



**NDIA Combat Vehicle Conference**

# **Army Capabilities Integration Center**

**LTG Michael A. Vane**

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**21 Oct 2008**

***TRADOC: Victory Starts Here !***



# ***Army Capabilities Integration Center***

## **Mission**

**The Army Capabilities Integration Center leads the development and integration of force capabilities across the DOTMLPF for the Army within a Joint and Multinational environment to support Joint Force Commanders.**

## **Vision**

**World class professionals developing innovative, integrated, resource-informed, and outcome-based solutions for the current to future force.**



# ARCIC Priorities

Build the force: by 2024, field the modular force as envisioned by the Army Capstone Concept.

## Connect

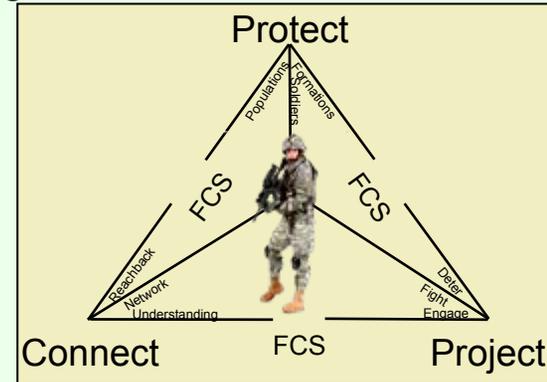
- Develop affordable and achievable LandWarNet and LWN Systems
- Enable Unified Battle Command
- Develop Network Vulnerability Strategy
- Develop bridge to Ground Soldier System

## Protect

- Optimize current and future force readiness; minimize op'n'l risk
- Develop organizationally based force protection capabilities

## Project

- Deliver expeditionary full spectrum capabilities to the force.
- Joint Future Theater Lift and Tactical Lift
- Accelerated current capabilities while modernizing the future force



Think and learn for the Army: conceptual framework beyond 2024.

- QDR Roles and Missions Support to ARSTAF
- Collect & analyze operational data to better represent Irregular Warfare
- Develop Human Dimension, Generating Force, Capstone Concepts
- Execute CSA/CG TRADOC Future Warfare Study
- Campaign of Learning
  - Leading from the edge
  - Baseline and integrate analyses: Mod Force, FCS, and SBCT.
  - Conduct other key analyses reflecting force effectiveness;
    - Tactical Vehicle Strategy
    - RSTA and ISR support to BCT
- Capability Needs Analysis; timely to meet warfighter needs

Adapt community of practice culture to deliver organizationally-based solutions.

- People
  - Training, Education, and Certification
  - NSPS and Evaluation links to Objectives
- ARCIC Campaign Plan
- Implement COEs w/ FCS COE



# ***Among other things.....***

- **Help the Army think**
- **Account for the future strategic environment**
- **Advocate Joint Interdependencies**
- **Warfighter's "*agent*" for capabilities development**
- **Voice for Army S&T and FCS Stratcoms**
- **Interface with academia, industry, labs....**
- **Key integration role: future force and *current* fight**



# Big-Five Warfighter Outcomes to Guide S&T Investment

## Battle Command Network

**- Beyond-line-of-sight**

**- Integrate Command and Control**

**- Optimized for mobile operations**

**- Increase access and available to all echelons and the individual Soldier**



## Counter IED and Mine

**- Detect, identify and neutralize CBRNE obstacles**

**- Safe standoff distance**

**- Determine threat, select best method to neutralization, and ascertain potential effects**

**- Maintains maneuver force momentum while protecting Soldiers and platforms**



## Power & Energy

**- Enhanced agility to operate worldwide, reducing weight and volume**

**- Sufficient pulsed power enabling advanced lethality options**

**- Increased continuous power and fuel economy**

**- Emerging electrical components and systems require dismounted Soldiers to possess a radical increase of available power, at half the tactical weight.**



**Power ("P") = rate at which work is performed or energy transmitted.**

**Energy ("E") = capacity to do work.**

**Work = force times distance (dot product) moved in the direction of the force.**



# Big-Five Warfighter Outcomes to Guide S&T Investment

## Human Dimension

- Enhance & restore cognitive and physical performance
- Function efficiently as integral component of a network and society
- Interface with multiple unmanned systems
- Mitigate the increase in physiological and psychological stress
- Improving mental, moral and physical capacity and performance



