Virtual Domain Based CIED Training Capabilities

Agenda

- Reconfigurable Vehicle Simulator and Trainer (RVS and RVTT)

- Virtual Clearance Training Suite (VCTS)

- Maximizing Virtual CIED Training

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RECONFIGURABLE VEHICLE SIMULATOR
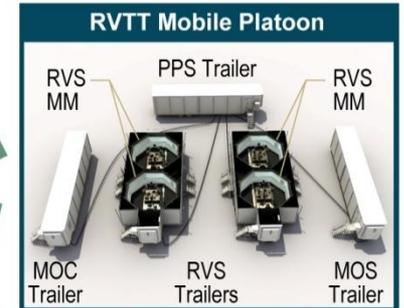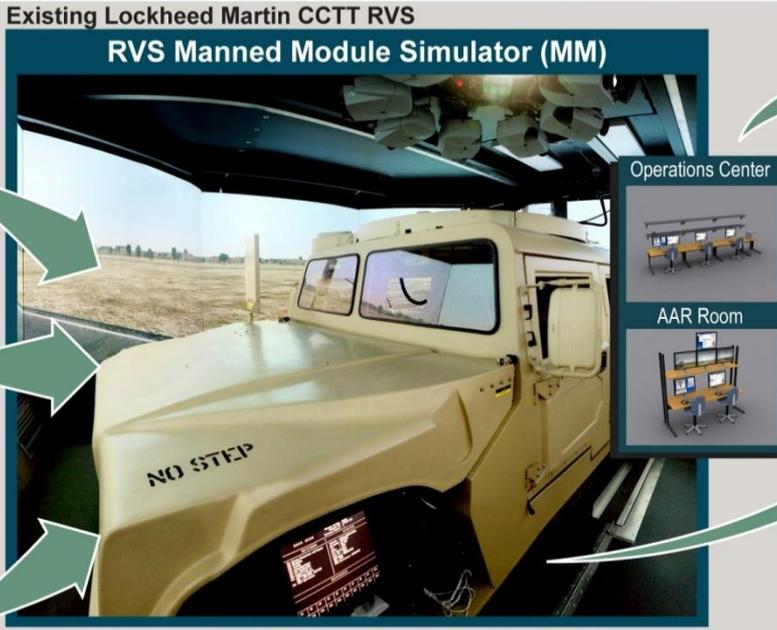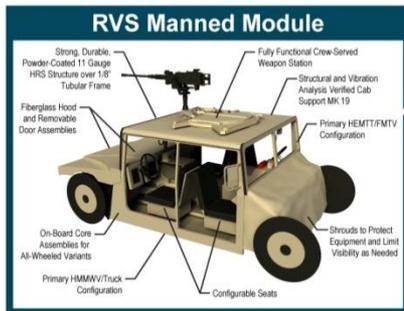
Mobile RVTT can attach to fixed sites or mobile CCTT Platoon Sets to perform Section, Platoon or Company/Troop level collective virtual training

RVS Trailer
RVS MM

Mobile Supporting Infrastructure

360° Virtual Environment

Existing Lockheed Martin CCTT RVS

RVS Manned Module Simulator (MM)

Operations Center

AAR Room

Weapons

AT4
M249   M9
M4
M16   M2
M240
MK19

NO STEP

RVS Manned Module

Strong, Durable, Powder-Coated 11 Gauge HRS Structure over 1/8" Tubular Frame

Fully Functional Crew-Served Weapon Station

Structural and Vibration Analysis Verified Cab Support MK 19

Fiberglass Hood and Removable Door Assemblies

Primary HEMTT/FMTV Configuration

On-Board Core Assemblies for All-Wheeled Variants

Shrouds to Protect Equipment and Limit Visibility as Needed

Primary HMMWV/Truck Configuration

Configurable Seats

RVTT Mobile Platoon

RVS MM   PPS Trailer   RVS MM

MOC Trailer   RVS Trailers   MOS Trailer

RVTT System (Fixed Site)

RVS MM   SAF AAR

RVS MM

RVS Modules Can be provided as a Fixed Site Platoon Set:

CCTT System (Fixed Site)

RVS MM   RVS MM

- RVS Module Can Be Configured As:
  - M998, M1026 HMMWVs
  - M977, M978 HEMTTs
- Future Kits Can Include:
  - Stryker Variants
  - M1117 (ASV), M707 and M1200
  - M1151, HEMTTA4 and MRAP

RVS Modules can link to CCTT and AVCATT for full interactivity for the LVC-IA

Current RVS, RVTT, CCTT CIED Training Capabilities

- Counter Radio-Controlled Improvised Explosive Device (RCIED) Electronic Warfare (CREW-2) system is fielded in RVTT and CCTT RVS manned modules. CREW integration into Abrams and Bradley manned modules is programmed for FY 13-14.

