



# 2017 NDIA Armaments Systems Forum

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Enabling Land Dominance for America's Warfighters



# PEO GCS Portfolio Overview



## Main Battle Tank Systems

- Abrams Tanks
  - M1A2 SEPv2; M1A1 SA
- M88 Recovery Vehicles
  - M88A1; M88A2
- FMS Abrams Variants
- FMS M88A2 Recovery Vehicles



## Armored Fighting Vehicles

- Bradley Fighting Vehicles System
  - A3; ODS-SA; ODS\*
  - 4 Mission Roles:
    - M2A3 Infantry Fighting Vehicle (IFV)
    - M3A3 Calvary Fighting Vehicle (CFV)
    - Bradley Fire Support Team (BFIST)
    - Engineer Vehicle
- MLRS Carriers (Managed for PM FAL by PdM Bradley)
- Paladins / FAASVs
- FMS M2A2 Saudi Arabia



## Stryker Brigade Combat Team

- Flat Bottom Hull (FBH) Strykers
- Double V-Hull (DVH) Strykers
- 17 Variants (10 FBH and 7 DVH):
  - Commander's Vehicle (CV & CVV)
  - Medical Evacuation (MEV & MEVV)
  - Infantry Carrier (ICV & ICVV)
  - Engineer Squad (ESV & ESVV)
  - Mortar Carrier (MCV & MCVV)
  - Anti-Tank Guided Missile (ATGM & ATVV)
  - Fire Support Vehicle (FSV & FSVV)
  - Mobile Gun System (MGS)
  - NBC Reconnaissance (NBCRV)
  - Reconnaissance Vehicle (RV)
- Armored Knights

## PEO GCS PORTFOLIO



## Armored Multi-Purpose Vehicle (AMPV)

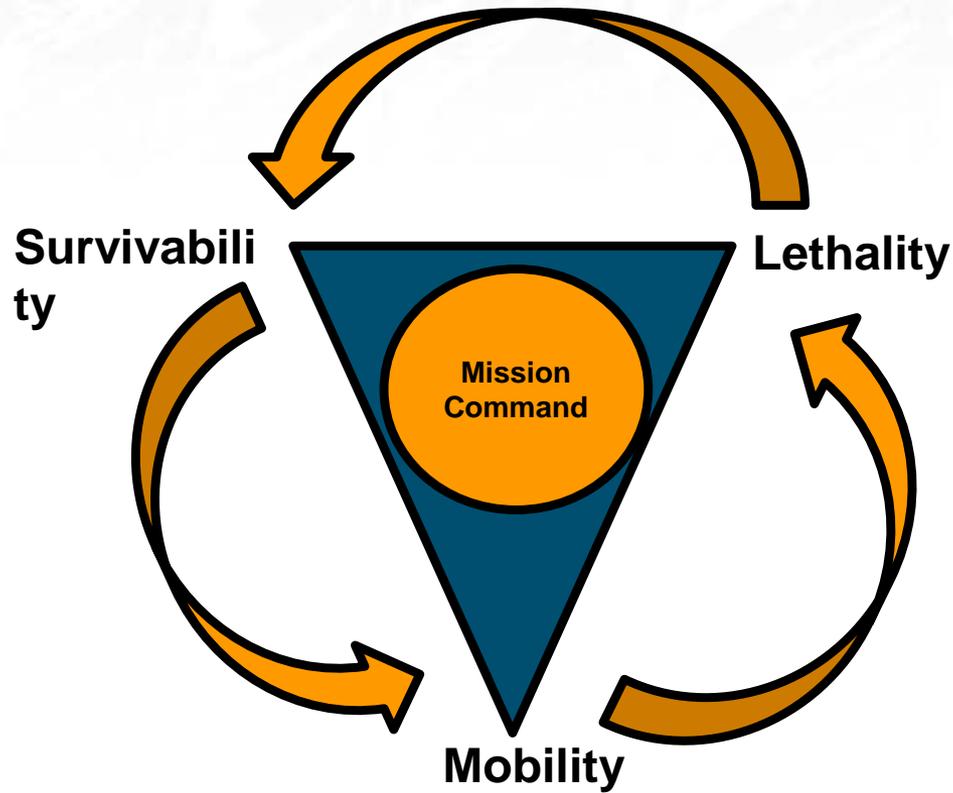
- Armored Multi-Purpose Vehicles
- 5 Mission Roles
  - General Purpose (GP)
  - Mortar Carrier Vehicle (MC)
  - Mission Command (MCmd)
  - Medical Evacuation Vehicle (ME)
  - Medical Treatment Vehicle (MT)