## Training

- Live, virtual, constructive and mixed venues
- Enable the Future Force to impart more skills, faster, at lower and with greater retention than currently achievable
- Use non-traditional home station training techniques and technology, train prior to employment
- Enhance and account for individual proficiencies and learning rates (outcome based)
- Leader development must be completely adaptable and scalable to cover the full spectrum of operational challenges facing the Soldier

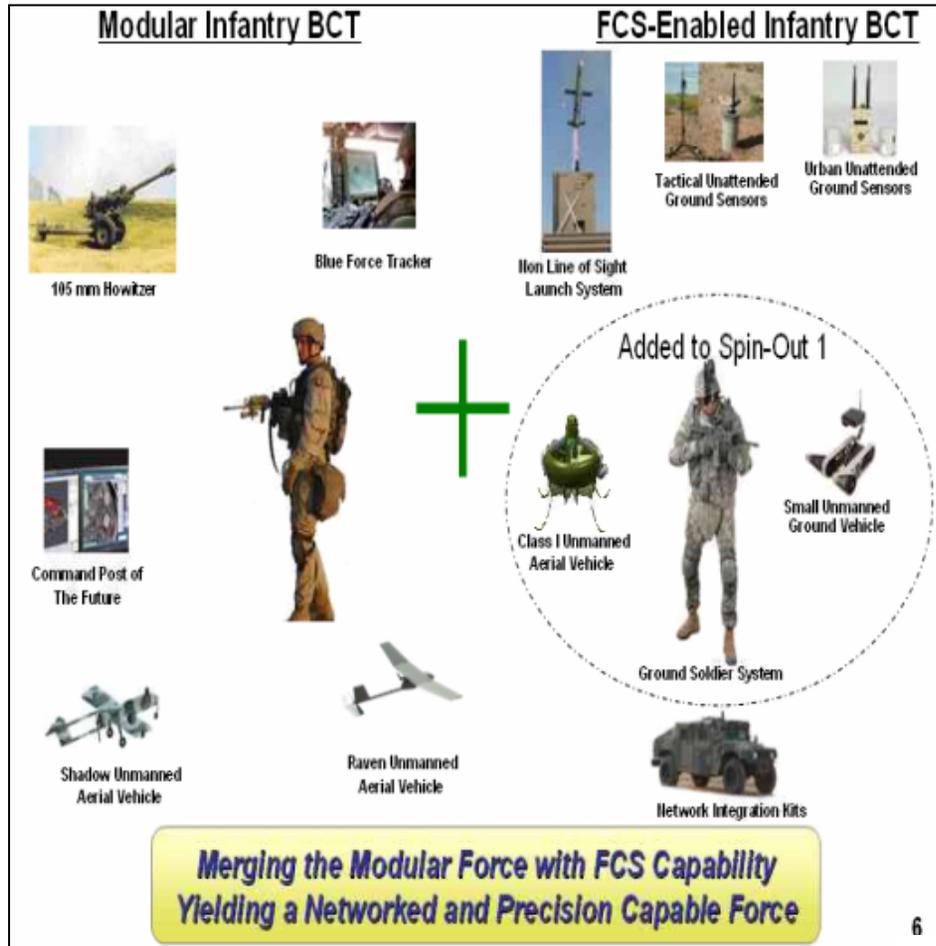




# Refocusing Spin-Outs to IBCTs

## Focus Before

- Most vulnerable force (Infantry Brigade Combat Team) not getting Spin-Outs until FY14.
- Spin-Outs were focused on the most capable force – Heavy Brigade Combat Teams.
- Not achieving integration of the Soldier in the network fast enough.
- Not getting Spin-Outs to current force fast enough.
- **Size, weight, and power challenges with current heavy platforms (Abrams, Bradley, Stryker, M113, & Paladin).**
- Multiple Battle Command Systems.



## Way-Ahead

- Spin-Outs focused on most vulnerable force (Infantry Brigade Combat Teams) first-FY11.
- Willing to accept risk, Heavy Brigade Combat Teams are good enough for now.
- Soldier in the network with Ground Soldier Ensemble – FY12
- Accelerating and adding needed capabilities to the current force.
- Integrated Battle Command System.