CREW Antennae and Remote Control Unit

Upcoming Enhancements to RVS, RVTT, CCTT

- Upgrade RVS projectors to provide near 20/20 eye limiting resolution
    - Increase resolution from: 1,400 x 1,050 to 4,096 x 2,160 pixels

- Upgrade RVS 11 Channel EPX-50 Image Generators
    - Support high resolution projectors
    - Support SE Core Databases, Moving Models, Individual Combatants

- Upgrade RVTT/CCTT system software

- Outcome: Provide Increased IED detection, recognition and identification ranges

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RVS and RVTT
CREW-2 CIED Training Capabilities

- In a virtual environment, vehicle crews and units train to conduct combat, maneuver support, or sustainment operations in ground vehicles and employ CREW in support of their missions.

- Reinforcement of the following concepts or tasks are achieved in the context of these virtual training exercises:

(1) Awareness of CREW limits and capabilities
(2) Perform basic CREW operator and leader tasks
(3) Plan for and overcome communications Interference
(4) Plan CREW distribution within the virtual convoy plan
(5) Execute maneuver drills with respect to CREW capabilities
(6) Visually see and understand simulated CREW use and coverage in an AAR (unclassified ranges)
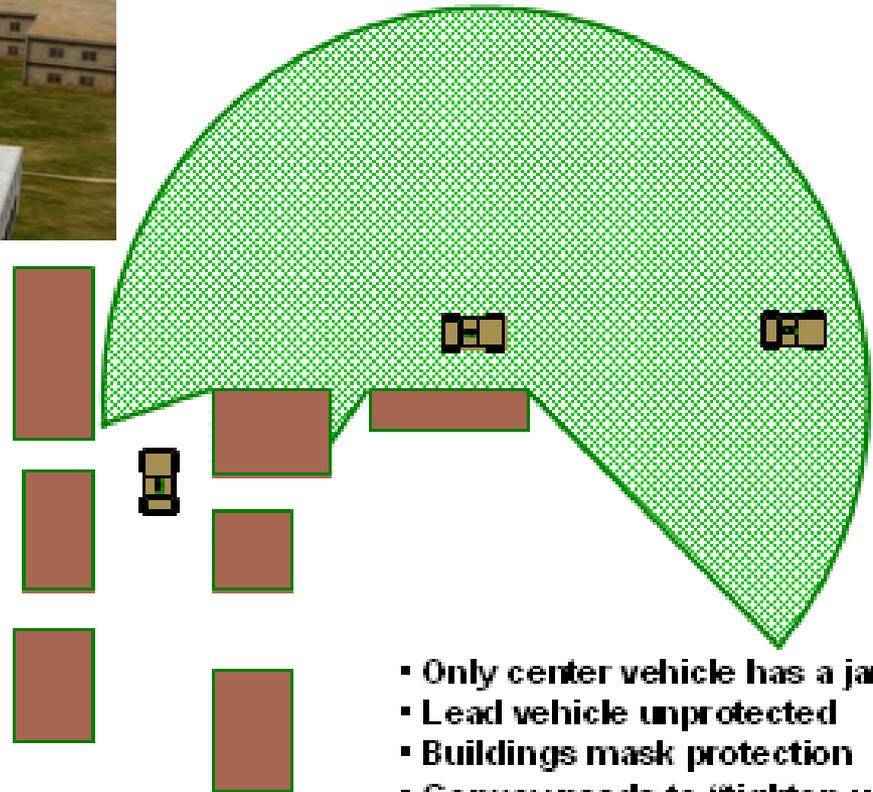
CREW Portrayal in the Virtual Environment

Visualization of CREW Coverage
as seen in Instructor station or AAR

Although not evident in this drawing, CREW would be influenced by buildings and terrain

- Only center vehicle has a jammer
- Lead vehicle unprotected
- Buildings mask protection
- Convoy needs to "tighten-up"

