

Implementing Directed Energy Into SHORAD Strategy



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Agenda



- **Implementing DE into SHORAD Strategy**
- **Maneuver Fires Integration Experiment (MFIIX)**



SHORAD Approach



"Short Range Air Defense (SHORAD) are those **dedicated Air Defense Artillery** and **non-dedicated air defense** capabilities which enable movement and maneuver by destroying, neutralizing, or deterring low altitude air threats to defend **critical fixed and semi-fixed assets** and **maneuvering forces**."

Dedicated ADA

Primary mission

Beyond LOS and LOS engagements
Highly structured Mission Command
Operating on a Fire Control Network

LOE 1: M-SHORAD Maneuvering Forces

- Current: **No capability**; Divisional ADA units divested in the early 2000s
- Protects "Maneuvering Forces" against 3rd dimension air threats aircraft
- **Mobility & survivability compatible** with the supported Force
- Trades "firepower" for "mobility" to keep up with the supported maneuver force which are less vulnerable to massed fires and complex attacks due to their mobility

LOE 2: IFPC Inc 2 Fixed & Semi-Fixed Assets

- Current: **Avenger & Land-Based Phalanx Weapon System (LPWS)**
- **IFPC replaces Avenger & LPWS**
- Protects critical "Fixed and Semi-Fixed" assets
- Fixed and semi-fixed assets are at greater risk due to massed fires and their inability to move
- IFPC's strength lies in its **engagement firepower**

Mobility

Firepower

IFPC Inc 2-I and M-SHORAD are complementary systems that provide layered and tiered air defense of critical assets

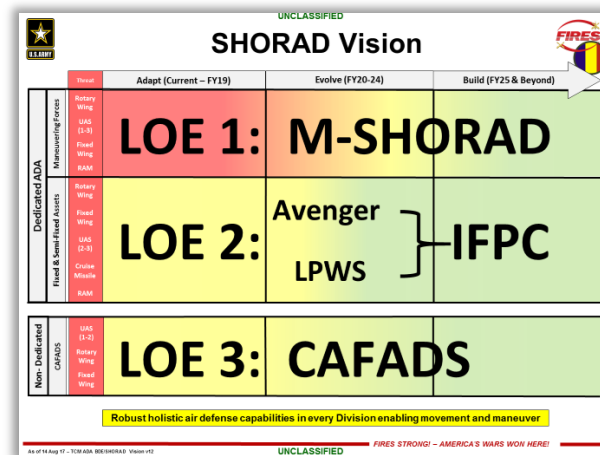
Non-Dedicated AD

Secondary mission

LOS engagements
Controlled by ROE
Organic Network

LOE 3: CAFADS "Self Defense is never denied"















Combined Arms for Air Defense (CAFADS) are **active and passive defense measures** taken by the force to protect itself from threat air surveillance and attack





SHORAD Vision



		Threat	Immediate	Interim	Future
Dedicated ADA	Maneuvering Forces	Rotary Wing	Maneuver-SHORAD "Demo"	Initial Maneuver-SHORAD 	Objective Maneuver-SHORAD 
		UAS (1-3)			
		Fixed Wing			
		RAM			
	Fixed & Semi-Fixed Assets		Maneuver Stinger 	Stinger w/ Prox Fuse	Improved MANPAD Capability
					Next Gen MANPADS
		Rotary Wing	Avenger/Stinger 	Indirect Fire Protection Capability (IFPC) Block 1 – UAS, Cruise Missile, Fixed & Rotary Wing 	
		Fixed Wing			
		UAS (2-3)	 Land-Based Phalanx Weapon System (LPWS)	IFPC Block 2 – adds RAM <ul style="list-style-type: none">• Adv Missile or• Direct Energy 	
		Cruise Missile			
		RAM	Sentinel A3 		Sentinel A4 
Non-Dedicated	Combined Arms for Air Defense (CAFADS)	UAS (1-2)	Individual/crew weapons	Guided Rounds	
				Directed Energy	
		Rotary Wing	C-UAS rapid capability solutions 	Multi-Mission Radars 	
		Fixed Wing			
			Apache 		Multi-Functional Electronic Warfare

