



Towards a Comprehensive Vehicle Strategy

LTG Michael A. Vane

Deputy Commanding General, Futures, and
Director, Army Capabilities Integration Center
US Army Training and Doctrine Command

13 Oct 2009



Revised Assumptions About the Future

Army Capabilities Integration Center

<u>Certainty</u> Defense Transformation Theory	<u>Uncertainty</u> Recent and Ongoing Conflicts
Knowledge Centric	Fighting, Politics Centric
Planning Process	Design, Execution
Centralization	Decentralization
Risk Avoidance	Risk Mitigation
Efficiency	Effectiveness
Fires	Combined Arms Fire/Maneuver
See / "Quality of Firsts"	Find and Understand
Rapid Decisive Operations	Sustained Campaigns
Systems Approach (EBO)	Complexity (Design)
Dominance	Strategy, Continuous Interaction
MCO Focus	Spectrum of Conflict
Linear Progression— Leap Ahead	Interaction with Adversaries— Continuous Innovation



Key Lessons Learned

Army Capabilities Integration Center

- Provide Soldiers protected mobility: #1 priority
- Develop fighting vehicle for complex environments including urban operations
- Reduce predictable travel on established routes: better off-road mobility required
- Design platforms with sufficient growth potential for future capabilities
- Increase platform capacity to meet evolving threat
- Obtain better C2 on-the-move capability
- Push real time situational awareness to and from Company level and below
- Connect the Soldier to the network

Greater demand on small unit operations dictates that tactical vehicles must be protected, mobile, and networked



Capability Packages

Army Capabilities Integration Center

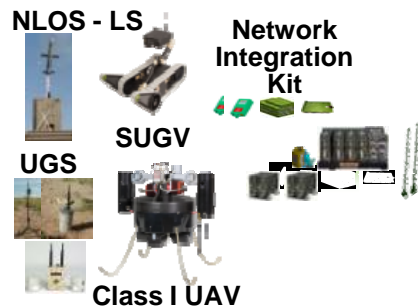
Spin-outs + Warfighter Urgent Requirements =

Capability Packages

- Provides incremental improvements delivered in two-year cycles
- Enables ARFORGEN beginning FY11
- Incorporates capabilities requested by Commanders in the fight

Capability Package 11-12

Spin-outs



Warfighter

Urgent Requirements

- Persistent Surveillance
- Advanced Precision Mortar Initiative
- Ground Soldier System
- Human Terrain Teams

Future Capability Packages will include:

- More capable Unmanned Air Vehicles (greater range, loiter and payload capability)
- Larger Unmanned Ground Vehicles
- Improvements to the Network (more information and imagery at lower levels)

Provides increased near-term capabilities to the Warfighter



Network Modernization

Army Capabilities Integration Center

- **Battle Command Essential Capabilities**
- **Two-year increments**
- **Field to ARFORGEN specified forces**
- **Affordable**



