# Establishing Joint Solutions to Address Current and Future Small UAS Threats

Presented by

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# *The Evolving Threat of Small UAS*

## Technology Trends

Rapidly advancing and proliferating UAS technology can be adapted into surveillance or weapons systems that pose a security threat—to both our military and our civilian population.



Longer Battery Life



Extended Range



Increased Payload



Sensor Miniaturization and Enhanced Autonomy



Sensor Fidelity/Visual Acuity



Boosted Speed and Performance



Small UAS (Non-State Actors) — Unmanned Aircraft Category Groups — State Actor Threats

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| DJI Phantom 3 | DJI S1000 | Shahed 136 | Yilong 1 | BZK-005 |

DoD C-sUAS Executive Agent (EA) Scope — Air Defense Programs of Record

Air Defense / Force Protection — Air and Missile Defense

## Intelligence, Surveillance, and Reconnaissance (ISR)

UAS provide operators an opportunity to conduct ISR operations from afar, while maintaining a limited presence and digital/electronic signature.



## Kinetic Delivery

Modified Group 1 and 2 and formally designed Group 3 drones are dropping ordinance on infantry, armor, and fixed sites.



## One-Way-Attack

Group 1, 2, and 3 UAS—both off-the-shelf- and military—are conducting kamikaze attacks on ground targets.



## Non-Nefarious

Negligent and/or reckless state and non-state drone operators in the vicinity of infrastructure and installations (both civil and military) pose a safety and security risk.
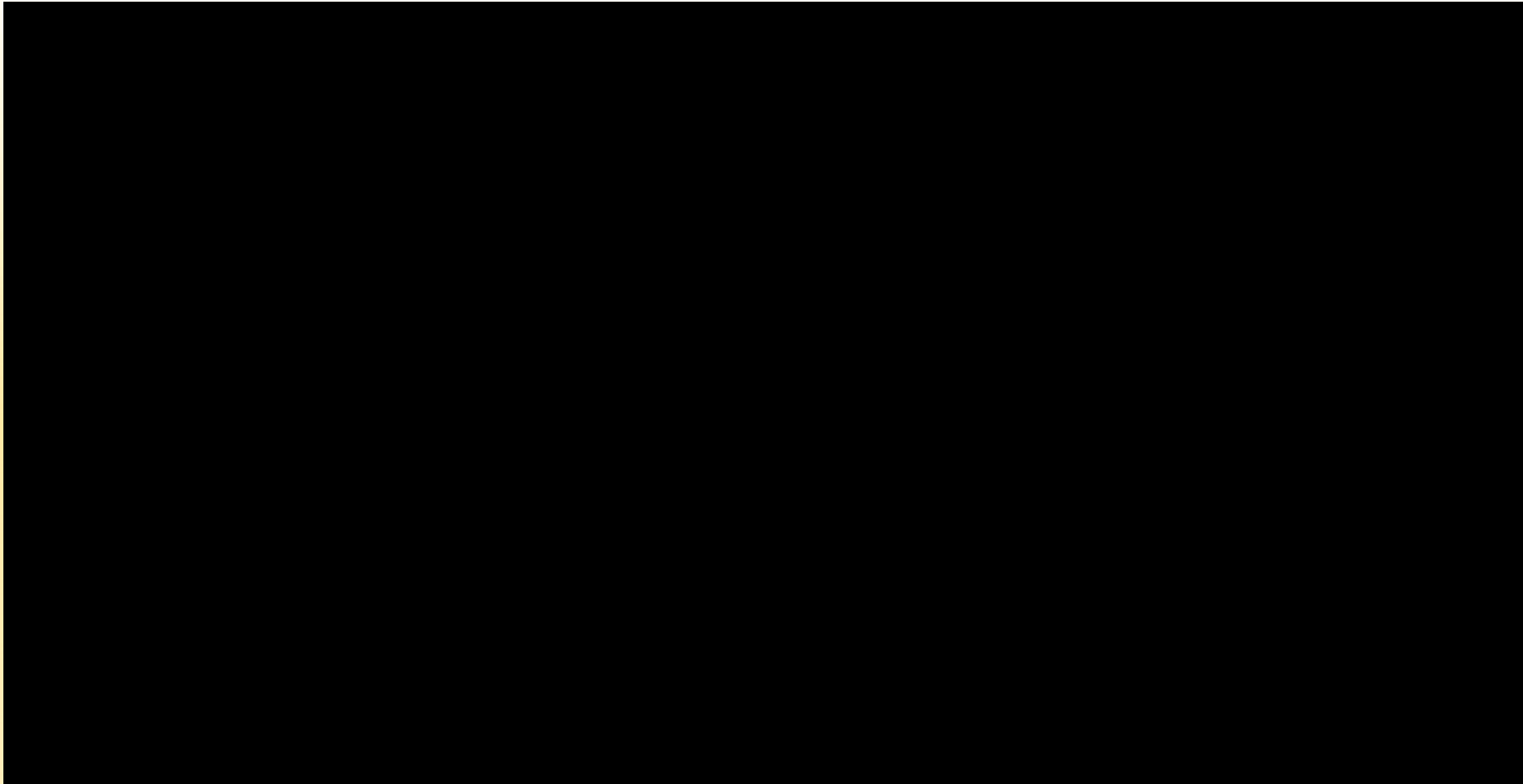
# *Small Drones on the Battlefield*

