United States Army
Cyber Center of Excellence

Future EW Capabilities

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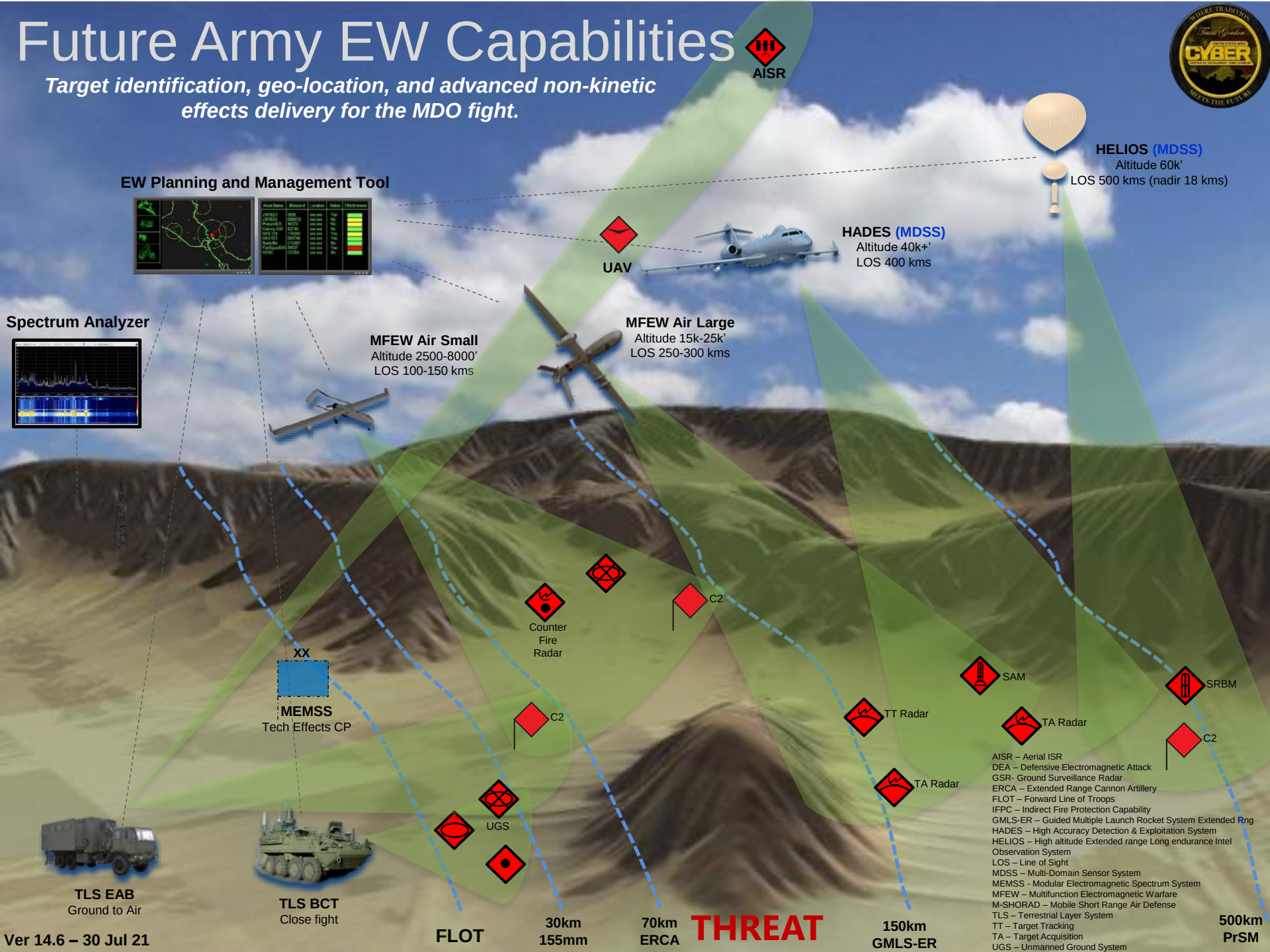
Future Army EW Capabilities

Target identification, geo-location, and advanced non-kinetic effects delivery for the MDO fight.