6



# ***The Vehicle Challenge***

***Develop a vehicle strategy that will support the Army in an Era of Persistent Conflict .....***

- By meeting force requirements for deployability, mobility, lethality, and survivability***
- By providing more Soldiers to engage adversaries***
- By increasing power requirements for:***
  - Battle Command***
  - Weapon systems***
  - Stability and Support Operations***
- Supported by reducing sustainment requirements for:***
  - Manpower, fuel, and ammunition***
  - Equipment (vehicles, trailers, generators, tools...)***
  - Life-cycle costs***

***What is the magnitude of the problem?***



# Combat Vehicles (Total MTOEs, TDA, APS)



≈ 2349  
all variants



≈ 3834  
all variants



≈ 2516  
all  
Variants

- **Performing superbly in combat today but...**
- Reaching limits of space, weight, and power
- Driving unaffordable sustainment requirements
  - Support vehicles (*ammo, fuel*)
  - Repair vehicles, wreckers
  - Trailers
  - Generators
  - Support personnel (*maintenance, supply, refueling, ammo...*)



≈ 1594  
all variants



≈ 974  
all variants



≈ 5877  
all variants



# Tactical Wheeled Vehicles

## A snapshot of the Light, Medium and Heavy Tactical Wheeled Vehicle (TWV) Fleet



**LIGHT**  
**156,868**  
**64%**



**MEDIUM**  
**65,562**  
**26%**



**HEAVY**  
**24,976**  
**10%**



**ASV**



**STRYKER**



**MRAP**

• **Numbers do not include ASV, STRYKER, MRAP**

## BLUF

- The Army has documented need for 295,997 TWVs
- There are 247,406 TWVs fielded
- ~ 15% - 20% of TWV fleet is armored
  - Total includes armored vehicles procured under the Operational Needs Statement (ONS) OEF/OIF
- 86 variants (Light, Medium, Heavy)
- 25,047 Medium vehicles are over 30 years old:
  - 38% of the Medium fleet
  - Nearly 23,000 vehicles with manual transmissions ~ requires additional training



# Generators and Trailers

## Army Tactical Electric Power Requirements

**Army has 102,000+ Generator Sets**



### Command & Control

8,728 Gen Sets (8%)



### Maneuver Support & Sustainment

68,439 Gen Sets (67%)



### Fire Support

2,769 Gen Sets (3%)



### Air Defense

1,735 Gen Sets (2%)



### Maneuver

16,255 Gen Sets (16%)



### Mobility/Counter-Mobility/Survivability

4,567 Gen Sets (4%)