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Virtual Clearance Training Suite (VCTS)
Engineer Route Clearance Companies and Platoons
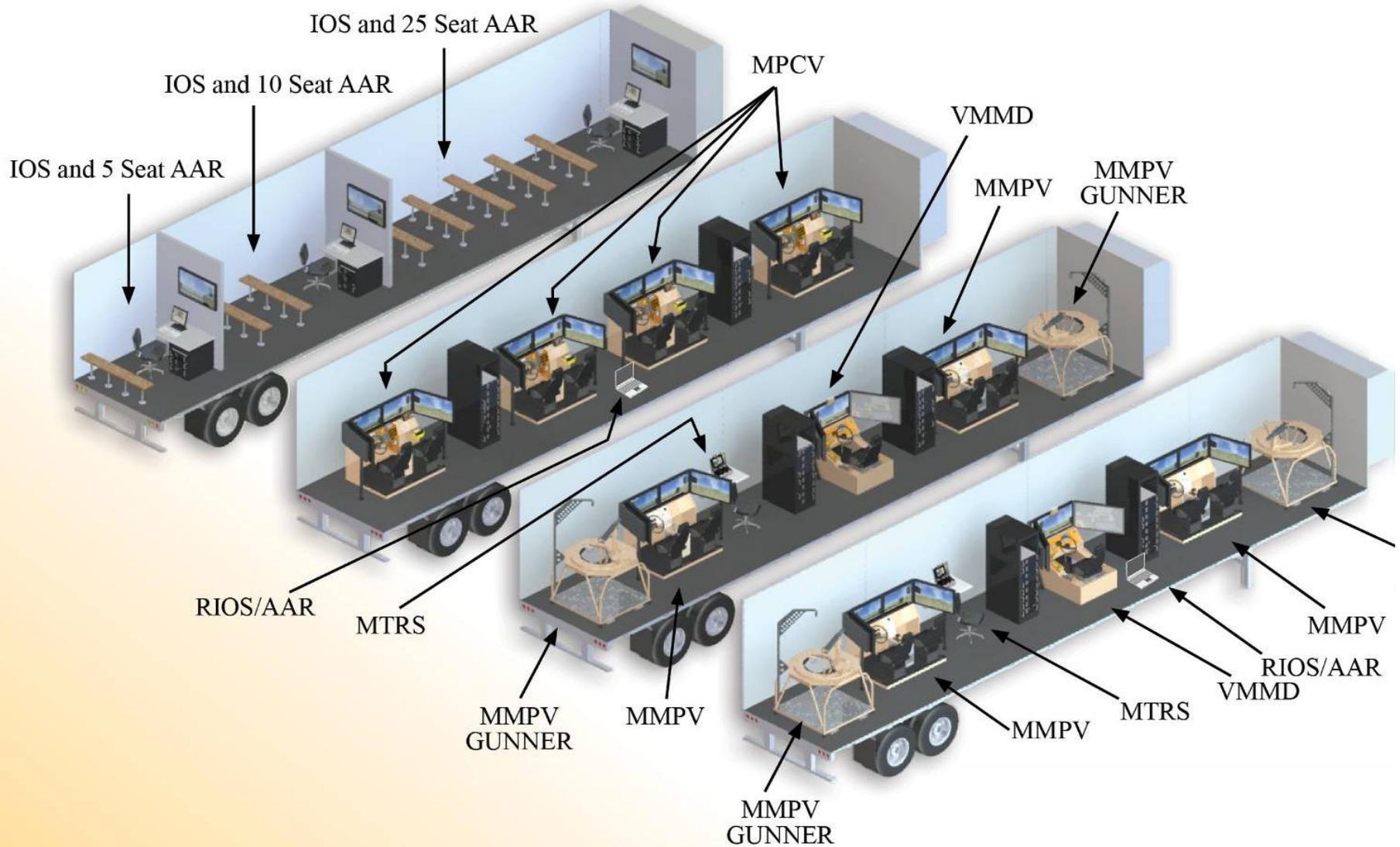
<u>CHARACTERISTICS</u>

- Provides classroom instruction and mobile virtual simulator environment

- Vehicle Simulators networked for collective route clearance mission training and individual equipment skill training

- The elements of the VCTS are;
  - Mine Protected Clearance Vehicle (MPCV) ("Buffalo")
  - Vehicular Mounted Mine Detector (VMMD) ("Husky") with the Mine Detonation Trailer (MDT)
  - Medium Mine Protected Vehicle (MMPV) ("RG31/33")
  - Man Transportable Robotic Systems (MTRS)

- 28 VCTS will support unit clearance companies, select regional training sites, and MSCoE Institutional Training. Fielding commences mid FY12

