

Global EOD Symposium & Exhibition 2018

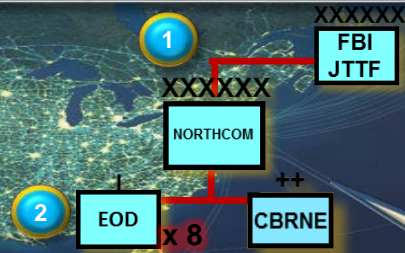


Army EOD Future Requirements



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OV-1: US Army Explosive Ordnance Disposal Operations



EOD Forces Enable Intelligence Based Operations with Explosive Ordnance Disposal

1. First-seen ordnance recovered by EOD team, initial exploitation completed, moved via semi-autonomous/autonomous aerial system
2. Consolidated explosive ordnance and materiel moved via echeloned aerial systems
3. Expeditionary Technical Exploitation Center (ETEC) conducts next level exploitation, processes and disseminates to DIV to support further operations
4. EOD GP ETEC processes & disseminate to JTF, facilitates fusion with strategic reach back for additional exploitation, increases situational understanding of the threat.
5. Fusion of intelligence informs both General Purpose and Special Operation Forces planning cycles, directly enabling intelligence based operations via WIN-T solutions

EOD Forces Enable Defense Support to Civil Authorities

1. Support NORTHCOM with capability to enable Strategic CWMD Ops for USG
2. Daily support to Civil Law Enforcement for explosive ordnance and IED remediation

EOD Forces Enable the Warfighter to Conduct Multi-Domain Operations

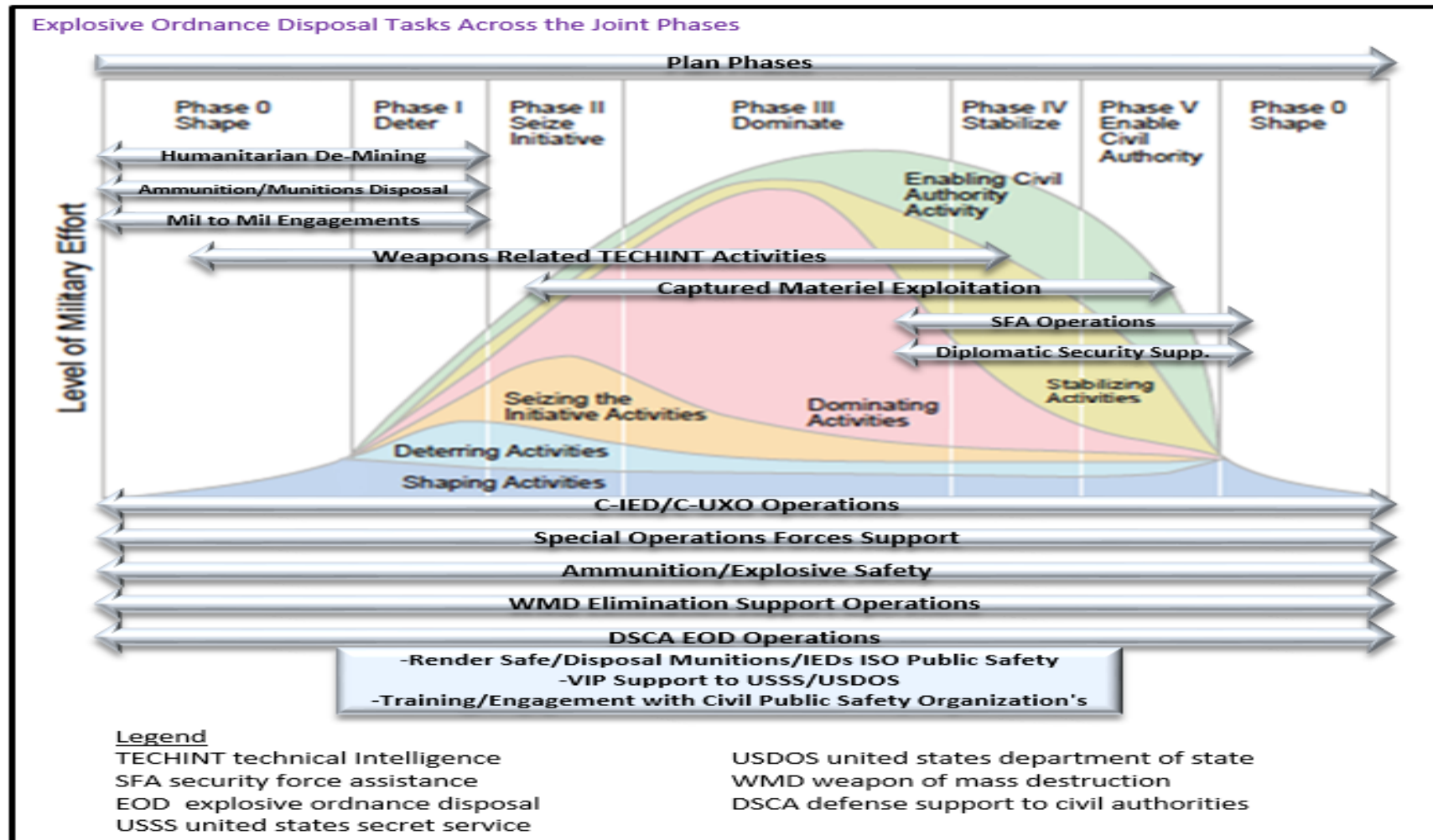
1. Joint Forcible Entry Operations, clearing explosive hazards to preserve critical, airfield infrastructure building combat power
2. Exploitation and Technical Intelligence of first-seen, next generation ordnance and weapon systems enhancing force protection
3. Characterize suspect CBRNE hazards at threat storage areas, ensuring protective posture
4. Render safe improvised explosive devices impacting critical infrastructure to ensure maneuver and movement with Soldier-Robotic Teaming
5. Access confined space, subterranean, and dense urban terrain to clear explosive hazards enabled with advanced robotics
6. Confirm or deny presence of WMD, supporting strategic missions with robotics
7. Enable Special Operations Forces Counter Terrorism, Counter Weapon of Mass Destruction, Security Force Assistance, and Counter Insurgency Operations with uniquely trained and equipped personnel
8. Enable development and inform strategic level policy and plans, across the Offices and COCOMs, through joint educated and select officers and NCOs