## Trailers

Light = 12,517

Med = 9,906

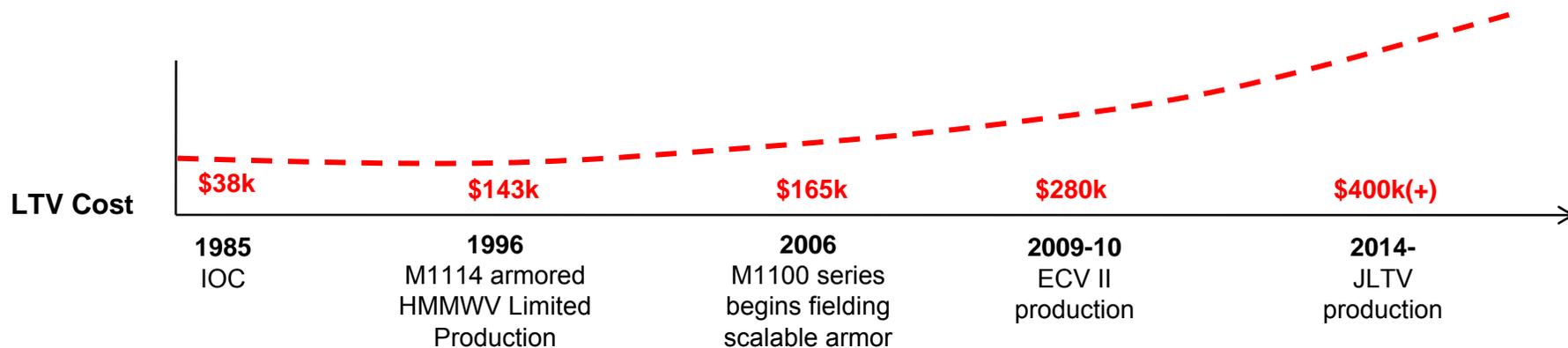
Heavy = 34,226

Total

56,649

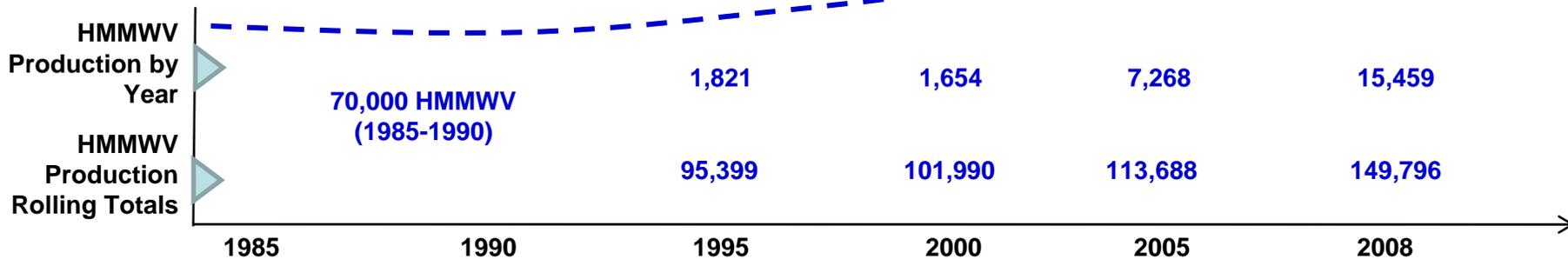


# Increased Quality and Quantity Drive Increased Overall Cost



**Growth Drivers :**

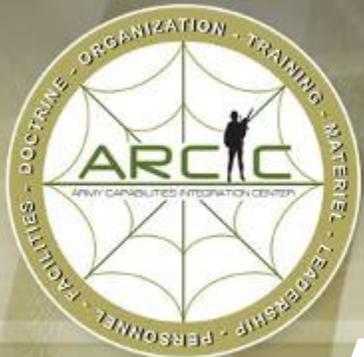
- Modularity**
- 100% Mobility**
- Grow the Army**
- 3 Days of Supply - MCO**
- 7 Days of Supply - SO**
- Asymmetric Capabilities**





# ***Where we need help from Industry***

- ***Holistic protection concepts and strategies. Move beyond just more armor.***
- ***Power and Energy Strategy***
  - ***Improve fuel efficiency***
  - ***Reduce transportation & distribution requirements (vehicles, trailers)***
  - ***Increase power capacity***
  - ***Eliminate Generators***
- ***Improve Reliability, Availability, Maintainability***
  - ***Embedded diagnostics***
  - ***Parts and tool reduction***
  - ***Improve life-cycle costs***
  - ***Reduce number of support personnel requirements***
- ***Improve Lethality and packaging of ammo***
- ***Reduce Weight, improve mobility and deployability***



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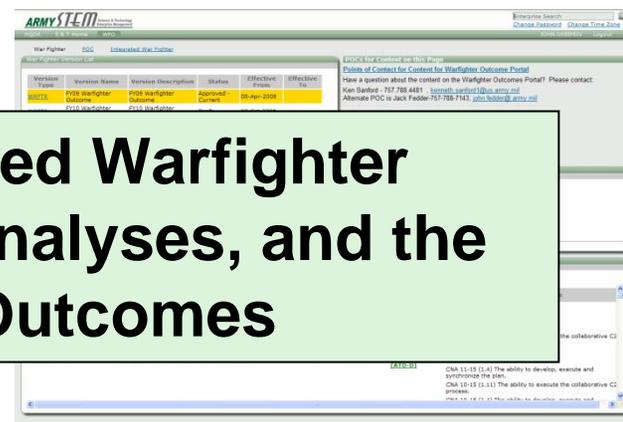
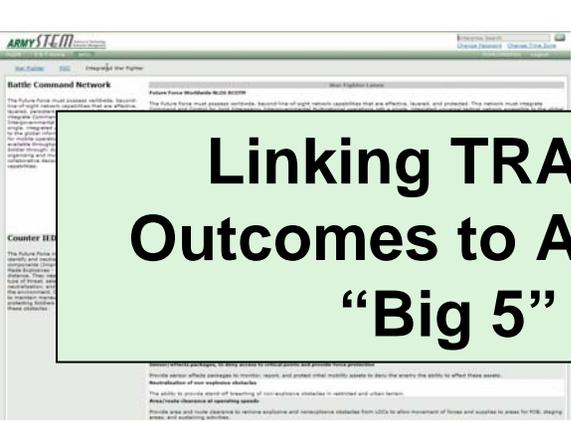
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# Warfighter Outcomes Portal