CAC

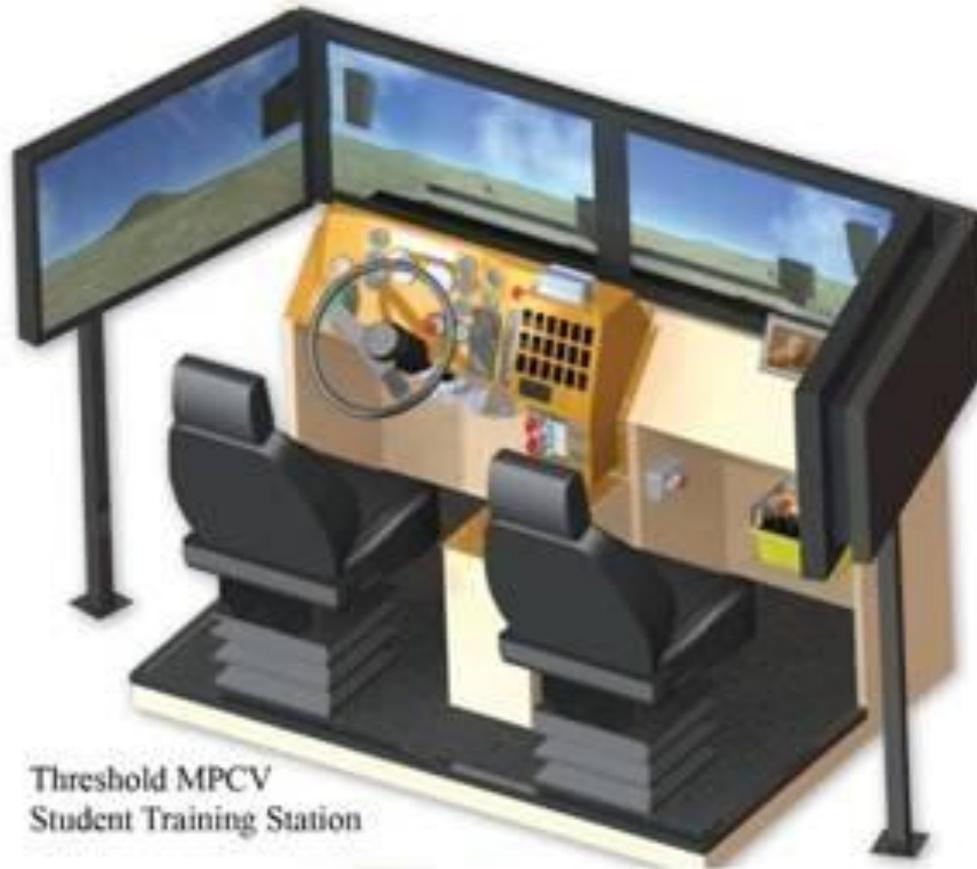United States Army Combined Arms Center

VCTS Summary

- Trains basic to advanced route clearance skills for Route Clearance and Area Clearance Companies and Platoons.

- Geo-typical terrain databases replicate Europe, Afghanistan and Iraq.

- Has realistic Buffalo arm and camera control boxes, Husky Peripheral equipment controls, and actual Operator Control Unit for the Talon IIIB robot (MTRS)

- Provides After Action Review (AAR) Capability.

- Instructors can modify scenario conditions and events such as IED explosions, vehicle traffic, and crowds in real time allowing flexibility in training.

- Has associated (crew-served) weapons systems for MMPV Gunners.

- Allows for future upgrades of Clearance/Area systems and appended subsystems such as Ground Penetrating Radar, blowers, rollers, etc.

IOS and 25 Seat AAR

IOS and 10 Seat AAR

IOS and 5 Seat AAR

MPCV

VMMD

MMPV

MMPV GUNNER

RIOS/AAR

MTRS

MMPV GUNNER

MMPV

MMPV

RIOS/AAR

VMMD

MTRS

MMPV

MMPV GUNNER

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VCTS Buffalo (MPCV) Virtual Crew Station

Threshold MPCV
Student Training Station

VCTS Husky (VMMD) Virtual Crew Station

Threshold VMMD Student Training Station

VCTS RG-31/33 (MMPV) Virtual Crew Station

Institutional MMPV Student Training Station
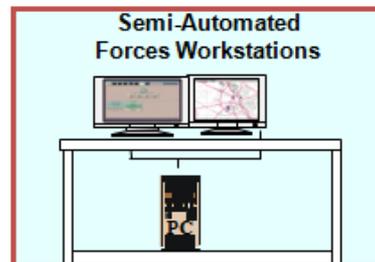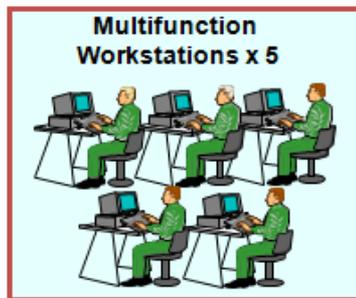shown on 3 DOF motion platform

