and explore additional advanced capabilities to outpace adversaries in the far-term (2035 and beyond)

KEY COMPETENCY AREAS:

- **Armament Systems**
  - ✓ Advanced gun systems and enhance existing gun systems to quickly respond to sUAS threats
- **Basic, Applied and Advanced Research**
  - ✓ Revolutionary concepts for advanced materials, communications, sensing, munitions, and weapon systems
- **Kinetic Interceptor Technology**
  - ✓ Low-cost kinetic interceptor technologies including advanced seeker, novel warheads, and extended-range propulsion to address Group 3 sUAS threats
- **Air Defense Sensor Technology**
  - ✓ Advanced sensor technologies including precision fire control radars, passive and distributed sensing
- **Fire Control Advancements**
  - ✓ AI/ML applications for fire control to ensure precision targeting of highly maneuvering threats and rapid weapons target pairing
  - ✓ Distributed lethality solutions to address multiple, simultaneous threats and leakers
- **Cyber and Electronic Warfare Solutions**
  - ✓ Advance non-kinetic methods to efficiently neutralize enemy UAS
  - ✓ Cyber and protocol manipulation to counter threat sUAS control, navigation and C2 networks
- **Directed Energy Solutions**
  - ✓ Advanced DE/HPM technologies increasing magazine depth at lower cost per kill, increase range and rate of fire

ARMY C-SUAS S&T STRATEGY FRAMEWORK

- **Leverage intelligence, requirements, operational communities and internal subject matter experts to execute gap analysis framework**
  - Assess current S&T efforts to inform S&T gaps
  - Include short, near and long-term analysis
  - Extend framework across all labs and centers (Competency Areas) within DEVCOM
  - Use distributed guiding documents to ensure alignment with Army needs
- **Provide solutions to Army capability gaps spread across all warfighting functions and cross-functional teams**
  - Address the entire UAS kill chain: target detection, tracking, identification, fire control, and defeat
  - Provide technology solutions to meet the requirements for fixed/semi-fixed, mounted and dismounted C-UAS capabilities
  - Provide Air Defense and MOS agnostic C-UAS solutions



DEVCOM'S LONG-TERM COUNTER-UAS GOALS

- Advanced Sensors, Effectors, Command & Control, Communications
- Focus on Reach, Range, Speed, & Cadence
- Systems that are Smarter, Affordable, Upgradable, & Interoperable
- Full Joint & Coalition Integration from fielded systems down to R&D

DEVCOM AVIATION & MISSILE CENTER TECHNOLOGY AREAS

CYBER

SENSOR

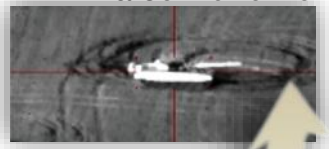
MISSILE ELECTRONICS

GUIDANCE

LETHALITY

RADAR

DATALINK & COMMUNICATION



PROPULSION

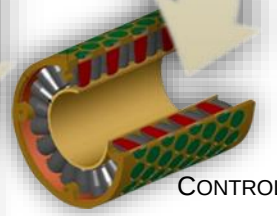
LAUNCHER

RELIABILITY/MAINTAINABILITY

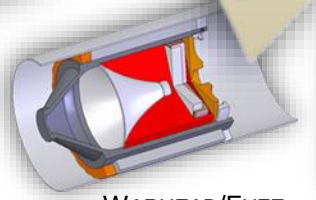
AFFORDABILITY / MANUFACTURING TECHNOLOGY

MATERIALS & STRUCTURES

POWER



CONTROL SYSTEMS



WARHEAD/FUZE

NAVIGATION SYSTEMS

AERODYNAMICS

MODEL & SIMULATION

AIR AND MISSILE DEFENSE (AMD) MODERNIZATION PRIORITY*

Supporting Army and Joint Readiness now and in the Future Multi-Domain Operation (MDO) Environment

Air and Missile Defense will provide Combatant Commanders with a flexible, agile, and integrated AMD force capable of executing Multi-Domain Operations and defending the Homeland, regional joint and coalition forces, and critical assets in support of unified land operations.[1]

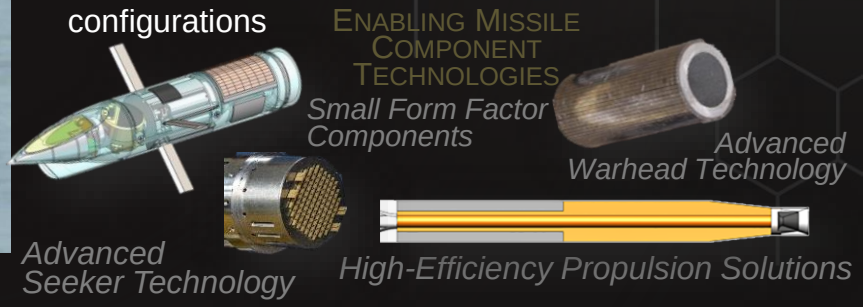
* Army Air and Missile Defense (AMD) 2028 (March 2019)

NEXT GENERATION AIR AND MISSILE DEFENSE CAPABILITIES

S&T Efforts Support AMD Modernization for Fire Control, Interceptor, and Radar

FUTURE CAPABILITIES:

- Enabling technologies for small, lightweight, low-cost missile interceptors for increased magazine depth (stowed kills) to enable maneuver force defeat of numerous sUAS at short range
- Integrated Fires launcher technologies for Fires and AMD
- Next generation Air Defense radar technologies
- Support distributed and collaborative engagement decision making through maturation of AI decision aids that enable operators to continuously manage IAMD deployments and select best engagement options and pairing.
- C-sUAS interceptors with increased range, reduced reaction time, increased lethality and reduced reload time for the maneuver forces fixed site and mobile configurations



Future S&T Capabilities Aligned with AMD Priorities

EXTENDED RANGE C-SUAS

Schedule:

Task	FY 25	FY 26	FY 27	FY 28	FY 29
Requirement Refinement					
Concept Development					
Functional Analysis					
Engineering Development Unit					
Developmental Test Series					
User Assessment Prototypes					

Milestone Indicators: Knowledge Point: TRL Demo:

Purpose/ Requirement:

- Provide maneuver forces a mobile, high speed, long-range kinetic interceptor capability
- Target Group 2-3 sUAS that operate at higher altitudes with greater standoff ranges for Multi-Domain Operations (MDO)
- Establish technical viability of an extended range interceptor compliant with the Stinger Vehicle Universal Launcher (SVUL) and Forward Area Air Defense Command and Control (FAAD C2).
- Maintain or increase lethality against traditional MSHORAD targets for the maneuver forces, fixed site and mobile C-sUAS configurations.
- The missile would also increase range, reduce engagement time, improve reliability, increase magazine depth and reduce reload time compared to current C-sUAS kinetic interceptor capabilities.

Key Technical Challenges:

- Novel propulsion concepts through component evaluation and analysis at range
- Small form factor seeker technology to meet long range missile intercept requirements
- Small form factor critical missile components for extended range UAS targets
- SVUL Integration

RFI INFORMATION:

- AMTC GM-25-01-06 Out Now (Title: LRMC)
- EWP Due 12/18


U.S. ARMY