National Defense Industrial Association
Tactical Wheeled Vehicles Conference
9-11 May 2016

Keynote Speaker
MG Robert “Bo” Dyess, Jr.
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12 Trends We Are Watching

- Climate Change/Resource Competition
- Economic Rebalancing
- Demographics and Urbanization
- Collective Intelligence
- Human Computer Interaction
- Increase level of Human Performance
- Technology, Engineering & Manufacturing
- Robotics
- Artificial Intelligence
- Cyber & Space
- Big Data
- Power Generation & Storage
Army Operating Concept
Technology Focus Areas

- **Mobile Protected Precision Firepower** - lighter weight and lower volume platforms with increased firepower, protection and survivability.

- **Lethality and Effects** - focus on developing munitions, platforms, sensors, targeting, and mission command systems that provide the commander the ability to overmatch the enemy while employing lethal and nonlethal force with precision and discrimination.

- **Logistics Optimization** - to improve the Army’s ability to conduct expeditionary maneuver and sustain high tempo operations at the end of extended supply lines, the Army increases logistical efficiencies and unit self-sufficiency.

- **Autonomy-enabled Systems** - the application of emerging technology creates the potential for affordable, interoperable, autonomous, and semi-autonomous systems that improve the effectiveness of Soldiers and units. Autonomy-enabled systems will deploy as force multipliers at all echelons from the squad to the brigade combat teams.

- **Expeditionary** - use of unmanned platforms in mounted and dismounted maneuver formations will lead to smaller, mobile, and transportable manned and unmanned vehicles, enabling greater expeditionary capability.

The U.S. Army’s advantage over enemies depends in large measure on advanced technology and the Army must fit machines to Soldiers rather than the other way around.
How Can Industry and Science & Technology Help?

The Army is working with joint partners, industry, and key stakeholders developing future force capabilities with the following technological first principles in mind:

- Emphasize integration of technology with Soldiers and teams
- Simplify systems and integrate Soldier training into design
- Maximize reliability and reduce life cycle costs
- Design redundant systems that improve effectiveness under conditions of uncertainty
- Develop systems that degrade gracefully
- Maintain foundational knowledge to reduce the opportunity for surprise
- Reduce logistical demands
- Anticipate enemy countermeasures
- Ensure interoperability
- Consider scale and organizational implications
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Building the Future Force: Concepts to Capabilities

**Think**

Establish a sound conceptual foundation for Army modernization

**Concepts**

Describe how future forces will fight and win; provide intellectual foundation for modernization. Consider:
- Threats/Enemies/Adversaries
- Missions
- Technology
- History/Lessons Learned

**Required Capabilities**

Capabilities our Army must possess to accomplish missions across the range of military operations.

**Learn**

Conduct rigorous experiments, wargames, and assessments to learn in a focused, sustained, and collaborative manner

**Warfighting Challenges**

Provide analytical framework for learning in a focused, sustained, and collaborative manner.

**Gaps Opportunities**

Use experiments, wargames, assessments, and experience to identify capability gaps and opportunities to achieve overmatch.

**Solutions (DOTMLPF-P)**

Develop solutions in near- (2015-2020), mid- (2020-2030), and far- (2030-2040) terms to ensure future force combat effectiveness.

**Analyze**

Focus prioritized efforts on first-order military challenges

**Capabilities Needs Analysis**

Conduct rigorous analysis to identify top priorities and ensure sound investments in future capabilities.

**Implement**

Deliver integrated DOTMLPF solutions to improve combat effectiveness of the current and future force

**Extension of Army Staff**

Collaborate to implement strategies and resource capabilities to ensure current and future force readiness.
Timeline of Trends to 2050

Science & Technology
- 3D Printing Reduces Supply Chain
- Wireless Electricity Eliminates Tether to Infrastructure
- Hypersonic Missiles, Directed Energy and Rail Guns Mitigate A2/AD
- High Speed Rail in U.S. Reduces Transport Time
- Hypersonic Passenger Planes…30 Min to Cross Atlantic
- Nano Swarms Redefine Mass & Precision
- Driverless Vehicles Increase Efficiency in Transportation Delivery
- Robot Efficiencies Reduces Human Capital on Battlefield
- Fully Autonomous Intelligent Military Aircraft

Society
- Complex Organs Grown From Stem Cells Prolongs Life
- Nanoparticle Therapy Becomes New Antibiotic
- Alzheimer Cure Increases Working Age
- Robots Reduce Need For Unskilled Labor
- Stem-cell Pharmacies Cures For Genetic Diseases
- Russia Population Drops 10%…Over 20% Never Experienced Communism
- Youth Bulges in Weak African States Creates Instability
- Genetically-Altered Babies Increases Lifespan, Physical, Cognitive Abilities
- Age Mitigation Allows Longer, More Productive Work Life

Information
- 100 Petaflop Super Computer Speeds Enables Big Data Decisions
- Quantum Communication Enables Unbreakable Encryption
- Holographic TV Increases Training Realism
- Haptic Sensors Enable Bionic Devices
- Internet of Things Allows Remote Operation of Most Devices
- Terabit Internet Speeds Improves Data Collection
- Teleportation of Organic Molecules Enables Medical Transport
- Human-Machine Interface Connects Human Thought to the Network

The Strategic World
- India Becomes Most Populous Country Exports Labor Market
- Global Multipolar System Reduces Hegemony
- BRIC GDP Overtaking G7 Changes Economic CoG
- Increased Migration Causes Conflict in Africa & Europe
- Ice-free Arctic Shortens Transport Time
- Lake Chad Disappearance Affects 68 Million
- Super Hurricanes Threaten Coastal Cities
- 9b Global Population Strains Resources To Support

NIC MEGATRENDS
- Individual Empowerment
- Diffusion of Power
- Demographic Patterns
- Food, Water, Energy Nexus