

3rd Directed Energy Systems Summit



High Energy Laser Technology for the Multi-domain Battlefield

Mr. Thomas E. Webber, SES
Director,
Technical Center



USASMDC/ARSTRAT



Senior Commander



JFCC IMD



1st Space Brigade



100th Missile Defense Brigade (GMD)



Future Warfare Center



Technical Center

USASMDC/ARSTRAT Mission

Develops and provides current and future global space, missile defense, and high altitude capabilities to the Army, Joint Force, and our Allies and partners, to enable multi-domain combat effects; enhance deterrence, assurance, and detection of strategic attacks; and protect the Nation.

Priorities

- Protect our Homeland
- Provide combat-ready forces and capabilities
- Plan and conduct synchronized global operations
- Prepare or adopt leap-ahead concepts and technologies
- Preserve and account for the Nation's critical resources
- Promote and foster a positive command climate

Mission Areas

ASCC/Operational Support

Service Activities

Army Proponency

Other CG Roles & Responsibilities

- Commander, Joint Functional Component Command for Integrated Missile Defense (JFCC IMD)
- Senior Commander for U.S. Army Garrison - Kwajalein Atoll and Fort Greely, Alaska
- Army Air and Missile Defense Enterprise Integrator
- Personnel Developer, Functional Area 40 Space Operations Officers

USASMDC/ARSTRAT



- **The Army Recognizes value of High Energy Laser**
- **USASMD/ARSTRAT is Army lead for High Energy Laser Science & Technology**
- **USASMD/ARSTRAT collaborating to ensure Integration**

USASMD/ARSTRAT's High Energy Laser Role

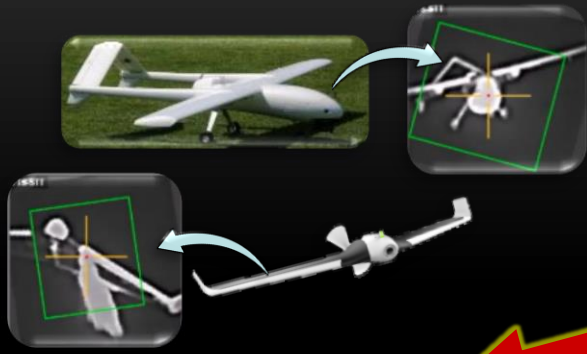
HELMTT

Joint Improvised-threat Defeat Organization (JIDO) Hard-kill Challenge

System Name	Phase I Points	Phase II Points	Phase III Points	Total Points
High Energy Laser Mobile Test Truck (HELMTT)	637	622	722	1981
Mobile High Energy Laser (MEHEL)	555	147	28	730



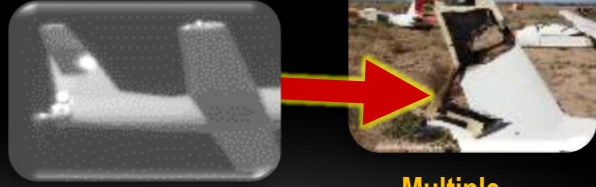
MEHEL 2.0



Unmanned Aerial System Engagements



Maneuver Fires Integration Experiment (MFIx)



Multiple Engagements Types



Past High Energy Laser Demonstrations

Ground mobile platform development - integrated Beam Control System (BCS) on Heavy Expanded Mobility Tactical Truck (HEMTT)
- High Energy Laser Technology Demonstrator



Integrate 10kW commercial laser, thermal management, and power on HEMTT
- High Energy Laser Technology Demonstrator (HEL MD)

Integrate 100 kW laser, compact thermal/power, and advanced BCS on Family of Medium Tactical Vehicles
- High Energy Laser Tactical Vehicle Demonstrator (HEL TVD)



Lessons Learned

Integrate 60 kW laser on HEMTT
- High Energy Laser Mobile Test Truck (HELMTT)

Transition technology to Program of Record
- Initial Operational Capability Indirect Fires Protection Capability Increment 2, Block 2

Integrate 5 kW laser on Stryker
- Mobile Experimental High Energy Laser (MEHEL)



Integrate 50 kW laser on Stryker
- Multi-Mission High Energy Laser (MMHEL)



Transition technology to Program of Record
- Maneuver-Short Range Air Defense

Army Path to High Energy Laser Weapon Systems

Capabilities Development Document for the Indirect Fires Protection Capability



FMTV-based



FCoE



ASA(ALT)

Stryker-based



Technology to Transition

HEL TVD
100 kW Demo

PEO MS

Data to Inform Requirements



SMDC

HELMTT
50 kW Demo



MMHEL
Demonstration



MEHEL



TTP & CONOPS

Initial Capabilities Document For Maneuver Short Range Air Defense Capability



HEL Weapon System Development and Transition

HELMTT

Provides key
knowledge
points for
HEL TVD



Key Events

- ✓ FY14 – 10 kW System Demonstration
 - ✓ FY16 – Maneuver Fires Integration Exercise
 - ✓ FY17 – Hard-Kill Challenge
 - ✓ FY18 – 50 kW-class Integration
 - ▶ FY18 – 50 kW-class Demonstration

High Energy Laser Mobile Test Truck (HELMTT)

HEL TVD

Demonstrate a mobile HEL system on a tactical platform that defeats
Rockets, Artillery, and Mortars (RAM)
and Unmanned Aerial Systems (UAS)



Payoff

- Flexible response to RAM and UAS threats
- Low-cost engagements
- Deep magazine

High Energy Laser Tactical Vehicle Demonstrator (HEL TVD)

“We are at the beginning of a next generation of warfare, where we use less kinetic means and instead put energy on a target. It’s brilliant. It’s limited only on your power source, and in the future, it could have almost unlimited potential.”