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# “The Iron Triangle Challenge”



No capability can be adjusted in isolation

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# Recent Past – Focus Survivability

U.S. ARMY

## Tank Urban Survival Kit (TUSK)



Loader's Armored Gun Shield II (LAGS)



Rear camera



Stabilized Weapon Stations



COMAGS



Mine Resistant Driver Seat



Loader's Thermal Weapon Sight



Abrams Reactive Armor Tiles I & II



TC Shade



Abrams Belly Armor



Universal Headrest Bracket



Weldments for Mine Resistant Driver Seat



Weldments for Abrams Reactive Armor Tiles II Turret



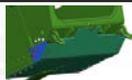
Weldments and cable for Counter Sniper/ Anti-Materiel Mount

## Bradley Urban Survivability Kit (BUSK)



## Stryker Survivability

Mine Roller Adapter Kit (MRAK)



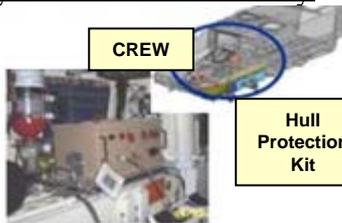
SLAT Armor



Reactive Armor Tiles



CREW



Hull Protection Kit

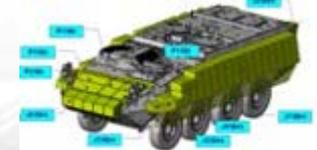
Tire Fire Suppression Kit



Blast Mitigation Kit



SRAT II Kit



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# Current Priorities – Restore SWaP-C & Mobility



## Abrams M1A2 SEP v3

## Bradley A4

### ECP 1a (Power)

#### Network Compatibility

- HHS Radio
- JBC-P (Mission Command)

#### Power Generation/Distribution

- Battery Monitoring System
- Increased Amperage Alternator
- Slip Ring

#### Line Replaceable Modules (LRM)

- Mission Control Unit
- Turret Control Unit
- Hull Control Unit
- Commander's Display Unit
- Driver's Control Panel
- Gunner's Control Panel
- Common High-Resolution Display

#### Sustainment

- Auxiliary Power Unit

#### Lethality

- Ammunition Data Link to support new Tank rounds

#### Protection

- CREW/Duke v3

#### Logistics

- Vehicle Health Management System



### ECP 1b (Lethality)

#### Protection

- Laser Warning Receiver
- Directional Smoke Grenade Launchers
- Updated Crew Fire Suppression System (AFES)
- Environmental Control System
- Vehicle Generated Smoke

#### Improved Commander's Independent Thermal Viewer (CITV)

- 3GEN IFLIR
- Laser Range Finder
- Laser Pointer
- Color Camera

#### Improved Gunner's Primary Sight

- 3GEN FLIR
- Improved LRF
- Color Camera

#### Advanced Multi-Purpose (AMP) Round Integration

#### Meteorological Sensor for improved firing accuracy

#### Enabling Enhancements

- Improved on-board diagnostics
- On-board Video Capturing
- Continued architecture standardization via Victory Architecture Compliance
- Integrated MILES/LETC\*\*

### ECP 1 (Suspension and Track)

- Extended Life Track
- Heavy Weight Torsion Bars
- Dampers and Road Arms

### ECP 2 (Network)

#### Power Train

- 875 vW Power Pack Upgrader\*
- 800 HP Transmission Efficiency\*\*
- Cooling System Modification
- Upgraded Final Drive\*