FY 17-18
FY 15-16



FY 11 - 12 →

Incremental Improvement

FY 13 - 14 →

Incremental Improvement

Current →

Baseline

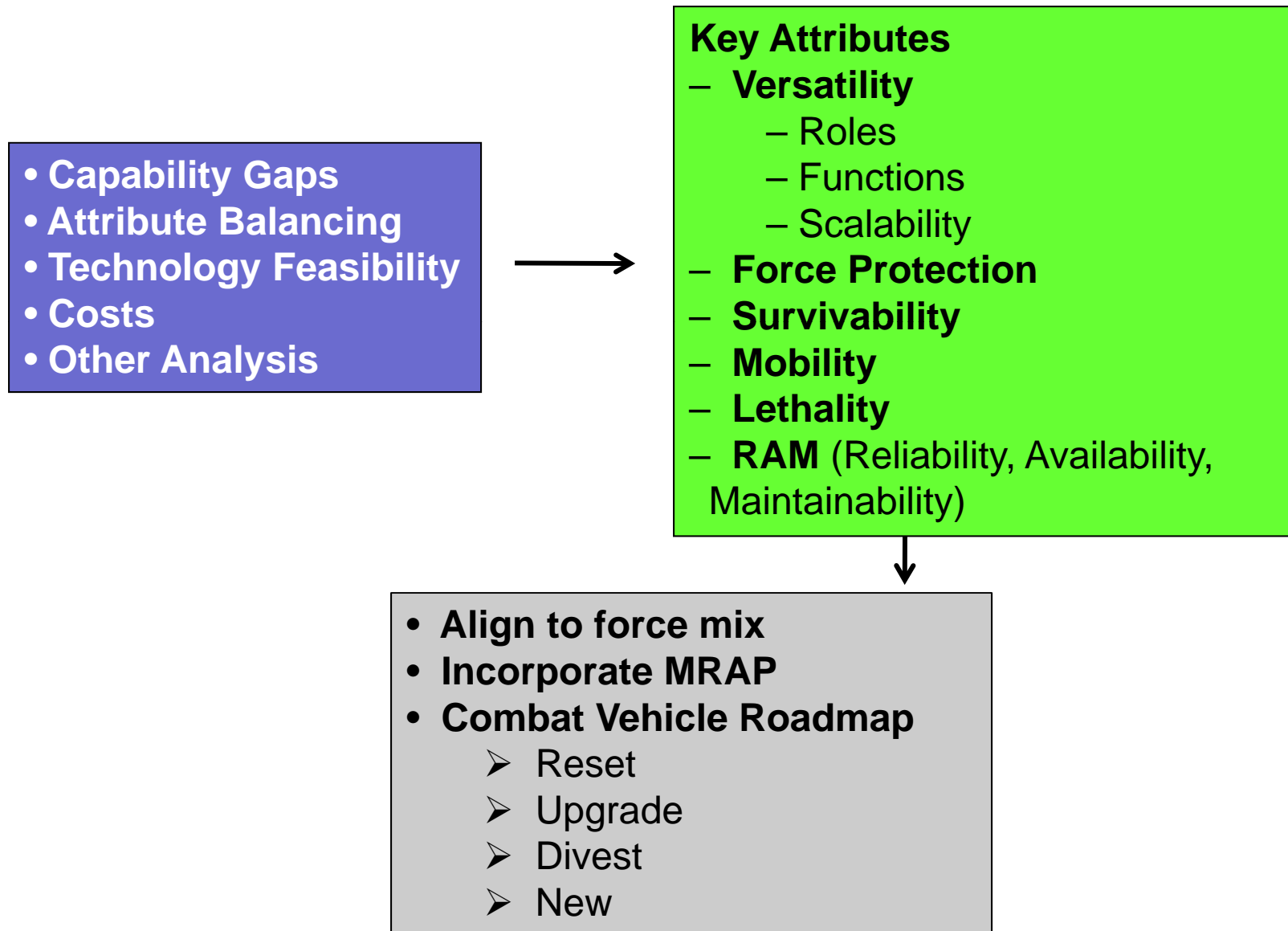
**Interoperable functional applications;
communications transport;
and network services**

Match Pace of Change with Technology and Operating Environment



Combat Vehicles Methodology

Army Capabilities Integration Center





Ground Combat Vehicle Operational Design Principles

Army Capabilities Integration Center

Versatility

Force Protection

Network Integration &
Interoperability

Mobility

Sustainability

Lethality

Transportability



Resource Informed, Incremental Approach

Army Capabilities Integration Center

- Use strategy and risk assessment to drive procurement, rather than the other way around
- Move timelines for concepts and assessments in closer
- Trade across warfighting functions, formations, & Services
- Develop integrated DOTMLPF solutions
- Strengthen synchronization with Training and Leader Development
- Prioritize capabilities and align with ARFORGEN
- Synchronize decision points for budget, POM, and force structure
- Design to technology readiness and costs
- Interface operational requirements work earlier with S&T
- Conduct earlier and better cost benefit analysis
- Buy less, more often

*Build a **versatile mix** of **tailorable and networked organizations**, operating on a **rotational cycle**, to provide a **sustained flow** of trained and ready forces for **full spectrum operations** and to hedge against **unexpected contingencies** at a **sustainable tempo** for our all-volunteer force*



Insights for Future Developments

Army Capabilities Integration Center

- **Improve Force Protection**

- Fire Suppression
- Active Protection Systems
- Reactive Armor at Lighter Weights

- **Power and Energy**

- Energy Efficiency
- Exportable Power
- Power management on Vehicles
- Enhanced Thermal Management on Board
- Directed Energy

- **Generating Non-lethal Effects from 50-500 m**

- **All Weather Sensor Capability**

- **Combat Identification**

- **Optics Defeat Capabilities**

- **Human Dimension**

Big Five WFO

- Battle Command
- C-IED/Mines
- Power and Energy
- Human Dimension
- Training

Autonomous
Brigade

A light blue, multi-pointed starburst graphic with a white outline. The text 'Autonomous Brigade' is centered within the starburst in a black, sans-serif font.