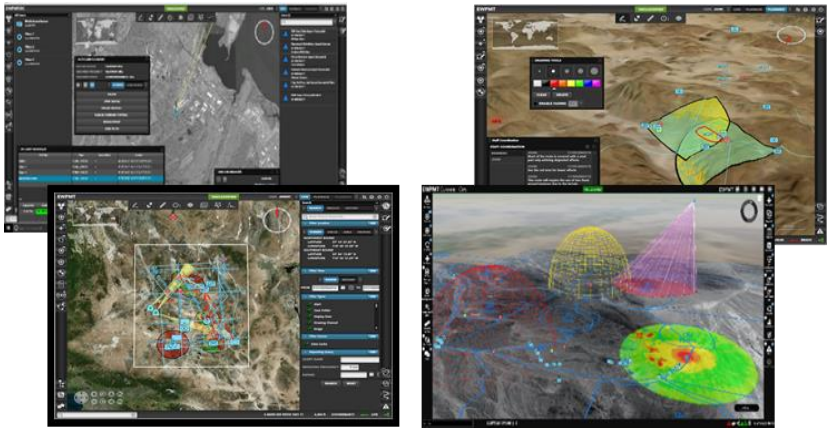


AISR – Aerial ISR
DEA – Defensive Electromagnetic Attack
GSR- Ground Surveillance Radar
ERCA – Extended Range Cannon Artillery
FLOT – Forward Line of Troops
IFPC – Indirect Fire Protection Capability
GMLS-ER – Guided Multiple Launch Rocket System Extended Rng
HADES – High Accuracy Detection & Exploitation System
HELIOS – High altitude Extended range Long endurance Intel Observation System
LOS – Line of Sight
MDSS – Multi-Domain Sensor System
MEMSS - Modular Electromagnetic Spectrum System
MFEW – Multifunction Electromagnetic Warfare
M-SHORAD – Mobile Short Range Air Defense
TLS – Terrestrial Layer System
TT – Target Tracking
TA – Target Acquisition
UGS – Unmanned Ground System

Ver 14.6 – 30 Jul 21

Electronic Warfare Planning and Management Tool (EWPMT)

Electromagnetic Warfare/Spectrum Management



Capability Description

- Control, manage, and dominate the Electromagnetic Spectrum (EMS)
- Conduct remote control & management of EW
- Synchronizing EW and Spectrum Management Operations (SMO)
- EWPMT is predominantly utilized by the Cyber Electromagnetic Activities (CEMA) Section

Emerging EWPMT Increment 2 Requirements:

- Techniques Arsenal
- Automated Spectrum De-confliction
- Artificial Intelligence/Machine Learning assisted kill chain analysis/targeting based on emitter identification
- Cognitive science-based user interface enhancements
- Next Generation geolocation engine

Recent Milestones

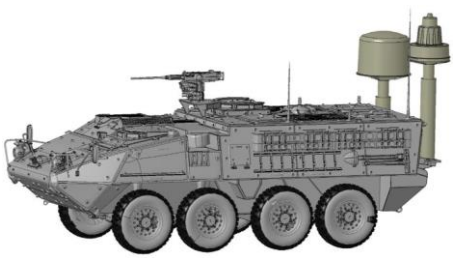
- May 2021: EWPMT Developmental Test
- August 2021: EWPMT Initial Operational Test and Evaluation

Ongoing Development

- Intelligence Broadcast Service (IBS) integration
- Intelligence and Electronic Warfare Tactical Proficiency Trainer (IEWTPT) integration
- Joint Land Component Constructive Training Capability (JLCCTC) and Warfighter Simulation (WARSIM) integration

Terrestrial Layer System

Signals Intelligence/Electromagnetic Warfare/Cyberspace Operations



Basis of Issue: 6 TLS per BCT X 31 BCTs; 6 TLS for TRADOC (anticipated)

Capability Description

- Modernizes the terrestrial layer providing a capability to digitally interface with Brigade and Division assets, to sense, attack, deceive adversary
- Organic terrestrial, globally deployable, ISR system containing SIGINT, EW and Cyber-support capabilities
- Integrated suite of sensors and effectors on a mobile platform, aligned with the Brigade Military Intelligence and EW force structure supporting Multi-Domain Operations

