

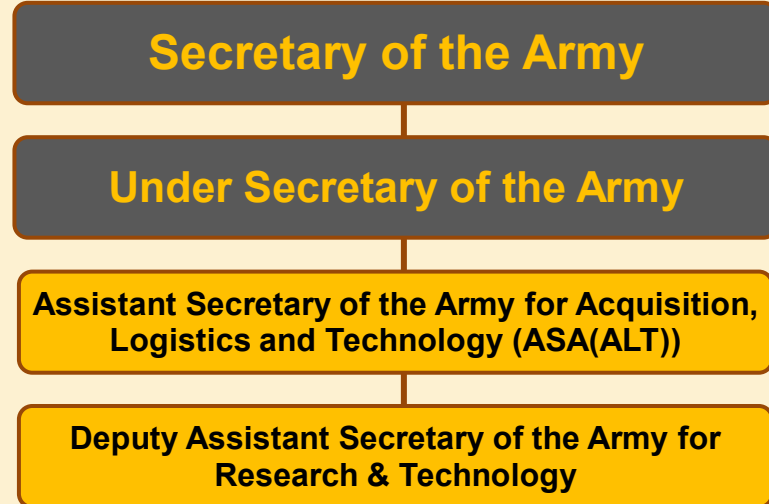


# **Army Science and Technology In Support of the Humanitarian Assistance and Disaster Relief Mission**

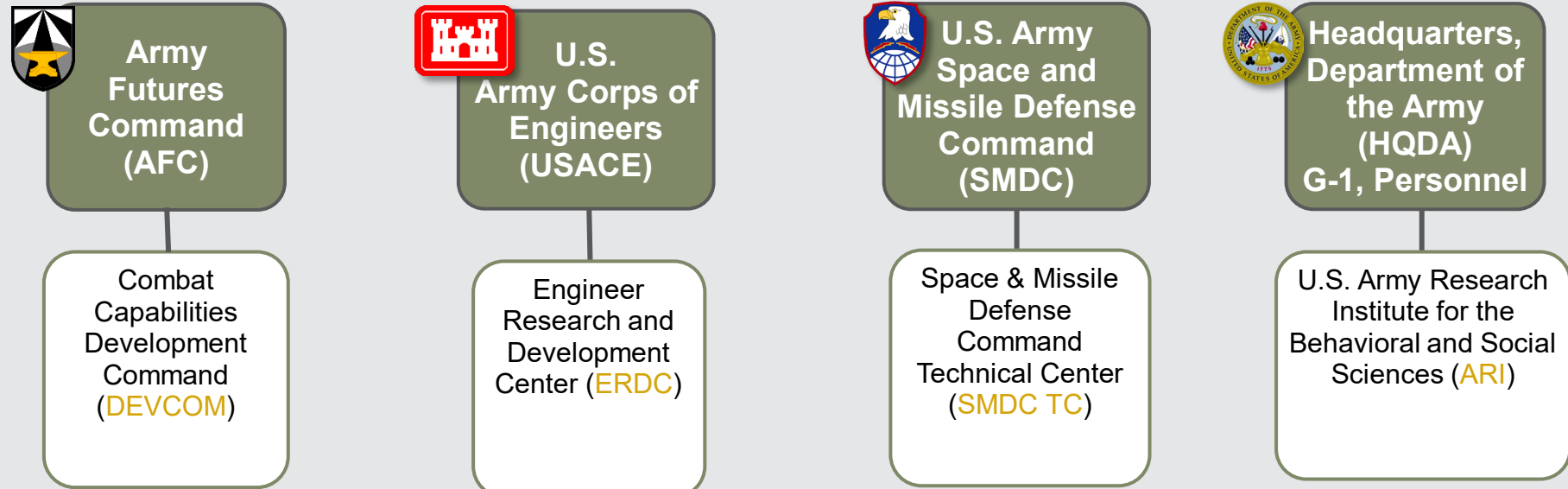
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United States Army Futures Command  
May 24, 2023



Policy, Budget and Oversight









Operational and S&T Program Execution





## Army Modernization Priorities

<b>Long Range Precision Fires</b>  Strategic Fires Operational Fires Tactical Fires	<b>Next Generation Combat Vehicle</b>  Lethality Robotics and Autonomous Systems Armor and Active Protection Ground Vehicle Platforms	<b>Future Vertical Lift</b>  CS1 (Attack Recon) Future Unmanned Aircraft System Modular Open Systems Approach FVL CS3 (Long Range Assault)	<b>Network</b>  Unified Network Common Operating Environment Command Post Cyber	<b>Air &amp; Missile Defense</b>  Indirect Fire Protection Capability Maneuver – Short Range Air Defense (M-SHORAD)	<b>Soldier Lethality</b>  Lethality Situational Awareness Protection Survivability Mobility Human Performance/ Training Personnel Research & Talent Management
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## Key Focus Areas

<b>Assured Positioning, Navigation and Timing</b> <ul style="list-style-type: none"> <li>Ground</li> <li>Aviation</li> <li>Precision Weapons</li> </ul>	
<b>Synthetic Training Environment</b> <ul style="list-style-type: none"> <li>STE Information Systems</li> <li>Family of Virtual Trainers (Individual and Collective)</li> <li>Future Live and Constructive Synthetic Training Environments</li> </ul>	
<b>Electronic Warfare</b> <ul style="list-style-type: none"> <li>Electronic Attack</li> <li>Electronic Support</li> <li>Electronic Protect</li> </ul>	
<b>Sensing &amp; Intelligence</b> <ul style="list-style-type: none"> <li>Space</li> <li>Deep Sensing</li> <li>Data Analysis/Analytics</li> <li>Aided Target Recognition Technologies</li> </ul>	
<b>Contested Logistics &amp; Sustainment</b> <ul style="list-style-type: none"> <li>Delivery and Support Systems</li> <li>Automated/Predictive MNX &amp; Sustainment Tech</li> <li>BioTech and Forward Deployed Manufacturing</li> </ul>	