"Everything we're seeing in Ukraine underscores again the growing drone threat…drones and other unmanned systems are going to pose significant challenges for us..drones are an issue not just overseas, but here at home as well."          -Ms. Christine Wormuth, SECARMY and Executive Agent, DOD C-sUAS

# Joint C-sUAS Office (JCO) Overview

## EA Responsibilities (IAW approved DoDD 3800.01E)

SECDEF assigned responsibilities to the EA (SecArmy) to plan, program, and budget for research and development of UAS Groups 1, 2, and 3 C-sUAS capabilities with cost, funding, and expenses shared equitably among Military Services

## Functional Areas
- Joint Doctrine
- Joint Requirements
- Joint Materiel Development
- Joint Training

## Major Focus Areas
- DoD C-sUAS Strategy
- Joint C-sUAS Operational Requirements
- Joint Training and Doctrine Concept
- Joint C-sUAS Acquisition Strategy
- Common Test Ranges
- Industry Engagement Plan
- US Interagency Coordination/Synchronization
- Allied/Host Nation Coordination/Synchronization
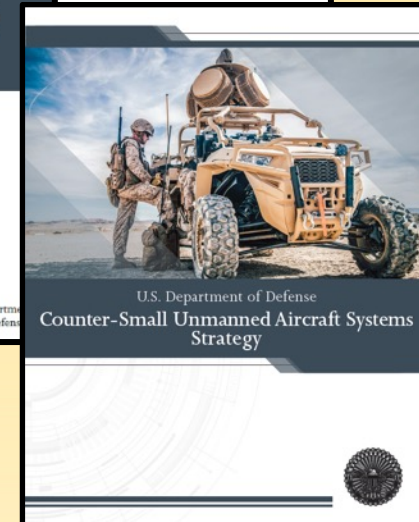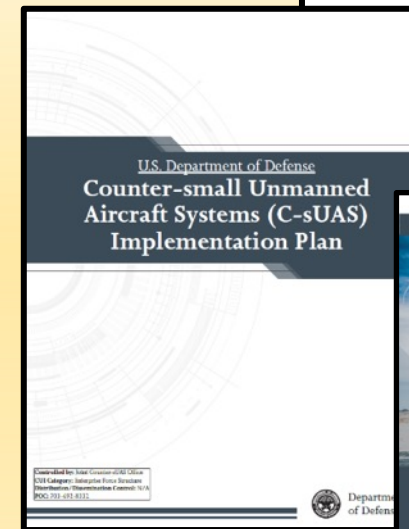
*JCO Mission:* The Joint C-sUAS Office leads and directs Department of Defense C-sUAS Doctrine, Requirements, Materiel, and Training efforts and establishes Joint solutions within a common architecture in order to address current and future small UAS threats and enhance warfighter capabilities to deploy, fight, and win against any threat at home or abroad.

