



Maneuver Requirements Division

**COL J. Michael James
&
John Miller
13 April 2020**



Briefing Contents



Capabilities Development & Integration Directorate

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MRD Mission



Capabilities Development & Integration Directorate

Mission: MRD executes all materiel related tasks, test and experimentation for manned maneuver capabilities and platforms and develops requirements documents in support of selected acquisition strategies in order to ensure the primacy of our Soldiers and the formations in which they fight.

Maneuver Requirements Division



Director:
COL Mike James



Deputy:
John Miller

Light Systems Branch

- A-GMV/ISV
- LRV
- MPF
- MRAP
- CATV
- Power and Energy
- Electric Propulsion

Heavy Systems Branch

- Abrams
- Bradley
- Stryker
- Large and Medium Caliber Weapon Systems
- Future Ammunition
- Future Decisive Lethality

Combat Capabilities Branch

- AMPV
- Vehicle Protection Systems
- Sensors
- Mortar Turret
- TOW/Loitering Munitions

BCT Mission Command

- Mounted Computing Environment
- Joint Battle Command – Platform
- Combat Identification



Duties and Functions



Capabilities Development & Integration Directorate

1. ***Shape FDD portfolio (Maneuver and selected participation for Soldier)***
 - SPAR/POM/Deep Dives
2. ***Capability Development for ground combat maneuver platforms (current force and selected participation in future systems).***
 - Requirements (JCIDS/Section 804)
 - ECP Management
 - Test and Evaluation
3. ***Capability Development for relevant ground maneuver vehicle sub-systems***
 - Vehicle Protection Suites (Systems)
 - Sensors (vehicle based)
 - Lethality (Med/Large Cal/Mortar Turret)
 - Ammo (Med/Large Cal)
4. ***Capability Development for BCT Mission Command***
 - Joint Battle Command-Platform (JBC-P) and Mounted Mission Command (MMC)
 - Mounted Computing Environment (MCE)
 - PNT/Network/Cyber/EW/CoEs interactions



Operational Environment

Capabilities Development & Integration Directorate

Our adversaries have studied our way of war and adapted by investing in capabilities and developing concepts to gain advantages over us across the domains of air, land, sea, space and cyberspace...

Changes in the character of war...

All domains are in play (Maritime, Land, Air, Cyber/EMS, Space)

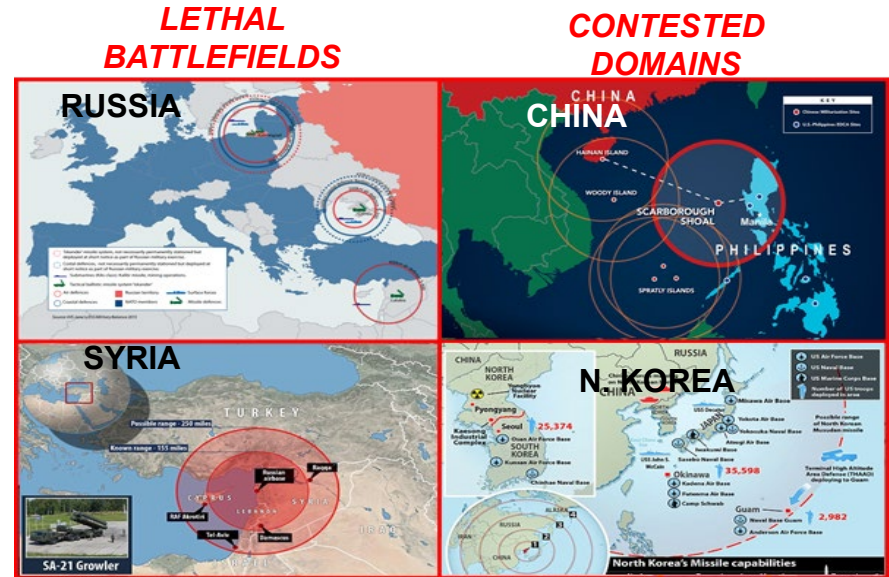
Enemy has "home field" advantage (A2/AD)

