Ground Maneuver Portfolio Overview

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Army Enduring Challenges

- Greater **force protection (Soldier, vehicle, base)** to ensure survivability across all operations
  - Ease *overburdened* Soldiers in Small Units
  - Timely *mission command & tactical intelligence* to provide situation awareness and communications in all environments
- Reduce logistic burden of **storing, transporting, distributing** and **retrograde** of materials
  - Create *operational overmatch* (enhanced lethality and accuracy)
- Achieve operational **maneuverability** in all environments and at **high operational tempo**
  - Enable ability to *operate in CBRNE environment*
  - Enable *early detection and improved outcomes for Traumatic Brain Injury (TBI) and Post Traumatic Stress Disorder (PTSD)*
- Improve **operational energy**
  - Improve *individual & team training*
- **Reduce lifecycle cost** of future Army capabilities
Army S&T Investments by Portfolio

**Soldier/Squad**
- Soldier survivability equipment;
- Human dimension/systems;
- Power & energy;
- Soldier Weapons, training

**Air**
- Advanced air vehicles;
- Unmanned aerial systems;
- Manned/unmanned teaming

**Medical**
- Combat Casualty Care,
- Infectious Disease mitigation,
- Clinical/rehabilitative medicine

**Innovation Enablers**
- High Performance Computing;
- Environmental Protection;
- Base Protection;
- Studies

**Lethality**
- Offensive/Defensive kinetic (guns, missiles) > 50 cal;
- Directed Energy (HEL) weapons

**Basic Research**
- Neuroscience;
- Network science;
- Materials science;
- Autonomy

**Ground Maneuver**
- Combat/tactical ground platforms/survivability;
- Unmanned ground systems;
- Austere entry;
- Power & energy

**Note:** Figures may not add due to rounding.
Ground Maneuver Portfolio

6.2 and 6.3 Funding

$383M

Survivability

$203M

Investment Areas

- Vehicle Protection
- Armor
- Active Protection
- Underbody Blast
- Base Protection

Ground Platforms

$119M

Investment Areas

- Power & Mobility
- Ground Vehicle Robotics
- Logistics

Mobility / Countermobility

$61M

Investment Areas

- Counter Mine & IED
- Austere Entry & Maneuver
- Obscurants

*Grey 4% are Other Labs And ManTech
Vision

U.S. Overmatch in military vehicles for offensive and defensive capabilities

Mission Goals

- Increase Survivability
- Reduce Weight
- Improve Fuel Economy
- Increase Power Available
- Detect and Neutralize Explosive Hazards
- Austere Entry & Maneuver
- Provide Concealment

Invest in Technologies which Increase Performance & Affordability of Army Ground Systems against a Capable Enemy
Ground Maneuver S&T Strategy

**Key Research Areas**

- Holistic and synergistic protection vs. unique protection via armor, underbody blast, and active protection
- Increased energy dense engines to enhance mobility and improve fuel efficiency
- Open and common, power & digital data management and distribution
- Autonomy enabled systems
- Technology to enable austere entry & maneuver
- Technology to Detect and Neutralize Explosive Hazards

**Drivers**

- CSA Strategic Priorities
- Army Strategic Planning Guidance
- Army Enduring Challenges
- Army Capabilities Needs Analysis (CNA 16-20)

**Goal:** Increase combat effectiveness over time while reducing acquisition, sustainment, and logistic costs

**Improve performance while reducing system weight and cost**
Ground Maneuver Major Efforts

**Protected Mobility**

- **Goal:** Develop, integrate and demonstrate force protection and mobility technologies to maintain the optimal balance of mobility and protection to facilitate sustained operations anywhere in the world.

- **Off-Road Capabilities**
  - Increased Mobility
  - Active Protection
  - Advanced Armor

- **Load Plans**
  - Minutes
  - Hours
  - GPS
  - Launch Detection
  - Close-In Detection

- **Holistic Protection**
  - Increased Situational Awareness

**Vehicle Electronics Architecture**

- **Goal:** Mature and demonstrate next generation electrical power and data management and distribution architectures for military vehicles improving VICTORY standards.

- **TRL 6 Component Power & Data Systems**
  - Power Architecture
  - Data Architecture
  - Vehicle Systems Control Software
  - Architecture Implementation

- **TRL 5+ Component Power, Data & Vehicle Systems**
  - Transition software, hardware, ICDs, and performance specifications

**Increased Energy Density and Energy Efficiency**

- **Installed Power Density**
  - Increase by 2x

- **Electrical Power Availability**
  - Increase by 10x

- **Fuel Efficiency**
  - Increase 15-30%

**Develop technology to increase performance & reduce identified sustainment cost drivers.**
Modular APS will allow commonality across the vehicle fleet, tailoring of systems to meet PM needs and platform constraints, and provide growth capability to address emerging threats and facilitate transition.

