



# Service Requirements Panel

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# ***Army Ground Robotics Required Capabilities***

- ***Sources of Required Capabilities***

- Joint and Army concepts and Army Concept Capability Plans
- Joint Urgent Operational Needs Statements / Operational Needs Statements
- Lessons learned
- COCOMs Science and Technology Integrated Priority Lists
- Senior Leader Vision / Visionary Documents (White Papers)
- Research

- ***How they are propagated***

- Annual Warfighter Outcomes
- TRADOC Pamphlet 525-66 (Force Operating Capabilities)
- Capability Needs Analysis Gap List
- Organizational Based Analysis / Capabilities Based Analysis
- Wargames
- Experiments
- Collaborative processes (S&T portfolio analysis, Technology Information Exchanges with industry, program reviews with Army funded university research centers, ...)

# ***Army Ground Robotics Required Capabilities***

- ***Primary developmental thrusts for robotics***

- ***Future Combat Systems:***

- Class I and IV UAVs, unmanned ground vehicles (SUGV, ARV-A(L), MULE-T, MULE-CM)
- Manned ground vehicles (autonomous navigation, autoloaders, active protection systems, control of UMS, remote operation of critical MGV functions)

- ***OIF and OEF needs:*** reconnaissance and surveillance, target identification and designation, countermine / counter-IED, CBRNE reconnaissance

- ***Research and development:***

- Operations in complex and changing terrain and constricted spaces; precise positioning and agility in “communications challenged” environments
- Soldier – robot teaming / collaboration
- Adaptive automation
- Reducing Soldier fatigue
- Complex manipulation of objects
- Anti-tampering
- Scalability for robotics interfaces

# ***Army Ground Robotics Required Capabilities***

## ***Additional Potential Tasks / Capabilities***

### ***•Engineering***

- Move and emplace material, construct obstacles, establish security
- Conduct firefighting operations
- Earthmoving for airfields, FOBs, etc.

### ***•Medical***

- Conduct pharmacy operations
- Perform tele-medicine vital signs, surgery and tele-operated surgery
- Perform battlefield first aid
- Disposal of medical waste

### ***•Maintenance***

- Maintain and repair facilities
- Perform diagnostic and maintenance checks and services on vehicles and equipment
- Perform vehicle recovery
- Perform advanced manufacturing, welding and lithography

# ***Army Ground Robotics Required Capabilities***

## ***Additional Potential Tasks / Capabilities***

- ***Logistics***

- Cargo packaging and pallet assembly
- Packaged warehousing; inventory management
- Loose binning warehousing; inventory management
- Refueling
- Crane and lift operations
- Indoor and outdoor supply yard lift and short movements operations
- Robotic re-arming

- ***Security***

- Provide armed and unarmed perimeter security: interior and exterior – CONUS and OCONUS
- Remove and clean up hazardous materials from contaminated areas

# DOTMLPF Considerations

- **Provides a taxonomy for analysis** of the impact that robotics solutions have on the force both operationally and institutionally
  - Enables a full understanding of the costs-benefits of fielding a specific solution
- **Doctrine and Policy:** autonomous systems, interoperability standards, casualty evacuation, ...
- **Organization:** echelons that command and control robotics systems, sustainment, ...
- **Training:** end-to-end training (home station to theater), individual to collective, live and virtual, ...
- **Materiel:** materiel support concepts, accountability, spares, reliability and maintainability key performance parameters, ...
- **Leadership:** manned-unmanned systems integration, leader expertise in effective use and integration of systems, “leader in the loop” control, ...
- **Personnel:** impacts on unit manning, new personnel skills, man-machine interface, ...
- **Facilities:** required infrastructure for maintenance , storage, and training