Irregular forces/"Little Green Men"/Proxies (Hybrid)

Enemy is "in the network"/Communications Disruption (Cyberspace)

Long Range Fires/UAS and UGV (Lethality)

Troop density reduced (Dispersion of Forces)



COMPLEX ENVIRONMENT

CHALLENGED DETERRENCE

21st Century Battlefield = Transregional Threats

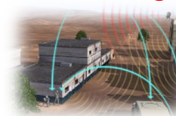
Terrorist & Criminal Organizations

Dense Urban Areas

Artificial Intelligence Cyber Attacks

Robotics Jamming Unmanned Vehicles

Information Manipulation



Threat Investment in Future Technologies



Space



CYBER/EW



Anti-Ship



Long Range Fires



Robotics



UAS/SWARMS



Air & Missile Defense

Maintain the battlefield primacy of our Soldiers and the formations in which they fight!



Components of the Solution



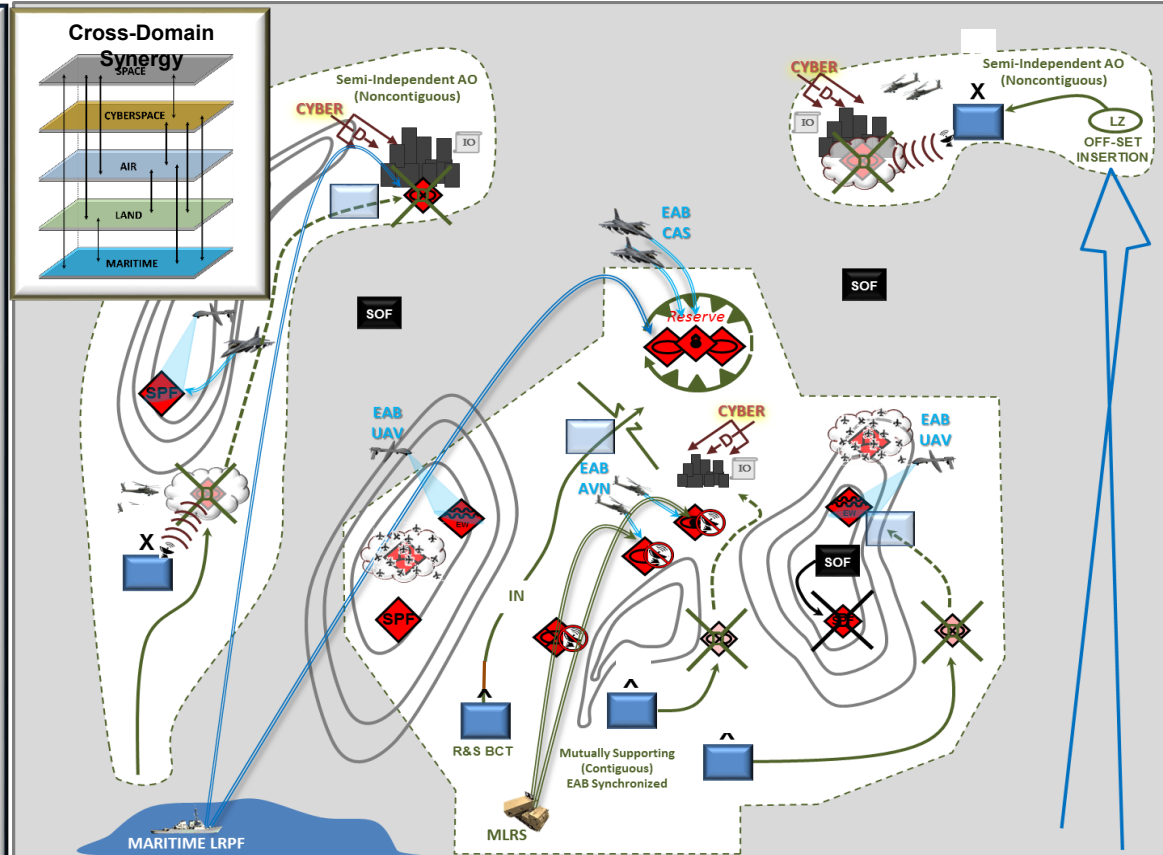
DISPERSED/DISTRIBUTED OPERATIONS
NON-CONTIGUOUS

INTERRUPTED COMMUNICATIONS

Capabilities Development & Integration Directorate
HYPERACTIVE BATTLESPACE

As part of the Joint Force, Army forces deploy and transition rapidly to cross-domain maneuver with combined arms teams that operate semi-independently to seize, retain, and exploit the initiative; defeat enemy forces; and achieve operational objectives.

- Conduct Cross-Domain Maneuver:** Create synergy with capabilities employed *across all domains* to increase relative combat power, pose enemies with multiple dilemmas, and defeat or destroy enemy forces.
- Operate Semi-independently:** BCTs possess sufficient mobility, firepower, protection, intelligence, mission command, and sustainment capabilities necessary to conduct *cross-domain maneuver* while dispersed at extended distances, and for ample duration.
- Integrate Reconnaissance and Security Operations:** Combine organic and joint capabilities at all command echelons *across all domains* with reconnaissance and security operations over wide areas to reduce enemy options and protect the force.