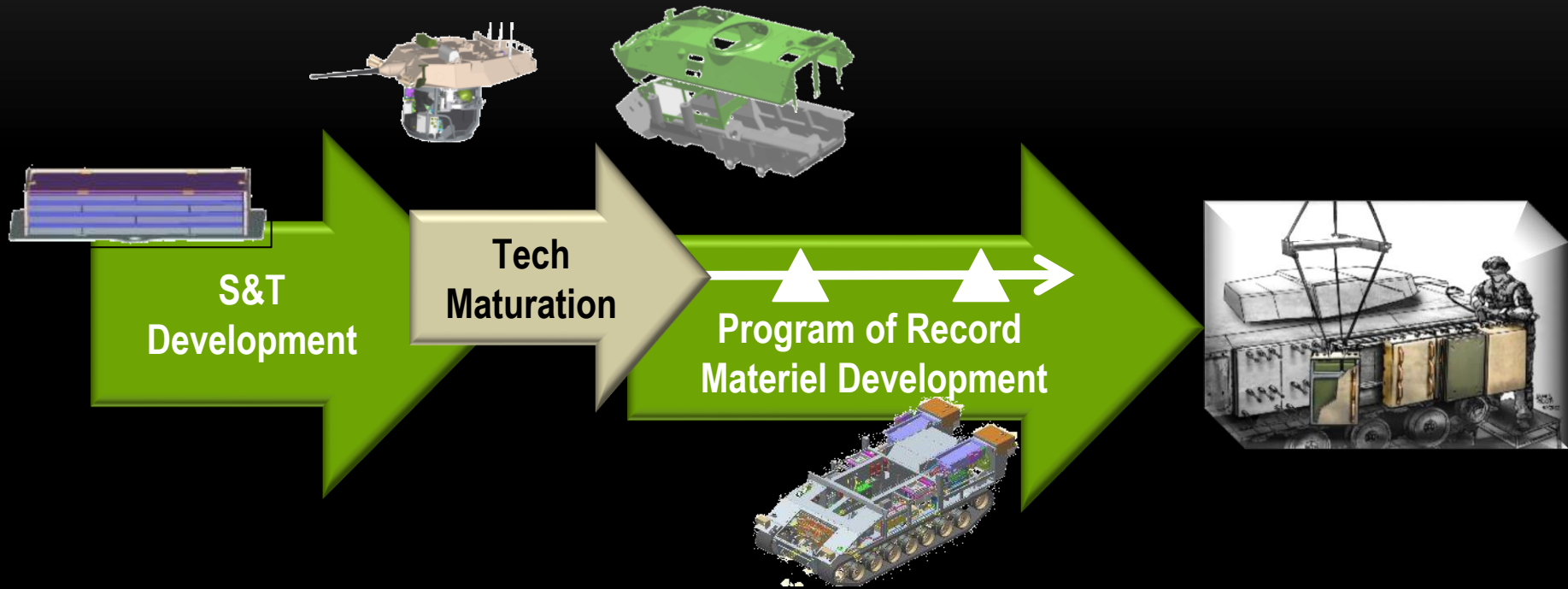
JWA Spokesman



Joint Warfighting Assessment (JWA)

Mobile Experimental High Energy Laser (MEHEL)

- Mature Key Capabilities The Army Needs
- Apply When And Where Appropriate To “Ramp Up” Technology Insertion



- Experimental Prototyping In Advance Of Requirement For Future Army Program Of Record
- Developmental Prototyping To Inform Enhanced Requirements

Technology Maturation Initiative

Technology Maturation Initiative



MMHEL

Demonstrate a 50 kW-class combat-platform-based system that can maneuver with Brigade Combat Teams to defeat UAS, RAM and ISR threats

Multi-Mission High Energy Laser (MMHEL)

- 
- Path To Transition Technology
 - HELMTT Provides Key Knowledge Points
 - HEL TVD Demonstrates A Mobile HEL System
 - MEHEL Informs TTPs And CONOPS
 - MMHEL Technology Maturation Initiative
 - Recent Experiments Demonstrate Progress

Summary



THANK YOU

Distribution Statement A: Approved For Public Release; Distribution Is Unlimited
USASMDC/ARSTRAT Public Release # 7117, 7144, 7165, 7178, 8030, 8031

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.

LEARN MORE:

[DOWNLOAD
AGENDA](#)

[PURCHASE
YOUR PASS](#)

[CHECK OUT OUR
SPEAKER FACULTY](#)

[SPONSORSHIP
OPPORTUNITIES](#)