Emerging Requirements

- EA/Cyber delivery from tethered apertures for extended ranges
- Integrated lightweight manpack
- Integrates Navy's TACSIT user interface
- Cooperative geolocation with "follow the leader" VTOL Group 1 or 2 UAS
- Alternative TDOA time-synchronization approaches
- Realistic/software definable System Training Aids, Devices, Simulators, and Simulations (TADSS) mode for garrison and field operations (FCC approved RF translated to realistic threat replication)

Recent Milestones or Events:

- Operational Capability Demonstration (OCD)-B / STP #4: LM Feb 21 / DRT Mar 21
- Photon Stakeholder Community Meeting for PI-8 Prioritization - 13 Apr 21
- OCD-A Developmental Test Readiness Review (DTRR): LM 18 May 21
- OCD-A DTRR DRT: 2 Jun 21
- TLS-BCT Distinguished Visitor Event: 9-11 Jun 21
- OCD-A / STP #6: May/Jun 21 - LM/DRT
- OA DTRR with LM and DRT 30 Jun 21

Terrestrial Layer System Echelons Above Brigade (TLS EAB)

Signals Intelligence/Electromagnetic Warfare/Cyberspace Operations

Basis of Issue: 4 per Multi-Domain Task Force, 3 per CORPS, 4 per DIV – APO 65 systems

Capability Description

- Deep sensing (detect, ID, locate) to support Division, Corps, and MDTF fires
- Long range and short range Ground to Air EA
- Mobile, expeditionary/deployable system containing SIGINT, EW and Cyber-support capabilities
- Aligned with the IEW BN force structure and missions to support information superiority, targeting, and Long-Range Precision Fires in Joint All-Domain Operations (JADO)

Emerging Requirements

- EA from tethered and rapidly deployed drone/aerostat
- Beyond LOS / OTH passive high accuracy detection, identification, and location of adversary radars
- Hyper-spectral/ultra-sensitive ES antenna technology
- Bi-static radar
- Active electronically steered arrays for high gain/multiple simultaneous engagement
- Counter RF/EO/IR
- Networked distributed coherent effects for long range

Recent Milestones or Events:

- AROC approved TLS EAB A-CDD 9 July 2021
- Collaborate with I2WD and INSCOM for risk reduction/pre-prototype assessments including STPs
- Seeking MTA authority for rapid prototyping based on A-CDD and FUE
- ***C5 Standard Request for White Papers that addresses Statement of Need (15 pages) – 2nd QTR FY22***
- Continued industry engagements to ensure understanding of system of systems approach to satisfying requirements (RWP 4QFY21)
- Initial effort focused on integration of existing/emerging capabilities from Army, other services, other agencies to reduce technical/cost risk
- STPs key throughout development/prototyping process

Manned AISR/EW Aircraft

Electromagnetic Warfare/Cyberspace Operations

Capability Description

EW / Cyber payload for manned (optionally manned) jet aircraft:

- 40,000+ ft AGL platform and payload
- Organic payload or air launched sensors and effectors
- Ability to network and control individual sensing and effects nodes
- Apply Modular Open Systems Approach (MOSA) standards
- Apply C5ISR/EW Modular Open Suite of Standards (CMOSS) and Sensor Open Systems Architecture (SOSA) standards
- Address security constraints including cross domain requirements