- Make Mission Command Real:** Empower subordinate leaders to seize, retain, and exploit the initiative consistent with the commander's intent regardless of the condition of the mission command network or other *cross-domain enablers*.



EAB: Manage campaigns and transitions; integrate reconnaissance and security operations; create shared understanding; synchronize operations and shape OE for BCTs; organize sustainment operations; and organize theater level consolidation of gains activities to create sustainable outcomes consistent with national objectives.

Maintain the battlefield primacy of our Soldiers and the formations in which they fight!



Future Combat Vehicles



Capabilities Development & Integration Directorate

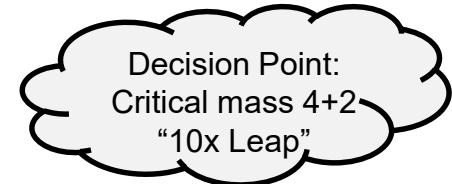
IF

Our current capital fleet of *combat vehicles* do not answer requirements for the Cross Domain Maneuver Future Operating Environment. (“How we have to fight”).

AND

- Engineer Change Proposals are not sufficient to maintain threat overmatch.
- Modernization of current vehicles will only gain temporary improvements.
- MCDID/NGCV are the organizations that integrate emerging *maneuver enabling technologies* to execute cross domain maneuver and attain threat vehicle overmatch for decades.

THEN



The Future Decisive Force needs...



...which requires Combat Vehicles that use:

To Be Transportable

“Get to the Fight”

To Dominate (Mobile/Lethal/Survivable)

“Overmatch Threats in Cross Domain Environments”

To Be Sustainable

“Change Current Logistical Paradigm”

An Adaptable Platform

“Growth Margins that allow Technology Insertions”

-Directed Energy & Energetics

-Power Generation & Management (Formation Power)

-Advanced Armor Materiel Solutions

-Vehicle Protection Solutions

360 SA, Signature Management

+

-Maneuver Robotics & Autonomous Solutions

-Integrate Advanced Computing to MC Systems and Networked Lethality

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Future Decisive Force Needs



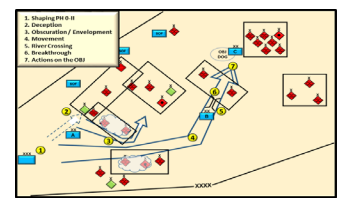
Capabilities Development & Integration Directorate

“Get to the Fight”