#### Electrical System (28 Vdc)

- Electrical Power Upgrade (from 400 amps to 950 amps)
- High Speed Slip Ring Upgrade
- 1.5 Ethernet Switch
- Vehicle Health Management System (VHMCS) Phase I
- SBA99 Monitoring\*
- Single VICTORY architecture compliance
- Electrical Cooling

#### Situational Awareness / Mission Command

- Improved FBCE2 Integration
- KKV-72 (Programmable Encryption Device)
- Blue Force Tracker (BFT) 2
- Mounted Family of Computing Systems (MFoCS)
- Joint Battle Command - Platform (JBC-P)
- Common Intelligent Display
- Mid-Tier Networking Vehicular Radio (MNVTR)
- Handheld Manpack Small Form Fit (HMS)
- Next Warrior\*
- New Central Processor Unit

#### Enabled Capabilities

- Counter RCIED (Remote Control Improved Explosive Device)
- Electronic Warfare (CREW) v3

#### Accelerated Technologies

- Automatic Fire Extinguishing System (AFES) Optimization – Phase One
- Driver's DVE Wide Field of View (FOV)



\* Common with other platforms

**Intent:** Address space, weight, power, cooling and computing limitations to enable Army inbound technologies.

### ECP 2b (Lethality)

#### Commander's Independent Viewer (CIV)

- 3GEN FLIR\*
- Laser Range Finder\*
- Cross-Platform Pointing Laser & Receiver (CPPLR)\*\*
- Color Camera\*

#### Improved Bradley Acquisition System (IBAS)

- 3GEN FLIR\*
- Laser Range Finder\*
- Cross-Platform Pointing Laser & Receiver (CPPLR)\*\*
- Color Camera\*

#### Enabling Enhancements

- VICTORY architecture/COE compliance\*
- Embedded Training

#### Commanders Independent Weapon System

## AMPV

Common Powertrain, Suspension, Driver's Station and Commander's Station

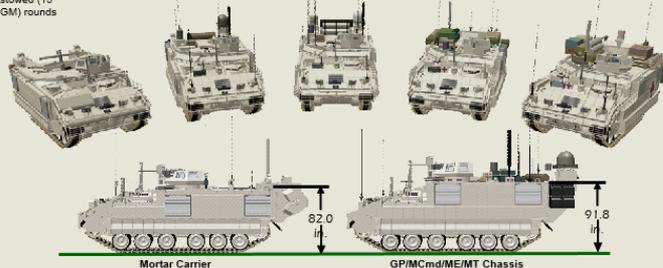
**Mortar Carrier**  
• Crew, gunner and gunner assistant  
• M121 mortar  
• 69 stowed (15 HEGM) rounds

**General Purpose Variant**  
• Crew and four Soldiers  
• Reconfigurable to transport litter  
• M2 or Mk19 machine gun

**Mission Command Variant**  
• Crew and two operators  
• Compatible with all communications equipment

**Medical Evacuation Variant**  
• Crew, medic and four litters or six ambulatory casualties  
• Litter lift mechanism  
• Complete mission onboard medical equipment

**Medical Treatment Variant**  
• Crew, medic and physicians assistant  
• Treatment table  
• Complete mission onboard medical equipment

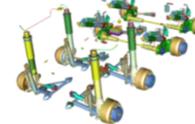


## Stryker ECP



#### Engine Upgrade

- 450 hp engine to buy back mobility power
- Improved power pack thermal management with additional environmental conditioning



#### Chassis Upgrades

- Mitigates increased Gross Vehicle Weight (GVW) (55k-60k lbs)
- Optimized Driveline for 450Hp



#### ECP 1 Approach:

- Mitigate mobility degradation caused by survivability improvements
- Address vehicle space, weight, power and computing (SWaP-C) challenges that are further impacted by addition of the Network

#### In-Vehicle Network

- Extend Vehicle Data Network to driver's and commander's stations
- Establishes infrastructure for future Army network systems; information sharing for current and future C4ISR systems
- Establishes infrastructure for potential future SWaP neutral C4ISR system insertions