# *Addressing the Threat*

## Initial Joint C-sUAS Systems



**FS-LIDS**

**CORIAN**

**NINJA**

Fixed / Semi-Fixed Site

**Mobile / Mounted**

**L-MADIS** | **M-LIDS**

**Command and Control**

Forward Area Air Defense (FAAD) C2

MEDUSA C2

Systems Integrator (ADSI)

**Dismounted / Handheld**

**SmartShooter**

**Bal Chatri**

**Dronebuster**

### Existing & Developing Systems

- JCO funds research, development, test, & evaluation of counter-swarm & counter-one way attack capabilities
- 10 initial joint counter-small unmanned aircraft systems to left
- JCO continues to fund upgrades & new solutions covering multiple focus areas, including:
  - ➢ Command and Control of defensive systems
  - ➢ Counter-Group 3
  - ➢ Counter-Swarm (e.g., High Energy Laser, High Power Microwave)
  - ➢ Electronic warfare
  - ➢ Low collateral damage

### JCO Demonstrations

- Demo 4, Jun 2023, focus on counter-Group 3 one-way attack (OWA)
- Demo 5, Jun 2024, focus on counter-swarm

## Recommended EW Systems



Pulsar | Ninja | Titan | CORIAN

EGON | DRAKE | Modi

### Memo 2: EW Baseline recommendations (May 23)

- Pulsar (Anduril) †
- Bal Chatri 2 †
- Ninja*
- Titan (Blue Halo)
- CORIAN V1.5 †
- CORIAN V2 †
- EGON (L3Harris)
- DRAKE (NGC)
- Modi (SNC) †
- Modi2 (SNC) †
- FS-LIDS*

*\* also an original down-selected system*
*† Variation exists in Initial down-select or CaaS*

## Recommended CaaS Systems



RPS-42 | Shield | Drone Sentry | RFOne MkII | EnforceAir

HurleyIR Mantis | Vega 2075-1400-CTZ | Drone Gun | Drone Cannon | Leonidas

Aeroguard | Skywall | CUAS MRZR

**SAIC**

LRST-82 | LRCT | Skyfence | Foxhound | Pulsar | Anvil

**Anduril**

Sawtooth LR | Sawtooth SR | ELM-213 | Goshawk | Ninja | AGT

**Black Sage**

RPS-42 | SPEED-ER | Active Jammer | RF Detection
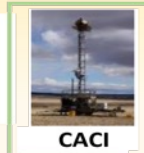
**RSGS**

**CACI**

### Memo 1: Demo 2 recommendations (Nov 22)

- Anduril CaaS system
- Black Sage CaaS system
- CACI CaaS system
- RSGS CaaS system
- SAIC CaaS system

# How We Are Doing

| Current | | Future |
|---|---|---|
| **Threat Platforms** | **Fielded Capability** | **Required Capability** |

**Group 3**

Threat Platforms:
Mohajer 6, Shahed-136, Shahed-191, Shahed-129, Forpost

Fielded Capability:
Avenger*, FSLIDS (Coyote Blk 2+), MLIDS, Palletized Laser (10kw HEL), LPWS*, Coyote Block 3 (HPM)

Required Capability:
Advanced Interceptor, Palletized Laser (20kw HEL), DE MSHORAD (50kw HEL), Road Runner (SOCOM), Epirus High Powered Microwave, Next Gen Forward Radar, Advanced EO/IR

**Groups 1&2**

Threat Platforms:
Lancet, Orlan-10, KUB, RTK 300, Mavic 3, Phantom 4

Fielded Capability:
CORIAN, NINJA, Anduril (SOCOM), EGON (SOCOM), Skyview, Modi, Citadel Titan, Windtalker, LCI, Bal Chatri

Required Capability:
LCEI, Joint Common EW, Common C2 / AI / Decision Making

| Current Efforts | Future Efforts |
|---|---|
| **Capability** – Combat Proven against current threat <br> **Training** – Joint Counter-sUAS @ YPG; MTT; upcoming counter sUAS University at FCOE <br> **Integration** – FAADC2 | **Capability** – Drives investment to pace the evolving threat of increasing *swarms*, *speed*, *payload size*, and *endurance*. <br> **Training** – ITB and CTC equipping; FCOE MTT Capability <br> **Integration** – Allied and Partners C2 Integration; Joint Common EW and C2 |