Passage of Materiel, Information, and Intelligence

- Aerial Flow of Material
- Flow of Intel & Reach back
- Dissemination of Intel

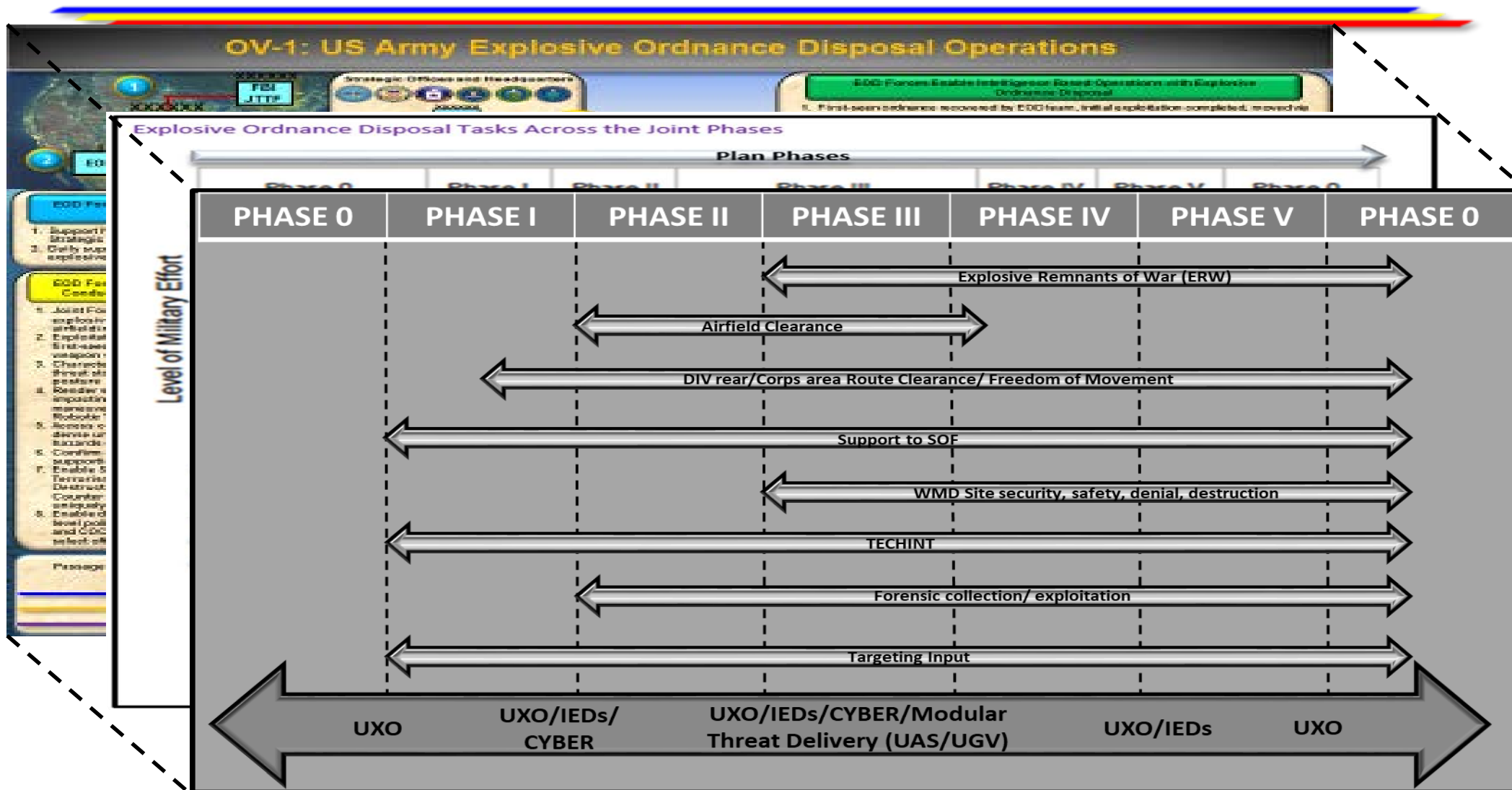


EOD Tasks across the Joint Phases



JP 3-42

EOD Operations in LSCO



Army EOD operations that enable Large Scale Combat Operations are resident at echelon and build capacity throughout the phases of Joint operations.

Robotics

Common Robotics System (CRS) / Man Transportable Robotic System (MTRS)

	Heavy <u>RONS</u>	Medium <u>TALON 4</u>	Light <u>SUGV 310 / PACKBOT 510</u>
Legacy	<ul style="list-style-type: none"> • 26 year old technology • Obsolete, no longer manufactured • Not Cyber Survivable • Non Interoperability Profile (IOP) Compliant 	<ul style="list-style-type: none"> • 15 year old technology • 15 years operational wear and tear • Non-Standard Equipment • Not Cyber Survivable • Non IOP Compliant 	<ul style="list-style-type: none"> • 9 year old technology • 9 years of operational wear and tear • Non-Standard Equipment • Not Cyber Survivable • Non IOP Compliant
Future	<p style="text-align: center;"><u>CRS-Heavy</u></p> <ul style="list-style-type: none"> • Enhanced tactical mobility, lift (100 lbs full extension), arm reach (9+ FT) • VBIED prosecution • Personnel recovery • IOP Compliant/Universal Controller • Multi-robot Operator Control Unit (MOCU) compatible • Mission Modular Payloads 	<p style="text-align: center;"><u>MTRS Inc II</u></p> <ul style="list-style-type: none"> • IOP Compliant/Universal Controller • Multi-robot Operator Control Unit (MOCU) compatible • Mission Modular Payloads • 2 x man transportable • Compatible with DR SKO sensor suite 	<p style="text-align: center;"><u>CRS-Individual</u></p> <ul style="list-style-type: none"> • Less than 25 pounds, supports Airborne and dismounted operations (backpackable) • IOP Compliant/Universal Controller • Multi-robot Operator Control Unit (MOCU) compatible • Mission Modular Payloads

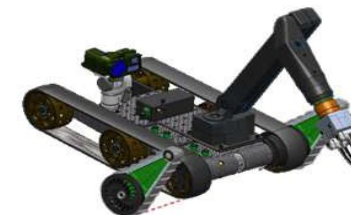
Electromagnetic Environmental Effects (E3) Compliant, CBR and Cyber Survivable



Notional Representation



UNCLASSIFIED



Notional Representation



Enhanced Robotic Payload (ERP)

Working Action

- **Problem:** Legacy and emerging program of record robotic platform organic payloads provide little to no new capabilities for EOD teams tasked with the detection and render safe/disposal of Explosive Ordnance (EO) at safe standoff.
- **Purpose:** Provide enhance capabilities through interoperability profile (IOP) compliant payloads to (1) increase lift capacity and dexterity, (2) detect hidden or camouflaged EO through multi-spectral imaging, (3) render safe surface laid or suspended EO through selectable and accurate disruption, (4) limit Soldier cognitive burden through autonomous Obstacle Avoidance and Digital Modeling (OA&DM), (5) provides dynamic networking for Beyond Line of Sight (BLOS) operation and 360 degree ISR capability.