Towards a Comprehensive Vehicle Strategy

LTG Michael A. Vane

Deputy Commanding General, Futures, and
Director, Army Capabilities Integration Center
US Army Training and Doctrine Command

13 Oct 2009



Back-up

Army Capabilities Integration Center



GCV ICD Capability Gaps

Army Capabilities Integration Center

Protection and Survivability

- Detections and neutralization of mines and IEDs, from standoff
- Armored vehicle underbelly protection & crew protection against IEDs and mines
- Armored and light vehicle protection against kinetic, chemical, and tandem blast warheads
- Occupant protection against IEDs and mines

Network

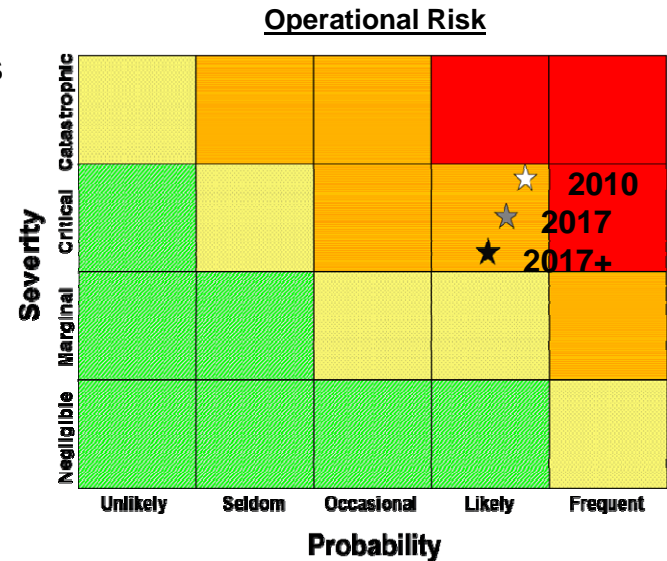
- Non-interrupted communications for dispersed units
- Mounted and dismounted SA and communications, especially for dispersed units
- Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance embedded at all echelons

Mobility

- Maneuver for positional advantage across range of terrain
- Non-maneuver element mobility and survivability

Lethality

- Direct fire overmatch against high threat targets
- Non-lethal weapons to achieve effects while limiting casualties and collateral damage
- Organic precision indirect fires, especially in support of dispersed units
- Sensor-to-Shooter for cooperative engagements



- Risk Assessment all BCTs**
- ☆ Current Force (2010)
 - ★ Upgraded Platforms (2017)
(Included in POM)
 - ★ Upgraded Platforms (2017+)
(Not in the POM)



GCV ICD Recommended Solutions

Army Capabilities Integration Center

- **Non-material solutions.**
 - D, O, T, L cannot satisfy all capability gaps related to combat vehicles

- **Material Solutions Assessed**
 - Current COTS/GOTS vehicles
 - Recapitalization of existing vehicles
 - New Start

- **GCV new start (Modified Off the Shelf or New Design) will**
 - Increase versatility
 - Provide protection equivalent to MRAP (Initial increments) and better off-road mobility (mobile armored protection)
 - Allow growth to integrate improved protection measures and other technologies as they mature (Future increments)
 - Reduce logistics
 - Support integrated battle command systems (Soldier in the Network) in complex terrain.
 - Provide lethal self-protection to defeat like systems while hosting non-lethal systems to enable operations among populations

- **Recapitalization (upgrades of current vehicles) will help mitigate some capability gaps during GCV development**



Capability Set 13-14 Development Objectives

Drivers for Next Capability Set Solutions

Army Capabilities Integration Center

Communications Network

- Aerial Tier to extend or expand communications network to meet commander's priorities
- Simplify Network Management by integrating current collection of network management toolsets
- Federate multiple Networks supporting the BCT, focusing on Trojan Spirit & CSS/VSAT
- Enable BCT access to JIIM to support specific functions and meet critical information delivery standards

Battle Command Applications

- Across Echelons
 - Provide standard Geospatial foundation that can be used for precision targeting, and locations by every Command Post, platform and dismounted leader
- Battalion and Above
 - Reduce physical footprint of the Maneuver Battalion & BCT TOCs by 15% of its current square footage
 - Provide Battalion & Brigade Commanders the ability to use Battle Command applications in their vehicle anywhere on battlefield
- Company and Below
 - Reduce latency by 10X for C2 & SA information exchange
 - Provide ability to send & receive still Imagery from/to battalion and down to squad leader



Context of Future Armed Conflict

Army Capabilities Integration Center

Defense Priorities

Defend the Homeland // Win the Long War // Promote Security // Deter Conflict // Win our Nation's Wars

Comprehensive Lessons Learned

- Counterinsurgency operations
- Stability operations
- Urban operations
- Full Spectrum Operations
- Security Force Assistance
- Training for Full Spectrum Operations
- Modernization, Acquisition, Generating Force

CSA White Paper

- Deter and defeat hybrid threats
- Prevail in protracted COIN campaigns
- Engage to help others build capacity
- Support civil authorities home and abroad

Operational Environment

- Extended Distances
- Access Limitation
- Among the People
- Complex Terrain
- Systems Warfare
- Rapid Tactical Transition

CCJO

- Combat
- Security
- Engagement
- Relief/Reconstruction

Capstone Concept 2009

- Assist Foreign Security Services
- Entry & Shaping Operations
- Inter- and Intra-Theater Operational Maneuver
- Simultaneous Offensive, Defensive, and Stability (or Civil Support) Operations
- Distributed Support & Sustainment
- Network Enabled Mission Command