**FY24 PB Requested Funding of ~$100M provides increased capability for the Joint Force against emerging threats.**

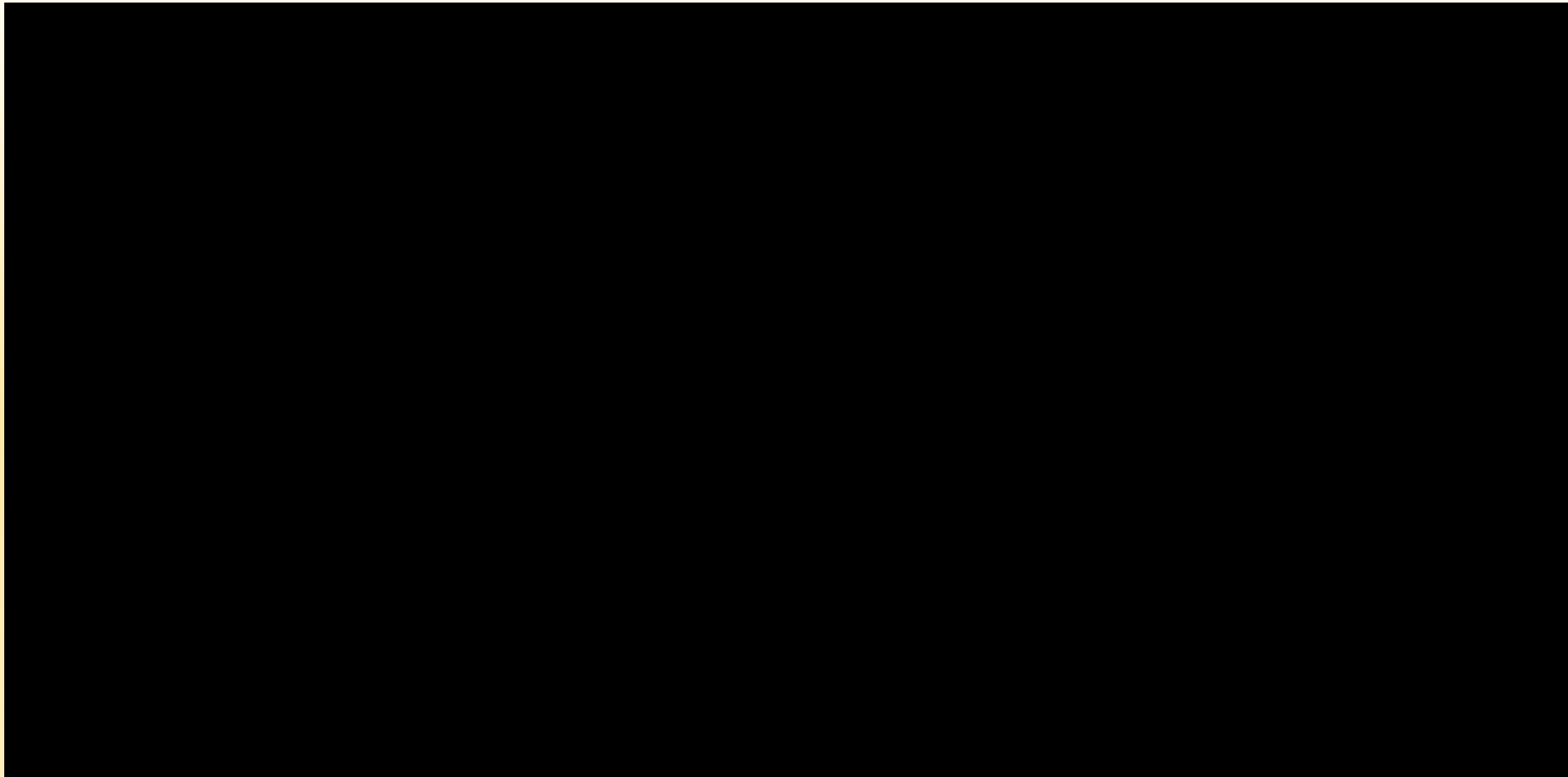# Emerging Capabilities for Countering Small UAS