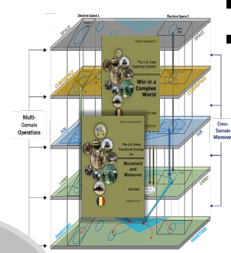
- Deploy Ready to Fight
- Use Existing Transportation Infrastructure and Road Network
- Reduce Tactical Enabler Requirements
- Traverse Eastern European Soil Conditions
- Meet Mega City Challenges
 - Navigate Narrow Streets
 - Able to Super Elevate Weapons
 - Better Top Attack Protections



“Overmatch Threats in Cross Domain Maneuver”



- Overmatch across Domains
- Maneuver to Positional Advantage
- Present Multiple Dilemmas
- Maintain Pace & Tempo our Enemies can't meet
 - Pacing Threat
 - Future Operating Environment
 - Army Operating Concept
 - Functional Concept for Movement & Maneuver



Directed Energy & Energetics

Power Generation & Management

Integrate Advanced Computing

Advanced Armor Materiel Solutions

Maneuver Robotics & Autonomous Solutions

Vehicle Protection Solutions

Decision Point based on Critical Mass on Enabling Technologies

“10X”

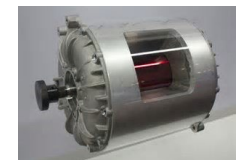
“Change Logistical Paradigm”

- Increase Range (x2); Decrease Burden (by half)
- ABCT Log Burden* (72 hours)
 - CL III - ~400K gallons
 - CL V - ~96 short tons
 - CL I - ~60 short tons
 - Water - ~60K gallons
 - Current Combat Vehicle Ranges**
 - Abrams – 206 miles
 - Bradley – 250 miles



“Growth Margins for S&T Insertion”

- Technologies will Mature at Different Rates
- Use Stage Gate method for Tracking Maturation
- Follow M1 Model*; Allow for Technology Upgrades When Appropriate



* M1 was fielded with 105mm cannon with intent to integrate 120mm cannon within 5 years.

* CASCOM Build a Force Worksheet
 ** Range based on vehicle capacity w/ full fuel level

maintain the base Soldiers and the formations in which they fight.



What does “4+2 Provide”?



Capabilities Development & Integration Directorate

Directed Energy & Energetics

- Lethal
- Non-lethal
- Increased Energy Density (10x)
- Increased Lethality for Guns and Ammunition
- Material & Chemical Technology
- Increase over RDX and HMX

Power Generation & Management

- All Platform Needs
- Alternate Energy Sources
- Range, Speed, Logistical Burden
- Double Operational Range and Reduce Logistical Burden by Half

Integrate Advanced Computing

- AI, MC, Autonomy
- Networked Lethality
- Assured PNY and Cooperative Engagements

Maneuver Robotics & Autonomous Systems

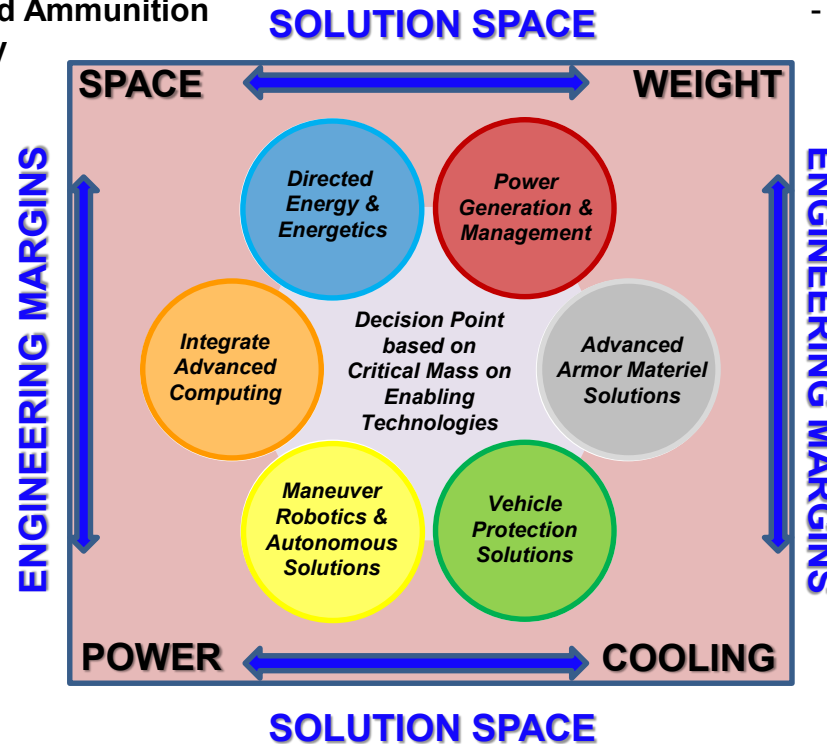
- Semi-autonomous
- Fully-autonomous
- Optionally Manned
- Tethered
- Untethered
- Ground/Air
- Sensors

