



UNCLASSIFIED

UNCLASSIFIED



U.S. ARMY LOGISTICS

SUSTAINING AMERICA'S ARMY: THE STRENGTH OF THE NATION



AMERICA'S ARMY: THE STRENGTH OF THE NATION™

# Tactical Wheeled Vehicles Conference Technology Panel

**Dr. Vic Ramdass**  
**Director, U.S. Army Logistics Innovation Agency**

U.S. Army Logistics Innovation Agency  
<https://lia.army.mil>

Dist A. Approved for public release

ADAPT // INNOVATE // ANTICIPATE // ALWAYS READY



# **BLUF: Benefits of Addressing Logistics Up Front?**

To more efficiently develop, buy, own and operate the TWV fleet

- ❑ **Reduce Operations and Maintenance demand**
  - DOD FY 10 budget: Maintenance -- \$85B (gov't/private) plus military maintainers -- ~ \$33B
- ❑ **Improve materiel availability and reliability...and maintainable systems**
  - Reduce Operations and Support (O&S) costs
  - Increase mean time between failure
  - Improve maintenance processes
  - Reduce repair cycle time
- ❑ **Support planning, forecasting, and budgeting**
  - Enable weapon system lifecycle manager to predict spares requirements/associated costs.
- ❑ **Opportunities for cost reduction occur throughout materiel solution analysis, technology development, engineering and manufacturing development, production and deployment, and operations and support phases.**





# The Environment

- ❑ Ubiquitous TWV's
  - In every phase of operations
  - On every part of the battlefield
  - Multiple roles for basic platforms
- ❑ No longer unprotected – armor kits/anti-IED
- ❑ Recapping of Army and USMC TWV while in midst of developing new TWV
- ❑ Preparing for expeditionary and full spectrum operations
- ❑ Joint, interagency, intergovernmental, and multinational (JIIM) operations



Protected, sustained, networked mobility – travel further, carry more, engage longer, survive when engaged, retain flexibility to accomplish broad range of missions.



# Tactical Wheeled Vehicle Challenges

- ❑ Army leverages commercial truck developments but Army market share is small
- ❑ Expensive to add military unique improvements or needs:
  - Engines and transmissions ruggedized for field operations
  - Terrain and field operating conditions vs. economical and environmental performance standards
  - Fuel systems used for military limited by operational necessity (JP-8)
  - Protective measures for crews and cargo
- ❑ Lessons learned to apply and improvements to equipment:
  - Transportability and deployability by air
  - Rugged suspension, engines and drive trains – but repairable
  - Recovery operations
  - Soldier safety and fire suppression
  - Simplified and quicker maintenance actions
  - Electrical systems to handle new loads and battery charging on board
- ❑ MRAPs are \$430K to \$900K starting from a basic commercial platform
- ❑ HMMWV was \$70K initially...now over \$220K with fragmentation kits
- ❑ The lightest of the JLTV's will weigh 7.5 tons, 3X heavier than the HMMWV
- ❑ Projected cost for JLTV in excess of \$300K before equipping with essential systems due to "custom" design
- ❑ Need to drive improved reliability, availability, maintainability (RAM) into the fleet





# Supportability Can't Be a Trade-Off...

## ☐ **Capability**

- Deployability/mobility
- Systems – growth (e.g., electric)
- Technology integration (e.g., AIT/RFID/GPS/On-Star, etc.)
- Deployability – size and weight
- Power source (e.g., diesel, electric, fuel cells, solar, hybrid, etc.)

## ☐ **Reliability**

- CBM+
- Materials – lighter/stronger/simpler

## ☐ **Maintainability**

- 2-Level Maintenance
- Embedded systems – plug and play

## ☐ **Affordability**

- Durable vs. expendable
- Incremental introduction and upgrade vs. bulk purchase

## ☐ **Expandability**

- Family of systems/commonality/interoperability (e.g., drive trains, etc.)
- Adaptable for new mission roles not anticipated

Must Also Consider Non-Materiel Implications



# Lifecycle Solutions

- ❑ **Pre-acquisition efforts are needed to achieve improved system sustainment and reduced costs.**
- ❑ **How do we make our input and how?**
  - Identify the problems
  - Collect data for solid analysis
  - Meet Warfighter needs
- ❑ **Designed, maintained, and modified to continuously reduce the demand for logistics support**
  - Warfighter requirements and early development decisions are vital
  - Sustainment strategies must be planned and adaptable
- ❑ **Benefits of addressing logistics up front in the product lifecycle**
  - Pay now or pay more later
  - Low maintenance materials (e.g., composites, coatings, ceramics, etc.)

*Control  
Requirements  
Creep!*

Maintainability & supportability  
should be designed-in and not considered as an “add-on.”



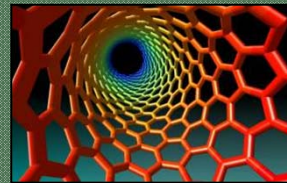
# Army G-4/LIA Enablers

## Agile Robotics



Agile, semi-autonomous robotics capabilities.

## Anti-Corrosion Nanotechnology Solutions – Logistics



Nano-engineered coatings and materials.

## Common Logistics Operating Environment



New generation of technologies in a single operational and technical architecture.

## Energy



High-impact innovative solutions to reduce fuel consumption and provide alternate energy sources .

## Unmanned Aerial Systems



Cargo Unmanned Aerial System for future Aerial resupply.

## Condition-Based Maintenance Plus



Proactive equipment maintenance capability to predict failure and take appropriate action.

Technical demonstrations of innovative technologies shape and influence up-front design that help reduce system life-cycle costs and sustainment footprint...



# What We Need From You...

- ❑ **Industry plays a key role**
  - Develops systems that are adaptable to DOD requirements (e.g., wiring harnesses, sensors, durability, diagnostics, etc.)
  - Solutions for collecting and moving platform data for analysis and improvement
  - New technologies/insertions
  - Improved batteries/power reduction/flexible power
  - Unmanned systems and robotics
  - Common repair parts and components to facilitate supportability
- ❑ **Legacy vehicle support through Army Force Generation (ARFORGEN) process and the Army Equipping Strategy**
- ❑ **Advancements in materials**
  - Lighter/stronger/lower cost
- ❑ **Creative and innovative solutions that help drive down costs while improving reliability, maintainability, survivability**

Help identify what technologies are appropriate for upgrade, and at what point in the life-cycle...give us your BEST and most RELIABLE products up-front...