VCTS Talon (MTRS) Virtual Crew Station

What's Coming

Dismounted Soldier (DS)

- Part of the Close Combat Tactical Trainer (CCTT) program

- Net ready and integrated with RVS / RVTT & AVCATT and emulated battle command systems.

- Train Soldiers and units (up to company level) in both doctrinal & TTP tasks and psychomotor skills

- Provides mission rehearsal capability on geo-specific (DS Block II / Future) terrain

- Replicates Army force structure, weapons/equipment, and supports ARFORGEN training

- Suite consists of nine immersive man-wearable systems, five multifunctional workstations (MFWS) for true combined arms capability, AAR station, OPFOR station and scenario generation station

Virtual Soldier Immersive System x 9

Multifunction Workstations x 5

Semi-Automated Forces Workstations

Master Control Console/ AAR Workstations

3-D VISUALIZATION

Future (FY12) Dismounted Soldier (DS) CIED Training Capabilities

- **Train all currently approved individual and collective dismounted CIED-related tasks**

- **Fielded to U.S. Army CIED Home Station Training Lanes**

- **Block I (FY12) may be partially interoperable with CCTT**

- **Block II/Future fully integrated with the LVC ITE**

Dismounted Soldier–Virtual Warrior

Centerpiece of the Dismounted Soldier System

Soldier-Leader Simulator
"Virtual Warrior"

- Provides the capability to conduct dismounted Soldier operations (individual to company) virtually
- Soldier can engage point or area targets with doctrinally assigned weapon
- Dismount from vehicles and aircraft
- Move in doctrinally correct formations
- Can walk, run, low crawl, jump, crouch, lay prone, climb stairs
- Recover wounded personnel
- Throw smoke and grenades
- Communicate via doctrinal voice and data communications
- Use hand and arm signals

ARNG's MRAP-Virtual Vehicle Trainer (M-VVT)

Trailer 1:
- 1 Talon Robot
- 1 JERRV Station
- 2 Instructor Operator Stations
- 1 AAR Theater

Trailer 2:
- 2 Buffalo Stations
- 2 Husky Stations
- 1 Instructor Operator Station

Trailer 3:
- 4 RG-31 / M-ATV Stations

11 Systems to be fielded in FY 12

Are We Maximizing Virtual Training?

- Many CATS do not list or specify "virtual" events". Adding virtual events to applicable CATS supports a Live-Virtual gated training strategy and improves training outcomes. However, if you consider the steps and scenarios listed for live STT and STX events but replace the live training venue with a virtual environment, many of the same Command, Control, and Coordination tasks can be trained or practiced.

- This makes eventual live training more effective with more first time GOs

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Installations	RVS O/H	M1 O/H	M2 O/H	RVTT O/H							
Fixed CCTT, M1,M2,RVS	QTY= Manned Simulators										
Fort Benning	6	14+	14+	0							
Fort Stewart	4	14	14	0							
Fort Hood	4	14	14	0							
Fort Bliss	4	14	14	0							
Fort Riley	4	14	14	0							
Fort Carson	4	14	14	0							
Camp Casey	4	14	14	0							
Mobile CCTTs											
California		4	4	0							
Minnesota		4	4	0							
Tennessee		4	4	0							
Mississippi		4	4	0							
North Carolina		4	4	0							
Pennsylvania		4	4	0							
Grafenwohr		4	4	0							
Schweinfurt		4	4	0							
				0							
				0							
				0							
RVTT Sites				0							
Germany		4	4	4							
Fort Leonard Wood				8							
Fort Wainwright				4							
Fort Richardson				4							
Fort Polk				4							
Fort Drum				4							
Fort Bragg				4							
Fort Lewis				4							
Scholfield Brks				4							
Fort Campbell				4							
Fort Sill				4							
Fort Dix				4							
Camp Bullis				4							
Fort Jackson				4							
Fort Lee				8							
Camp Atterbury				4							
SOF Campbell				4							
SOF Bragg				4							
Fort McCoy				4							
Camp Roberts				4							

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