- **Purpose:** Link and Track Capability Need Priorities to S&T Investments
- Assists TRADOC CDIDs/DCDs to
  - Define and monitor Warfighter Outcomes (WFOs)
  - Crosswalk WFOs to Authoritative Sources
  - Link and track potential solutions from ATOs, SBIRs, etc.
- Assists Army S&T Community to link investments to WFOs
- Links:
  - Army S&T Enterprise Management System
  - Army Small Business Innovative Research System
  - PEO C3T T2MATRIX Database



**Linking TRADOC CDID/DCD Managed Warfighter Outcomes to Army S&T, JCAs, Gap Analyses, and the “Big 5” Integrated Warfighter Outcomes**



# Warfighter Outcomes to Guide S&T Investment

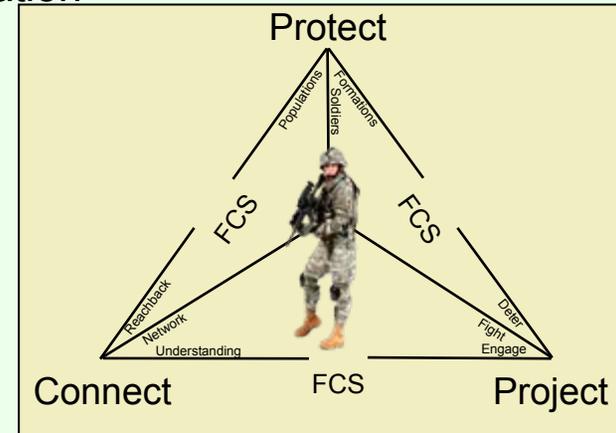
- Stand alone statements that articulate capabilities needed for the Army Warfighter by FY 2024 and include:
  - Clearly articulated description of capability.
  - Rationale explaining reason for the capability.
  - Metrics to describe achievement of the capability.
- “Big Five” Warfighter Outcomes
  - Army Leadership “top down” investment areas that have the potential for a profound impact on future capabilities.
  - Requirement for cross-domain coordination warrants Senior Leadership awareness and monitoring of progress toward achieving capability.
  - Sufficiently shape the S&T Investment so that the capability can be realized within the next 10-15 years.



# ARCIC Outcomes

Build the force: by 2024, field the modular force as envisioned by the Army Capstone Concept.

- AROC Approval of Rifleman Radio
- LandWarNet CONOPS approved 11 Feb 08
- USMC & Army common way-ahead for Position Location Information
- Unified Battle Command
- Tactical Wheeled Vehicle Strategy
- Requirement Determination Phase of TAA 10-15
- Redesign of Division, Corps, and ASCC (DP 123)
- Combat ID ICD validated by JROC in Aug
- TF ODIN
- FFID IOC 1 Oct 07
- Spin-out 1 Force Development Test and Evaluation (May 08)
- Accelerated fielding and training of SUGV and Class I UAS
- Implemented SO1 change from HBCT to IBCT



## Think and learn for the Army

- Protection Strategy
- Organizational Based Assessment
- Combat and Tactical Vehicle Strategy (PDM II)
- Brigade Combat Team Holistic Review
- Army / Air Force UAS CONOP
- CCJO and JOE development
- ARCIC Technology and Industry Information Exchanges
- Human Dimension Concept
- Emerging Global Trends
- Success of Army Expeditionary Warrior Experiments

## Adapt community of practice culture

- CNA in support of POM 11-15
- Re-focused Warfighting Outcomes to support S&T investment
- TR 71-20
- Teamed with HQDA to write and staff AR 71-9
- Developed ARCIC Campaign Plan
- NSPS