Advanced Armor Material Solutions

- More Protection for Less Weight
- Strategic Mobility

Vehicle Protection Suites

- Passive & Active
- 360 Degree SA
- Allows for Less Armor/Weight
- Pre-shot Understanding & Post-shot Protection



Capability vs. weight will be fundamental – all 6 increase or extend capability relative to weight

Maintain the battlefield primacy of our Soldiers and the formations in which they fight!



MRD Contacts



Capabilities Development & Integration Directorate

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Maintain the battlefield primacy of our Soldiers and the formations in which they fight!



What does “4+2 Provide”?



Capabilities Development & Integration Directorate

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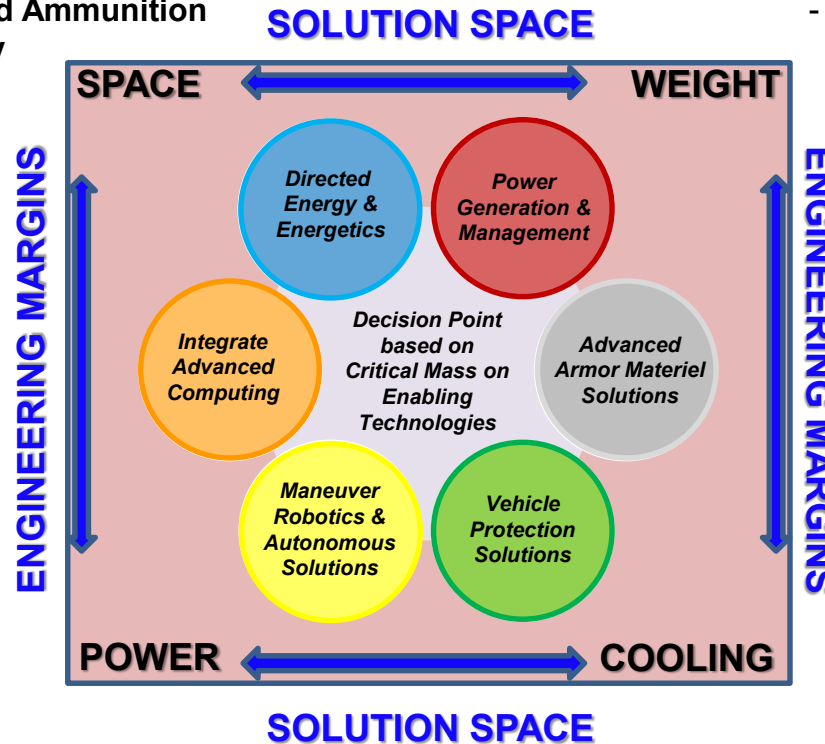
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Backup Slides



Heavy Systems Branch Programs



Capabilities Development & Integration Directorate



Near/Mid: **M1A2SEPV3/v4**- Allows Abrams to maintain current force capability while providing flexibility to transition to new vehicles when technology becomes relevant. Program currently in fielding/development. Abrams v3 is in capability testing; v4 ECP capabilities determination.