#### Electrical Power Upgrade

- 910 Amp electrical power generation
- Solid state distribution system

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# The Changing World Landscape and Leading Threat Actors



## Brigade Level Unit Dispositions of Ukrainian and Russian Forces

- **Re-emergence of Peer Threat - Russian Behavior More Provocative and Aggressive**
  - **China, Iran, North Korea, Non-State Actors, Terrorism**
- **Challenges to European Sovereignty**
- **Traditional, Asymmetric, and New Threats Continue to Challenge Our Forces**
- **Need for Heavy forces and Main Battle Tank Systems not Diminished**

Russia

“Moscow’s military foray into Syria marks its first use of significant expeditionary combat power outside the post-Soviet space in decades. Its intervention underscores both the ongoing and substantial improvements in Russian military capabilities and the Kremlin’s confidence in using them as a tool to advance foreign policy goals. Despite its economic difficulties, Moscow remains committed to modernizing its military.”

James Clapper,  
Director of National Intelligence



Motorized Rifle or Mechanized Brigade



Tank Brigade



Artillery Brigade



Theater Ballistic Missile Brigade



Air Defense Brigade



Airborne Brigade



Major Naval Installation

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# Challenges to our Combat Vehicles



The consequences of innovation and increased reliance on information technology into the future will have significant bearing on how we fight and win on the next battlefield



- “New” Threats including Cyber, hand-held electronics, tactical drones, and increased use of electronic warfare / Jamming / GPS Denial
- Proliferation of older technologies such as high-end anti-tank weapons

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# Rapid Developments



30x173mm Family



Mk258  
APFSDS-T



Mk239  
TP-T



Mk317  
TPDS-T



Mk238  
HEI-T



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# Development Investments



## CITY

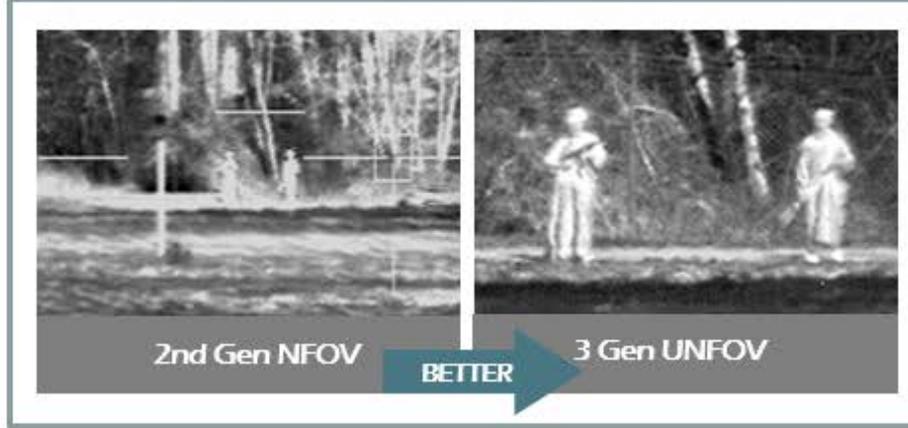


- **Improved Commander's Independent Thermal Viewer (CITY)**
  - 3GEN IFLIR
  - Laser Range Finder
  - Laser Pointer
  - Color Camera

## Abrams Lethality

- **Improved Gunner's Primary Sight**
  - 3GEN FLIR
  - Improved LRF
  - Color Camera
- **Advanced Multi-Purpose (AMP) Round Integration**
- **Meteorological Sensor for improved firing accuracy**

## GPS



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# Extending Range



XM208 Gunmount



XM1113



XM654 Supercharge

## Extended Range Cannon Artillery

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# New Lethality Modes – Multi Role Vehicles



