MUM-T for the Abrams Lethality Enabler

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ABRAMS TANKS

- The M1 series Abrams tank is the current Main Battle Tank
- Heavily armored, large caliber gun
- Destroy enemy armored vehicles
- Deployed onto the battlefield to engage/direct fire
- Provides ground superiority to hold a position
- **Fixed Wing**
  - More efficient/Significantly longer flight time
  - Cover more area for ISR
  - Cannot loiter as easily

- **Single Rotor**
  - Longer endurance over multi-rotor
  - Heavier payload capacity if necessary
  - More Versatile than fixed wing
  - Constant force generation required

- **Multi-Rotor**
  - Easiest to fly
  - High maneuverability
  - Loiter around a location for fixed area ISR
CURRENTLY FIelded UAVs

- MQ-1C Gray Eagle
  - Currently in service
  - Equipped with Hellfire missiles
  - Replaced the Predator drones
  - Battalion Asset
  - Cannot loiter
  - Too fast for Armor Vehicle OpTempo

- RQ-11 Raven
  - Hand launched
  - Waypoint navigation or supervised
  - Hard to deploy from armored vehicle
UNMANNED GROUND VEHICLES (UGVs)

- **Wheeled vehicles**
  - Low production costs
  - Repair/Simplicity
  - Lower impact on infrastructure

- **Tracked**
  - Traction – ground impact
  - Mobility/Versatility
  - Can keep tempo with Armored Vehicles
- **Intelligence, Surveillance, and Reconnaissance (ISR)**
  - Target Detection/Recognition
  - Battle Damage Assessment
- **IED Defeat**
  - Route Clearance
  - Road side bomb trigger
- **Remote breaching operations**
  - Obscuration
  - Lane clearing (MICLIC Launcher)
  - Lane proofing/marking
- **Mobile RWS**
- **Persistent Smoke Generation**
POTENTIAL SCENARIOS

- **ISR**
  - Spot enemy in defilade
  - UAV or UGV

- **ATGM team spotted and engaged**
  - Combat UAV (UCAV)
  - Mobile RWS

- **IED Detection**
  - UAV with Thermal Sight

- **Route Clearing**
  - Tracked APC equipped with plow

- **Persistent Smoke Generation**
  - UGV with Smoke Generator
• UGV In Position
• UGV Deploy Smoke
• Can be used for
  • Cover
  • Deception
  • Breaching Obscuration
    • SOSRA
UxV Controller
- Map of area
- Video feed from UxV
- Toggle switch/button
- Man portable and platform agnostic
ALE PHASE I

**Purpose:**
- Demonstrate the value of unmanned assets within an Armored Brigade Combat Team

**Product:**
- Integrate supervised-autonomy capability onto a UGV
- Integrate UxV OCU mount into Abrams Loader station
- UGV to address capability gap for persistent smoke
- Utilization of UAV to provide ISR and battle damage assessment

**Payoff:**
- Testing will demonstrate the deliverable of persistent smoke to obscure an armored vehicle from OPFOR positions
- Follow-on phases to increase lethality and extend fire control system

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UAV

Scout + Smoke Generator

Robotic HMMWV Mortar System
Future Phases

- Extend range of platform’s fire control
  - Laser rangefinder
  - Laser designator
  - Downrange Met. Sensor
- Extend range of Armor Unit’s lethality/sphere of influence
  - Mount UxVs with Weapon Systems
  - Increase situational awareness
- UAV with increased flight time
- Increase Engineering Asset survivability
**CONCLUSION**

- ALE clearly illustrates the Man-Unmanned Teaming benefits
  - Increase stand off distance
  - Increase lethality, LOS, SA
- ALE Demonstration & Future Phases
- Currently Fielded UAVs – Fixed Wing
- Platform agnostic