Near/Mid: **M2A3/A4**- Bradley Fighting Vehicle (BFV) modernization to restore Size, Weight, Power, and Cooling (SWaP-C) to host future technological capabilities for Infantry, Cavalry, Engineers and Fire-Support. Program currently in fielding/production.



Near: **Stryker**- Lethality upgrade is to improve freedom of movement and maneuver to facilitate effective mounted and dismounted operations by providing organic precision direct firepower. Program currently in development.



Near/Mid/Far: **Large and Medium Caliber Weapons and Ammo**- Weapons and Munitions with increased lethality at greater ranges, defilade targets, and ATGM teams. KE round in production; AMP round is pre milestone C; 30 mm CDD is in staffing.



Near: **Future Tank Capability (FUT-C)**- Currently working with the CFT, academia and the S&T base to ascertain future capabilities for modernization of the current Abrams tank, and potential future tank development.

Heavy Fleet addresses shortfalls in Multi Domain Operations by providing increased Mobility, Firepower, and Situational Awareness for ABCT and SBCT formations



Light Systems Branch Programs



Capabilities Development & Integration Directorate



Near: Infantry Squad Vehicle (ISV)- Increase light Infantry mobility by allowing small units to move extended distances over unpredictable routes to rapidly close on assault objectives. Approved requirement in source selection for competitive prototyping.



Mid/Far: Light Reconnaissance Vehicle (LRV)- Increased mobility and carrying capacity to allow standard six Soldier scout squad to conduct reconnaissance and security operations over extended distances while remaining undetected. Concept in requirement definition.



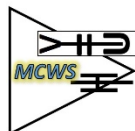
Mid/Far: Electric Propulsion- Initiative to mature and demonstrate electric propulsion for military application in tactical and combat vehicles.



Near/Mid: Mobile Protected Firepower (MPF)- Overmatching precision direct fire enabling Infantry maneuver in the close fight. Program currently in competitive prototyping with BAE and GDLS.



Near/Mid: Cold-weather All-Terrain Vehicle (CATV)- SUSV replacement for use in extreme cold regions. AFC approved requirement 7 MAY 19. Begin procurement action during FY20.



Mid/Far: Medium Cal Weapon System (MCWS)- Make Light Scouts and Infantry Weapons Companies more lethal. Concept in requirement definition.



Now: Mine Resistant Ambush Protected (MRAP)- Protected mobility enabling freedom of maneuver and ability to operate in complex asymmetric threat environment. Fielded system in use daily in Afghanistan, Iraq, and Syria.

Maintain the battlefield primacy of our Soldiers and the formations in which they fight!



Combat Capabilities Branch Programs



Capabilities Development & Integration Directorate

Support Systems:



Armored Multi-Purpose Vehicle (AMPV): Replaces the ABCT's M113 FoV to increase survivability and force protection; SWAP-C; and ability to incorporate future technologies and the Army's Network. Is currently in LRIP.



Vehicle Protection Suite (VPS): Draft CDD in development informed by trade study in 1st QTR FY20



3GEN FLIR: EMD on track for Milestone C FY23



TOW/Loitering Munitions: CDID development of priorities for future improvements.



Turreted Mortar: Conducting force effectiveness M&S to inform FY22 POM.



BCT Mission Command Programs



Capabilities Development & Integration Directorate

Mounted Mission Command:



Joint Battle Command-Platform (JBC-P): Post Milestone C



Mounted Computing Environment (MCE) Software: RDP approved waiting product down select



MCE Next Generation Hardware: CDD currently in development



Combat ID: No development.



Integrated Tactical Network (ITN): Working with the N-CFT on development of JBC-P/MTAK TOC kit.



Common Operating Environment: Working with TCM MC on aligning Cross Cutting Capabilities is future documents.