Supporting Tactical Wheeled Vehicles .... Today and Tomorrow

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Distribution approved for Public Release; distribution Unlimited, per AR 380-5. OPSEC Review conducted per AR 530-1 and HQ TACOM OPSEC SOP
An evolution from a *Logistics Vehicle* to a *Combat Platform*

This equates to an increased need for:
- Protection
- Fuel Efficiency
- Power
- Mobility

**A0 Series (1984-93)**
6.2L Diesel Engine
3 Spd Transmission
2,500 – 3,632 lb. Payload
GVW: 7,700 lb.

**A1 Series (1991-95)**
Improved Driveline
Improved Suspension
2,500 – 3,632 lb. Payload
GVW: 10,000 lb.

**A2 Series (1994-Present)**
6.5L Diesel Engine
4 Spd Electronic Transmission
3,520 - 4,400 lb. Payload
GVW: 10,300 lb.

**ECV (1993-Present)**
6.5L Turbo Diesel Engine
Suspension Upgrade
Armor Capable
1,800 – 5,100 lb. Payload
GVW: 12,100 lb.
Current Op: >16,500 lb.
ECV = Expanded Capacity Vehicle

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**Challenges**

An evolution from a *Logistics Vehicle* to a *Combat Platform*

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- Mobility

**M1151A1 w/ FK6 & OGPK**

**M1151A1 w/ FK7 & OGPK**

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What TARDEC does

- Identify space, weight and power impacts on platforms and technologies
- Provide Feedback to Combat and Material Developers as well as Tech Base on System Impacts/Trades
- Provide Vehicle Characteristics for input into Modeling and Simulation Tools
- Develop “Smart Buyer” for supporting future projects

Provide bridge between requirements and technology
Providing an S&T focus on those cross-cutting technologies that enable critical Warfighter capabilities.

Synchronized and Aligned Command Technology Solutions

KNOWLEDGE CENTERS
- Nanotechnology
- Biotechnology
- Cognitive & Neuroergonomics
- Electronics
- Advanced Computing
- Enterprise Integration

Building upon the LCMC Construct

Providing technology integration within a family of common systems to optimize commonality, reduce complexity and life-cycle costs, and manage technology transitions.

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Using a System-Centric Approach

1. Institutionalizing the processes, business models & culture required for transformation

2. Systems-focused with analytical underpinning

3. Robust ground systems integration capabilities

**Demonstrated Core Competencies**

Integration of systems, sub-systems or platforms
Requirements, data collection and data management
Configuration management
System Engineering Analytical processes
Interfaces with PEOs and OEMs
Leveraging partnerships with academia and industry
Occupant Centric Survivability

THREAT

Design from Occupant Out

Encounter Avoidance
Detection Avoidance
Acquire Avoidance

Hit Avoidance
Penetrate Avoidance
Kill Avoidance

Outside In

Inside Out
Tactical Wheeled Vehicle Survivability ATO

- ThermalVision360 Camera
- CVRJ Antenna (2)
- M7 LVOSS (4)
- Wide angle antenna
- CROWS II
- Magnetic Acoustic Device (Loud Speaker) (Optional; replaces CROWS weapon)
- High Intensity Spot Lights (Optional; replaces CROWS weapon)
- Driver Position Camera (Pan/Tilt)
- Cross Cue Sensor (2)
- TRAPS (7) Tire Fire Suppression
- Door Assist (2)

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Balanced Approach

1. Original TWV Design
   - Performance
   - Payload
   - Pre 2000

2. DESIRED TWV Future
   - Performance
   - Payload
   - Post 2000

3. Buying Protection
   - Performance
   - Protection
   - Current HMMWV

4. Buying Performance/Payload
   - Performance
   - Protection
   - Trades

5. Buying all with current tech
   - Performance
   - Protection
   - Payload
   - Heavier Vehicle

6. Maintaining the Iron Triangle
   - Performance
   - Protection
   - Payload
   - Desired End State

Optimum Design & Balanced Trades

Periodic Table of Elements

Legend - click to find out more:
- H - gas
- Li - solid
- Li - liquid
- Ne - synthetic
- Non-Metals
- Transition Metals
- Rare Earth Metals
- Halogens
- Alkaline Metals
- Alkaline Earth Metals
- Other Metals
- Inert Elements

S&T needs to define/achieve “Obtainum” for Light Weight Armor that is affordable

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On-going Support to the Warfighter

**R&D Achievement (RDA) Awards**
- Convoy Active Safety Technology (CAST)
- Elastomer Improvement Program (EIP)
- Ground Vehicle Control Aids for Improved Mobility with Indirect Vision, Drive-By-Wire Crew Stations (collaboration with ARL)
- High-Pressure Jet Propellant-8 (JP-8) Evaporation and Combustion Variances in Comparison to Diesel Fuel Number 2 (DF-2)
- Lightweight Vehicle Underbody Protection System (LVUPS)

**Support to the Warfighter**
- Thrown Object Protection System
- MRAP Gunner’s Restraint
- M939 Gunner’s Restraint
- M-ATV Enhanced Vision Kit
- Overhead Wire Mitigation Kit
- Electronic Tip-Over Antennae System
- MRAP Egress Trainer

**Army M&S Awards**
- Duty Cycle Experiments (DCE)
- Vehicle Propulsion System Evaluation Tool (VPSET)

**Army’s Greatest Invention (AGI) Awards**
- MEAP Add on Armor Kit
- System Remote Video Terminal A-Kit

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We’re Open for Partnering & Innovation!

Submit your technology for review at:
https://tardec.groundvehiclegateway.com

Small Business Innovation Research
- Congressionally Mandated Program
- 10.2 Topic/Phase I Schedule 2010
  - 10.2 Solicitation Pre-Release 21 APR-18 MAY
  - http://www.dodsbir.net/solicitation/
  - 10.2 Solicitation Opens 19 MAY
  - http://dodsbir.net/submission
  - 10.2 Solicitation Closes 23 JUN
- Phase II is by Invitation or Fast Track
- ONLY Phase I Awardees are eligible to receive Phase II

Cooperative Research and Development Agreement (CRADA)
- Can be utilized to create innovative collaborative arrangements

Test Services Agreement (TSA)
- Technology transfer mechanism that allows work for hire
- All inventions and data belong to the TSA partner
- Allows industry partners to leverage TARDEC’s unique capabilities

TARDEC Omnibus
Awarded August 2009
5 Year IDIQ Contract
Provides a wide variety of services
Will augment existing TARDEC capabilities

TARDEC’s Ground Vehicle Gateway is YOUR entry point!
TARDEC’s priority – Support the Fight!

Our Mission is to develop, integrate, and sustain the right technology solutions for all manned and unmanned DOD ground systems and combat support systems to improve Current Force effectiveness and provide superior capabilities for the Future Force.

Continue fostering relationships with the TACOM-LCMC, Industry & Academia.