Legend
Programs/ Initiatives

Robust holistic air defense capabilities in every Division enabling movement and maneuver



Formations and Capabilities

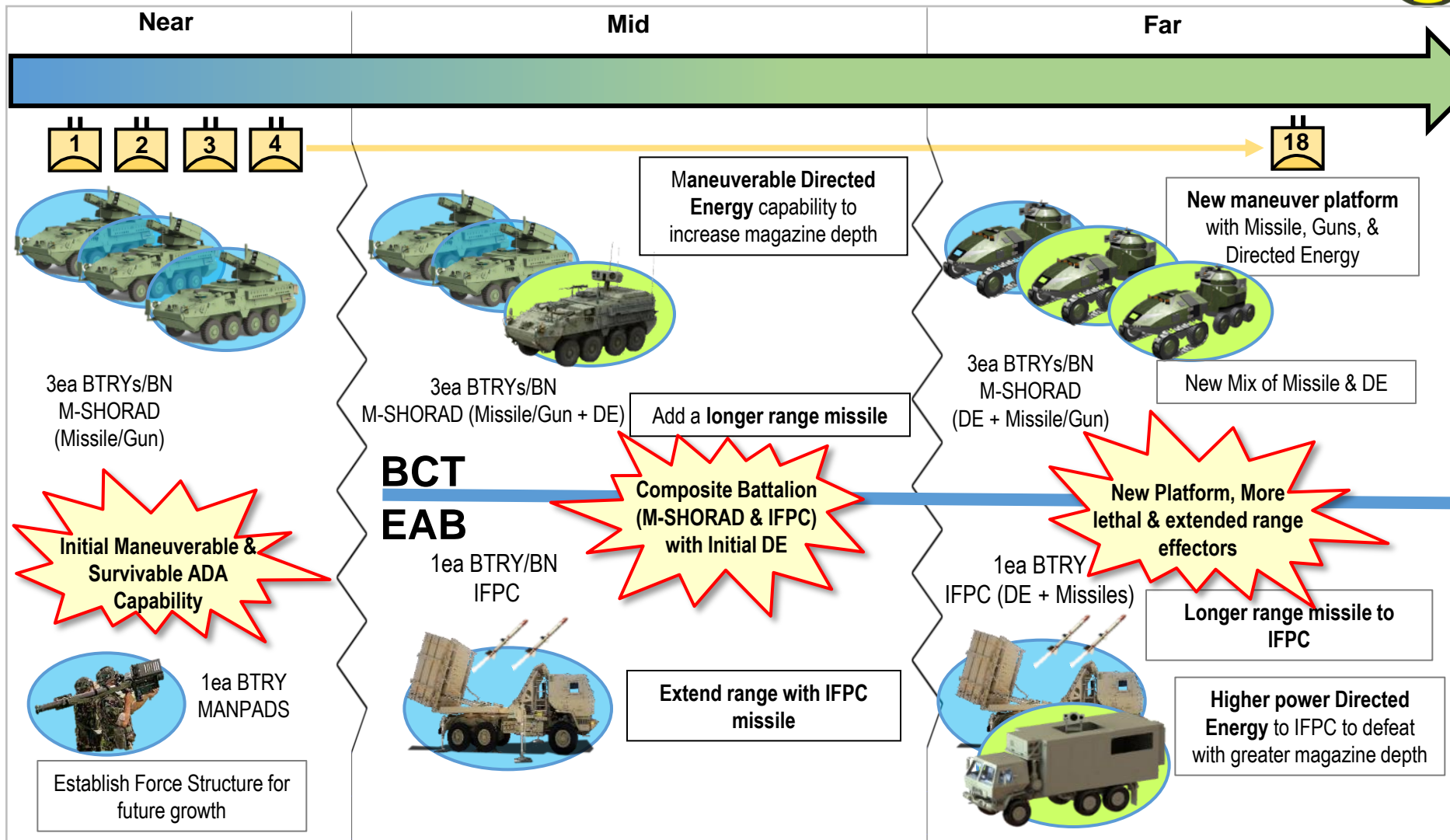
Growth of the Maneuver-Short Range Air Defense (M-SHORAD) Battalion