## Enabling

<ul style="list-style-type: none"> <li>Energetics &amp; Propulsion</li> <li>Lethality &amp; Warheads</li> <li>Armament Technology</li> <li>Hypersonic Technology</li> </ul>	<ul style="list-style-type: none"> <li>Force Projection</li> <li>Force Protection</li> <li>Autonomy &amp; AI</li> <li>Materials</li> <li>Power</li> </ul>	<ul style="list-style-type: none"> <li>Platform Design</li> <li>Powertrain &amp; Propulsion</li> <li>Aircraft Survivability</li> <li>Aircraft Mission Systems</li> <li>Unmanned Systems &amp; Autonomy</li> </ul>	<ul style="list-style-type: none"> <li>Network Resiliency</li> <li>Cyber Defense</li> </ul>	<ul style="list-style-type: none"> <li>Solid State Laser Tech</li> <li>Radar Technology</li> </ul>	<ul style="list-style-type: none"> <li>Intelligent Weapons</li> <li>Adaptive AI for SA and Enhanced Decision Making</li> <li>Soldier Power &amp; Energy</li> <li>Training &amp; Performance Tech</li> </ul>
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### Army Priority Research Areas

- Disruptive Energetics
- RF Electronic Materials
- Quantum
- Hypersonic Flight
- Artificial Intelligence
- Autonomy
- Synthetic Biology
- Material by Design
- Science of Additive Manufacturing

### Army Priority Crosscutting

- Military Operational Medicine
- Power and Energy
- Climate

### Transition

- Science and Technology Objectives (STO)
- Technology Maturation Initiatives (TMI)
- Manufacturing Technology (ManTech)

### Programs Managed on Behalf of DoD

- High Performance Computing Modernization Program
- Counter-Improvised Explosive Devices R&D
- T-BRSC
- Combat Feeding Research and Engineering Program
- Humanitarian Demining
- Joint Services Small Arms Program
- C-sUAS

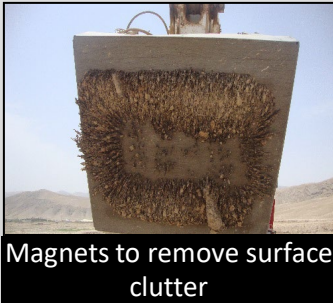


# Humanitarian Demining Research and Development Program

## Area Preparation



Bearcat



Magnets to remove surface clutter

## Mech Clearance



Badger



Raptor w/Rotary Mine Comb

## Detection



Scorpion UXO Detector



Handheld Standoff Mine Detection System

## Neutralization

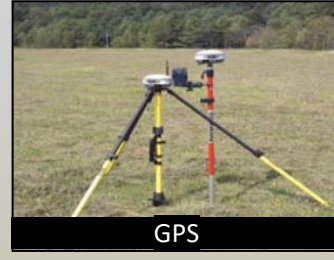


MineWolf



Rebel Crusher

## Survey/Support



GPS



Chase Vehicle

**Mission:** Develop, demonstrate and validate effective technologies for use in Humanitarian Demining via Operational Field Evaluations (OFE) in support of Geographic Combatant Command (GCC) Humanitarian Mine Action (HMA) operations and other USG priorities.

**Impact:** Improves mil-to-mil partnerships particularly in DoD priority countries; validates technology performance in live mine/UXO contaminated areas; increases rate of clearance; reduces explosive material available to insurgents; increases national demining capacity; advances US countermine research and data through technology evaluations.

## TECHNOLOGY APPROACH

**Area Preparation:** Preparing the ground for follow-on detection and clearance. Vegetation, obstacle, surface metal.

**Mine/UXO Detection.** Handheld, man-portable, and vehicular sensing technologies with advanced detection capabilities, threat characterization and clutter discrimination.

**Mechanical Mine/UXO Clearance.** COTS based excavators, tractors, front loaders, and remote-controlled systems modified with armor protection and mine/UXO clearance attachments.

**Neutralization.** Ground engaging technologies to physically destroy mines, UXO or potential threats. Flails, tillers, crushing technologies.

**Survey & Support.** Technologies that support equipment in the other categories. GPS equipment, remote control chase vehicles, video monitoring.

> 400,000 mines and UXO cleared from more than 105 million square meters (25,946 acres) of land



- **Water Diagnostics Operations Gear (WaterDOG)**
- **Water Assessment and Purification (WAsP) toolkit**
- **Gray Water Treatment and Reuse System**
- **Geospatial Capabilities for Security, Humanitarian Assistance, Partner Engagement (GeoSHAPE)**
- **Post Wildfire Flood Risk Management**





### Phase 1

- **Hybrid Solar Electric Container Refrigeration**
- **Containerized Photovoltaic Microgrid System for Forward Operating Environments**
- **Rapid Deployment Hybrid MicroGrid a Plug & Play Transportable Solar PV System-of-Systems**

### Phase 2

- **Hydrating the Force with Sustainable Water from Air**
- **Clean onsite energy from organic, biomass, and plastic waste, to reduce greenhouse gas emissions and deliver renewable energy, improved resiliency, and cost savings to the U.S. Army**





# QUESTIONS?