Stryker Mobile Expeditionary High Energy Laser (MEHEL) Demonstrator

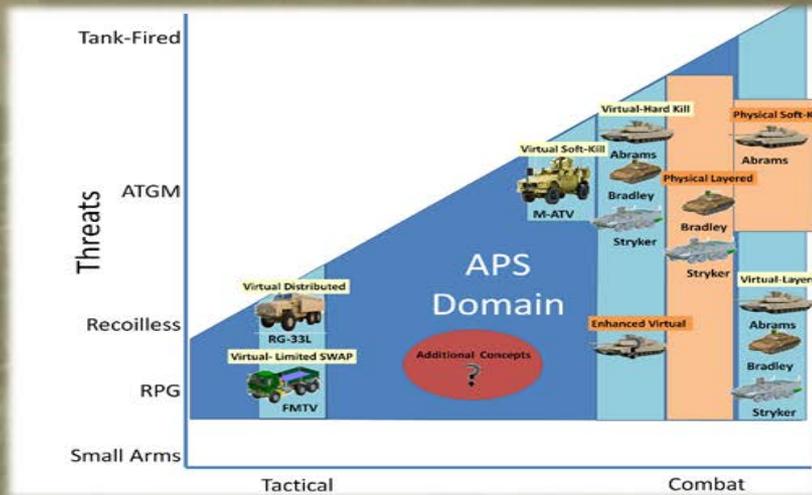


Stryker Counter-UAS Mobile Integrated Capability (CMIC)

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# From Lethality To Protection: Active Protection Systems (APS)

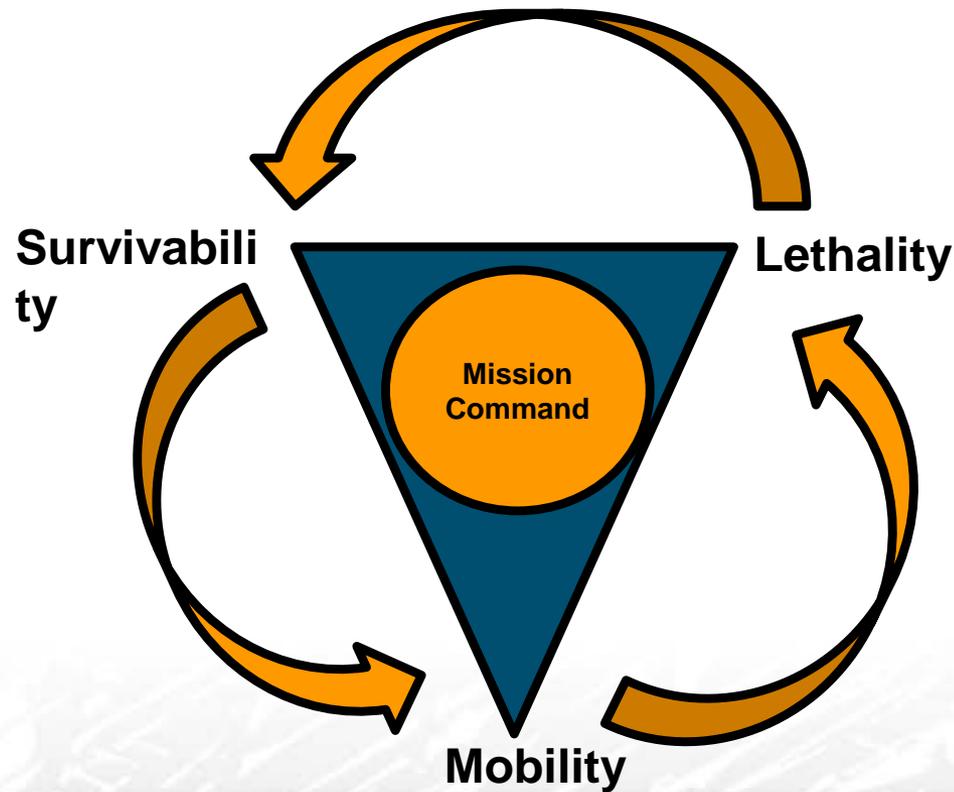


**Rapidly equipping for an unknown and unknowable battlefield with tailorable scalable solutions**

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# QUESTIONS



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