Near

Mid

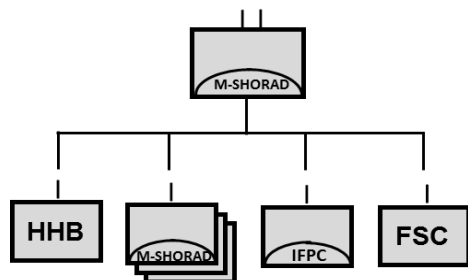
Far



Composite Formations and Mix Capabilities Mitigate Risk Over Time

Maneuver-SHORAD Operations and Organization

Composite Organization



Shooters

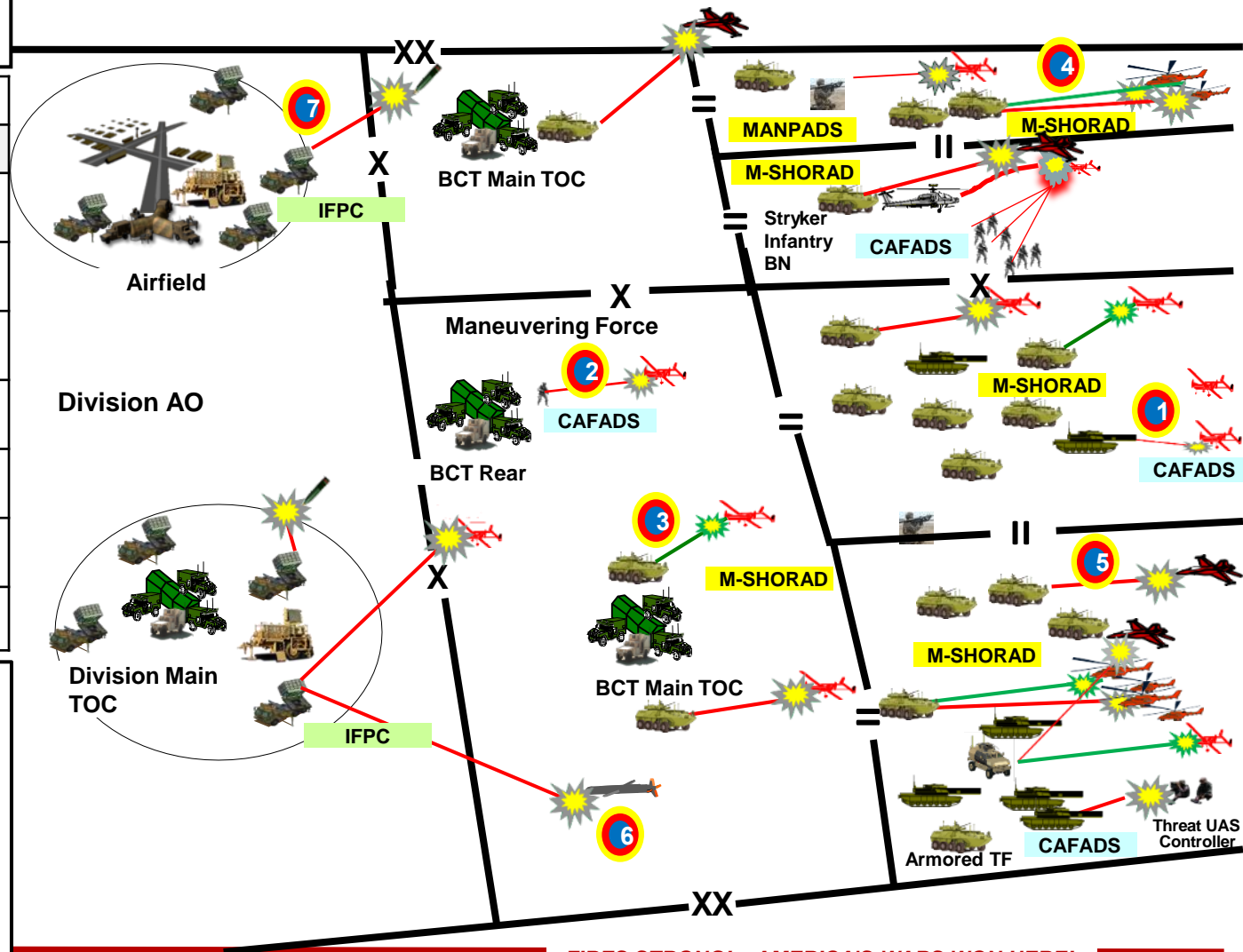
Threat	Primary	Secondary
UAS 1 (up to 3km)	CAFADS	M-SHORAD
UAS 2 (up to 6km)	CAFADS	M-SHORAD
UAS 3 (up to 6km)	M-SHORAD	IFPC
Rotary Wing (up to 8km)	M-SHORAD	IFPC
Fixed Wing (up to 8km)	M-SHORAD	IFPC
Cruise Missile (Up to 16km)	IFPC	N/A
RAM	IFPC	M-SHORAD