It is a DoD priority to protect personnel, material, and missions from the growing threats associated with the rapid increase in UAS technology. DoD will develop integrated plans, technologies, and doctrine, and will focus appropriate resources on countering the UAS threat, while minimizing unnecessary duplication and redundancy. ~ DoDD 3800.01E

# JCO Joint Training and Doctrine



FSOK Joint C-sUAS University

**Joint C-sUAS Training University Critical Task Site Selection Board (CTSSB) completed in 2QFY22 at the Fires Center of Excellence**

**Follow-on Inter-service Training Review Organization (ITRO) process will determine fair-share resourcing**

*Check out more Joint C-sUAS*
*references and resources*
*at the following CAC enabled sites:*

*JCO Community:*
*https://jko.jten.mil/*

*C-UAS Training Academy:*
*https://www.milsuite.mil/book/groups/air-defense-artillery-c-suas*
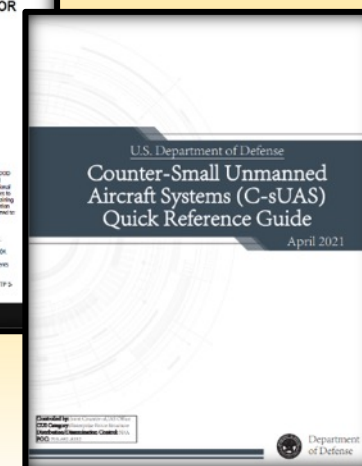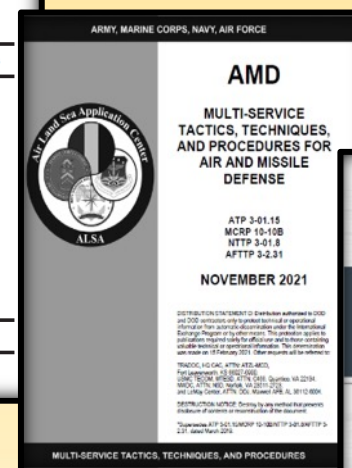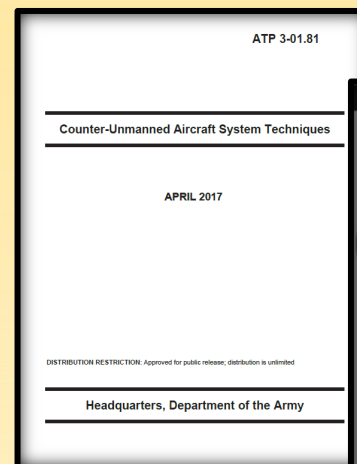
## FSOK Joint C-sUAS University
- (U) IOC 1QFY24 (YPG Curriculum)
- (U) FOC 1QFY25 (Approved JPOI)
- (U) All services
- (U) Exportable Operator Level Lessons
- (U) Resident Operator Course
- (U) Resident Planner Course
- (U) Approved Joint Interim Solutions
- (U) ~ 1000 SM per year through both courses

# C-sUAS Lessons Learned

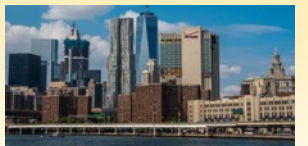| | |
|---|---|
|  | • The small UAS threat is real and evolving. Advances in hardware and software have enhanced speed and range while making drones more autonomous, more easily acquired, and deadlier. |
|  | • There are no silver bullets. C-sUAS requires a layered system-of-systems approach integrated into a common command and control system. |
|  | • C-sUAS capabilities consist of more than just materiel solutions. Moreover, it is everybody's responsibility. We must continue to train and educate the Joint force to outpace the threat. |
|  | • Enhancing ally and partner interoperability with U.S. forces is imperative. |
|  | • The JCO must partner with the services, combatant commands, the interagency community, industry, and academia to continue to outpace the small UAS threat. |
|  | • We must be ready to conduct C-sUAS in complex environments, including congested airspaces above populated areas. |

# *Questions*