**Products:**
- Modular APS Framework (MAF) and interface standards
- Modular APS Controller (MAC) implementing the framework and designed with safety requirements
- Modular software to integrate subsystems for a specific platform capability
- MAF compliant sensor / countermeasure subsystem specifications
- End-to-End simulations of specific configurations for risk reduction analysis

**Payoff:**
- “Best of Breed” component flexibility
- Avenue for technology insertion of Industry and S&T subsystems
- Designed for safety / shorter transition times
- Potential component commonality between vehicles
- Enable subsystem competition and associated cost savings
**Ground Maneuver Major Efforts**

| Counter Explosive Hazards | Austere Entry & Maneuver |

**Goal:** Investigate novel mine/IED detection sensors and algorithms while understanding the phenomenology behind detection of explosive hazards to enable freedom of maneuver.

**Goal:** Design, develop and demonstrate next generation technologies to provide proactive means to ensure Joint Forces can deploy and freely enter the theater of operations.

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**Robotic Ground Vehicles**

**Goal:** Advance ground robotic vehicle technology to reduce logistics tail, increase unit capabilities and be more expeditionary.

- Autonomy-Enabled Convoy
- Autonomous Materiel Handling Equipment
- Unmanned Vehicles
- Support Expeditionary Forces
- Main Battle System Concept
- Control Vehicles
- Vibration Imaging of Seismic Waves

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**Main Battle System Concept**

- Unmanned Vehicles
- Control Vehicles
- Support Expeditionary Forces
- Vibration Imaging of Seismic Waves
Summary

• Portfolio supports Army Maneuver

• Major Efforts:
  – Vehicle Protection Technologies (Armor, Underbody Blast, Active Protection)
  – Vehicle Mobility Technologies (Powertrain, Power Generation/Storage, Suspension, Track)
  – Counter Explosive Hazards (Detection and Neutralization)
  – Vehicle Electronics Architecture
  – Ground Vehicle Robotics
  – Protective Structures
  – Austere Entry & Maneuver
  – Forensic Analysis

• For Business Opportunities, see the following Organizations:
  – Tank Automotive Research Development and Engineering Center (TARDEC)
  – Army Research Laboratory (ARL)
  – Communication-Electronics Research Development and Engineering Center (CERDEC)
  – Engineer Research Development Center (ERDC)
  – Edgewood Chemical Biological Center (ECBC)
    • [https://www.ecbc.army.mil/about/working.html](https://www.ecbc.army.mil/about/working.html)
Defense Innovation Marketplace

Connecting Industry & DoD

The Defense Innovation Marketplace is a centralized resource for market research:

For Industry, to learn about Department of Defense (DoD) S&T/R&D investment priorities, capability needs and technology interchanges.

For Government, to access search tools to assess and then leverage industry R&D projects for current and future programs.

“We also have the Defense Marketplace, which is a website that allow industry to identify R&D opportunities... that we can then leverage.”
Mary Miller, Deputy Assistant Secretary of the Army for Research & Technology

New in the Marketplace

Strategic Documents
- Systems Engineering 2013 Annual Report "NEW"
- DoD’s FY15 S&T Testimony
- Chairman’s 2nd Term Strategic Direction
- Expeditionary Forces Capstone Concept
- Reliance 21 Operating Principles

Doing Business with DoD
- DARPA Hand & Touch Interfaces (HAPITK) Proposer’s Day "NEW"
- DARPA Upward Falling Payloads "NEW"
- Navy Optical Telescope Assembly "NEW"
- DARPA Tactical Boost Glide BAA "NEW"

News & Events
- Aerospace Enterprise Dialogue with Industry
- Wright Dialogue with Industry
- DAU March Newsletter
- Top Downloads February
- Army Technology Magazine
- Defense AT&L Magazine

Updated 3/31/14

INNOVATION OPPORTUNITIES

Resources for Industry
- DoD Info for Business & Program Planning

Submit IR&D Data
- Share projects with DoD Customers

Resources for DoD
- DoD employee access of R&D Search tool

FEEDBACK

Search Trends

What did you Miss?
- Top Marketplace pages and downloads

TECHNOLOGY INTERCHANGES

Aeronautical
- Dialogue with Industry and IR&D Interchange

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