Emerging Requirements

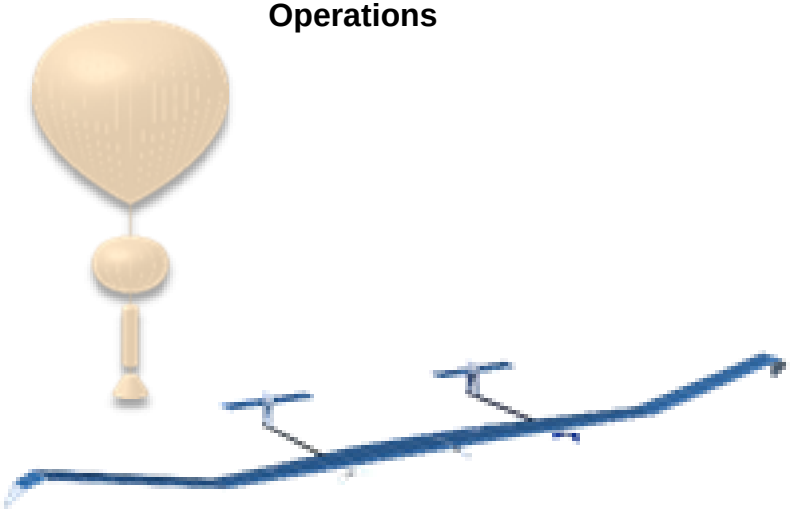
- Long range EW/Cyber – 400 km LOS
- Hyper-spectral/ultra-sensitive ES antenna technology
- High-power, highly directional, beamformed EA
- MOSA and CMOSS compliant
- Onboard EWO control with Navy/TACSIT interface
- PEO Aviation MOSA Implementation Enabling Common Modular Open Architecture (CMOA)
- Aviation Mission Computing Server (AMCS) − Small Form Factor/Special Purpose
- Aviation Mission Computing Environment (AMCE)

Recent Milestones or Events:

- MDSS ICD approved FEB2020
- HADES A-CDD approved AUG2020
- Experimentation and testing are being done by vendors based upon PM requirements/recommendations

High Altitude Platform EW/Intel Payload

Electromagnetic Warfare/Cyberspace Operations



Capability Description

EW / Cyber / SIGINT payload for High Altitude/Stratospheric platforms

- 60,000+ ft
- Modular EA/RF-enabled cyber packages
- Mesh networked
- Low cost / attritable
- Low temperature
- Low SWaP

Emerging Requirements

- 18+ km nadir LOS
- Hyper-spectral/ultra-sensitive ES antenna technology
- High gain beamformed electromagnetic attack
- Coherent, distributed electromagnetic attack (multiple lower power transmitters very precisely coordinated to deliver additive J/S on a single target).
- Air launched effects
- Anti-tamper, remote/auto destruction
- Remote control via EWPMT
- MOSA/CMOA/AMCS/AMCE standards compliant

Recent Milestones or Events:

- MDSS ICD approved FEB2020
- HAP A-CDD approval pending (~AUG2021)
- HELIOS A-CDD approval pending (~AUG2021)
- HERMES A-CDD approval pending
- Experimentation and testing are being done by vendors based upon CFT/ACM requirements/recommendations

Spectrum Analyzer

Spectrum Analyzer

(Proposed) Basis of Issue: Maneuver BN = 1 x each CEMA Cell; BCT and Above= 1 x each CEMA Cell, 1 x each S/G6 (BCT and Above); Signal Formation = 1 x each (BN thru ASCC); TRADOC

Capability Description

- Enables Army to manage friendly EMS signature
- Identifies and locates electromagnetic interference/jamming
- Enables frequency de-confliction, and Electronic Protection
- Validates, verifies, visualizes commanders EMCON

"The question I consistently hear from commanders is 'What does my formation look like in the spectrum?'"

"Less than 10 percent of our EW formations have the equipment on hand to answer that question; and of that, only half can effectively make sense and articulate what the equipment is showing them."

17 June 21-SGM Titus, I Corps

Emerging Requirements

- Broad spectrum EMS monitoring with minimal antenna configurations
- Configurable for static operations center usage and ruggedized for handheld interference hunting
- Automated signal detection and correlation to imported spectrum management tools (Spectrum XXI, JSDR)
- Automatic signal recognition, identification, geolocation, and recording

Recent Milestones or Events:

- AROC CDRT Iteration #15 recommended Spectrum Sit. Awareness System (S2AS) as an enduring capability (July 2013)
- BCT RF "Footprint" Study NTC 20-04 (Feb 2020)
- MCCoE CP Survivability Signature Management Study (2020)
- MCCoE CP Survivability CONOP, Draft (Mar 2021)
- CP Survivability Experimentation 21
- Cyber Quest 19, Cyber Blitz 19, Cyber Quest 20, Cyber Quest 21, MDO Live 21
- ONS fielding in EUCOM, Eighth Army, and MDTF
- Army Spectrum Analyzer requirement to AFC (2021)