Capabilities

- Dual Arm Dexterity
- Multispectral Overlay Camera
- Obstacle Avoidance & Digital Modeling
- Extended Range / Mesh Networking
- Multi-Shot Disrupter / Fine Precision Aiming Module



ACAT Level: IV

Proponent: SCoE/TCM-EOD

Current Requirements Documents: April 2018 – AROC Functional Council staffing resulted in a G8 directed requirement to split the staffed CDD into 3 separate Capability Production Documents (CPD): ERP-RS (Multi-shot Disrupter, Precision Aim Module, Dual-Arm Manipulation); ERP UGV (OA, DM, Extended Range/Mesh Networking, Multi-spectral Imaging); and ERP-UAS (Tethered UAS – ISR, BLOS, ECM) and return to HQDA for continued AROC staffing to compete in POM 21-25.

Background

- The ERP is a suite of modular IOP payloads intended to be integrated onto the Talon 5A, MTRS Inc II, and CRS(H) systems. Payloads will include: a Multi-Shot Disruptor, Highly Dexterous Dual Arm Manipulator, Multi-Spectral Overlay Camera, OA&DM, Extended Radio Range and Mesh Networking, and a Tethered UAS.
- September 2016 – Robotic Enhancement Program (REP) 16.1 Limited Objective Experiment (LOE) conducted for OA&DM – technology proven on flat ground; needs development for rough terrain and improved maps and data reduction
- September 2016 – REP 16.1 LOE conducted for Extended Range and Mesh Networking – validated the concept that employing mobile tactical radio relay NLOS communications environments such as urban terrain on flat terrain only; more development needed for tactical environments.
- June 2017 - REP 16.2 LOE conducted using a dual arm dexterity working prototype on a Standardized Talon.

Way Ahead

Equipping EOD forces with current robotic technologies as programs of record, incorporated into Army Sustainment systems. Materiel approach is modular mission payloads, enabling a greater range of capabilities at the lowest cost on common platforms, envisioned for used by all branches of the Army (including Marine Corps) and supported by Army Maintenance systems.



Soldier Protection, Render Safe and Disposal Equipment

Legacy

16-Year Old Theater Provided Equipment / Outdated technology
Non-Standard Equipment EOD TOOLS/ Non-existent capability

Future

RENDER SAFE SETS, KITS OUTFITS (RS SKO)

- EOD Render safe and disposal equipment
- Enables Airborne and dismantled EOD operations
- Power management and harvesting
- X-ray source and digital imager
- Trace CB and Drug confirmatory identification
- Localized threat and back packable Electronic Counter Measures (ECM)
- Multi-purpose firing device



NEXT GENERATION ADVANCED BOMB SUIT (NGABS)

- 360 degree blast, frag, ballistic and thermal protection
- Reduce weight (10%) and improved ergonomics
- Modular/Scalable (Soldier Protection System)
- Internal Cooling System
- Sensor/Comms Suite (thermal / night vision)



Light Weight Demolition Device (LWDD)



Team Support Power Management



Lightweight ECM Capabilities



Lightweight Hand Held Detector Capability



Binocular Night Vision Device



Gamma/Neutron Detection/ ID Capability



Handheld Mass Spectrometry Trace Detection



Lightweight Imager



Lightweight X-Ray Source



Unmanned Aerial Vehicle – ISR/Payload Capability

DISMOUNTED RECONNAISSANCE SETS, KITS, & OUTFITS (DR SKO)

- Level A w/ Self-contained Breathing Apparatus (SCBA) protection (required for THAAD accident/incident response)
- CBRN presumptive identification
- Sensors integration w/MTRS Inc II
- Personnel Decontamination



ABS



NGABS