Complementary Layered & Tiered Capabilities

- Maneuver SHORAD (M-SHORAD)**
 - Defend a maneuver force from aerial attack
- Indirect Fire Protection Capability (IFPC)**
 - Defend fixed/semi assets from massed fires
- Combined Arms for Air Defense (CAFADS)**
 - Secondary self defense by all Warfighters

Legend

- Kinetic Engagements
- Non-Kinetic Engagements





Maneuver and Fires Integration Experiment (MFIx) Premier Venue for Prototype Experimentation



Purpose: Develop, evaluate and expand integrated concepts and material capabilities in order to inform how Fires enhances tactical operations at Brigade and below, retain current advantages over adversaries and accelerate investments on contested future capabilities in support of the Army's Campaign of Learning (CoL).

Method: The Maneuver Brigade's Fires Cell (FA, ADAM/BAE, Space, and CEMA) employs cross-domain fires in direct support to the Brigade Combat Team.



FY 19 Objectives

- Mission Command for Fires Synchronization and Integration in Multi-Domain Battle.
- Future Platforms that enable/facilitate cross-domain fires.
- Sensor to Shooter Linkages that will enable/facilitate cross domain fires, target acquisition, and transfer of data from sensor platform through positive identification.
- Provide an ALPA venue for CoE focused assessments and government demonstrations.

MFIx 19 Key Tasks

Establish
Sensor to
shooter
linkages

Detect, identify,
and defeat a
wide range of
aerial threats

Conduct
counter-
battery
fires

Integrate sensors
and shooters
both organic and
attached

Conduct
tactical
targeting

Provide close
support and
shaping fires

Integrate Army
and joint
capabilities at
the tactical level

Technologies

System Highlights:

- 35 systems to include integrated Programs of Record participating at Brigade and below
- 10 New Systems (Government & Industry)
- 20 Returning Technologies
- 40 Total Tech Submissions

Experiment Design

- **FY 19 Objectives:** Mission Command for Fires
Future Fires Platforms
Cross-domain sensor to shooter
Non-Line of Sight Engagements
- **White Cell:** Maneuver and Fires Battalions
- **Tactical Units:** Brigade (-), ADA Battery, Maneuver Company
- **Cross-Domain Tactical Vignettes**
- **Above the Horizon Laser Engagements**
- **Support SCoE and MSCoE focused assessments**



AUGS with 30mm



Silent Saber



Kestrel Eye



FLIR Light Tactical Vehicle (LVSS)



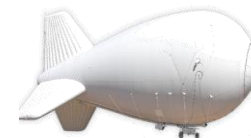
MEHEL (10kw)



HEL MTT (60kW)



HELWS (10kw)



Aerostat



Brutus (Truck Mounted 155mm)



Questions ?

INTERESTED IN ATTENDING?

Future weapons, including directed energy weapons have been in the Research & Development phase for the past several years. As the US armed forces, continue to develop and innovate in order to achieve battlefield overmatch and superiority, the Directed Energy weapon systems are making their way from the R&D phase to DoD and Military programs as the next step before acquisition and force integration.

Over the three-day summit we will examine the latest DE advancements, initiatives and plans regarding technology, acquisition and service roadmaps. This event will bring together thought leaders, acquisition executives, industry solution providers, and academia in order to tackle some of the challenges that face this community in the near, mid, and far term fight. We will look to gain insight and lessons learned from warfighter perspectives on the operational challenges and requirements of DES that will influence the capabilities of this game-changing technology.

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