



# Virtual Integrated MOUT Training System (V-IMTS)



## TECHNOLOGY DEMONSTRATION / EVALUATION

**SEPT 21 – 30**

**Cassidy MOUT Site  
FT CAMPBELL, KY**

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# Purpose



- Background
- Program Objectives
- Participants
- Timeline
- Technology
- Program Execution
- Applications

**Virtual Cassidy MOUT Database**





# V-IMTS History/Funding



- What is the Defense Acquisition Challenge Program?
  - New Program Office of the Secretary of Defense
  - Charter: Fund **Prototype** Technologies that are mature enough to transition from the lab and into the hands of Soldiers
- Program History Funding
  - Proposal from PEO STRI & RDECOM
  - Awarded FY03-05 R&D Funding





# V-IMTS Program Objectives



- L/V/C Linkage Validation (KPP#3 Of IMTS ORD)
- Leverage Capabilities
  - Soldier Combined Arms Tactical Trainer (S-CATT)
  - Virtual Emergency Response Training System (VERTS)
- Soldier Involvement
  - Training (STX & VTX)
  - Evaluating Technology





# Participants and Roles



- **PEO STRI/PM GCTT:**
  - Overall Program Management for the V-IMTS program
  - Coordination of Effort @ Ft Campbell
  - Deployable shelter development
  - Responsible to Report to the DACP Office
- **RDECOM:**
  - Engineering Support
  - Technical Leads for the Overall Effort



# Participants and Roles



- **PEO STRI/PM TRADE-DT:**
  - I-MTS Project Management
  - Provide Imagery Data for Cassidy MOUT Site
  - Technical Leads on the I-MTS
  
- **Army Research Institute:**
  - Develop Technical Demonstration Plan
  - Conduct Demonstration and Collect Data
  - Analyze Data / Develop Results Report



# Participants and Roles



- Ft Campbell, KY:
  - Cassidy MOUT Site Chosen for Integration
  - Soldier Support for Demonstrations
- Defense Acquisition Challenge Program:
  - Funding Source
  - Responsible to Report to Congress on Success of Effort



# Participants and Roles



- Advanced Interactive Systems/Reality By Design:
  - Prime Contractor for the Immersive Environment
  - Integrate Immersive Environment into the Deployable Shelter
  - Develop Database of Cassidy MOUT Site
- Institute For Simulation & Training (IST):
  - After Action Review System
  - Integrate Cassidy MOUT Database



# Participants and Roles



## Requirements Development:

- ATSC
- TPIO Virtual
- USA Infantry School
- FORSCOM



# V-IMTS Timeline



- Funding Increment Received – Nov 03
- Contract Award – Feb 04
- Integration Testing -Contractor's Facility– Aug 04
- Deploy to Ft Campbell – Aug 04
- Conduct Technology Evaluations/Demonstrations – Sept 21-30, 2004
- VIP Demos – Sept 29-30
- Closeout Report Submission– Jan 05

# Virtual/Live Environments



Virtual

Tactics, Techniques  
& Procedures (TTPs)



Live



Mission Rehearsal



Dynamic  
Terrain \*\*



Integrated AAR





# V-IMTS Description



## Full Spectrum Training

### Virtual

Virtual training of individual and collective tasks in immersive suites and desktop computer stations. DIVAARS feedback from trainer for individuals or groups.

### Live

Live training of individual and collective tasks in an instrumented MOUT facility. AAR feedback from trainer for individuals or groups.

### Constructive

OneSAF Testbed Baseline (OTB)  
(Semi-automated Forces)



# **Virtual-Integrated MOUT Training System: Evaluation/Demonstration (ED)**

**Bruce W. Knerr  
US Army Research Institute**



# V-IMTS Evaluation/Demonstration



- Objective: to evaluate the technological maturity of the virtual simulation components and the proposed Soldier CATT Infantry Squad configuration, which consists of a mix of
  - “Stand-up” immersive simulators for Squad and Fire Team Leaders
  - Desktop simulators for individual Soldiers
- Primary focus is on usability, what Soldiers can and cannot do well in the virtual simulators, and the training consequences
- Secondary focus on the effectiveness of the training, and transfer from the virtual to the live setting
  - Self report questionnaires by Leaders and Soldiers
- Primary product is recommendations for improvement



# Evaluation/Demonstration Overview



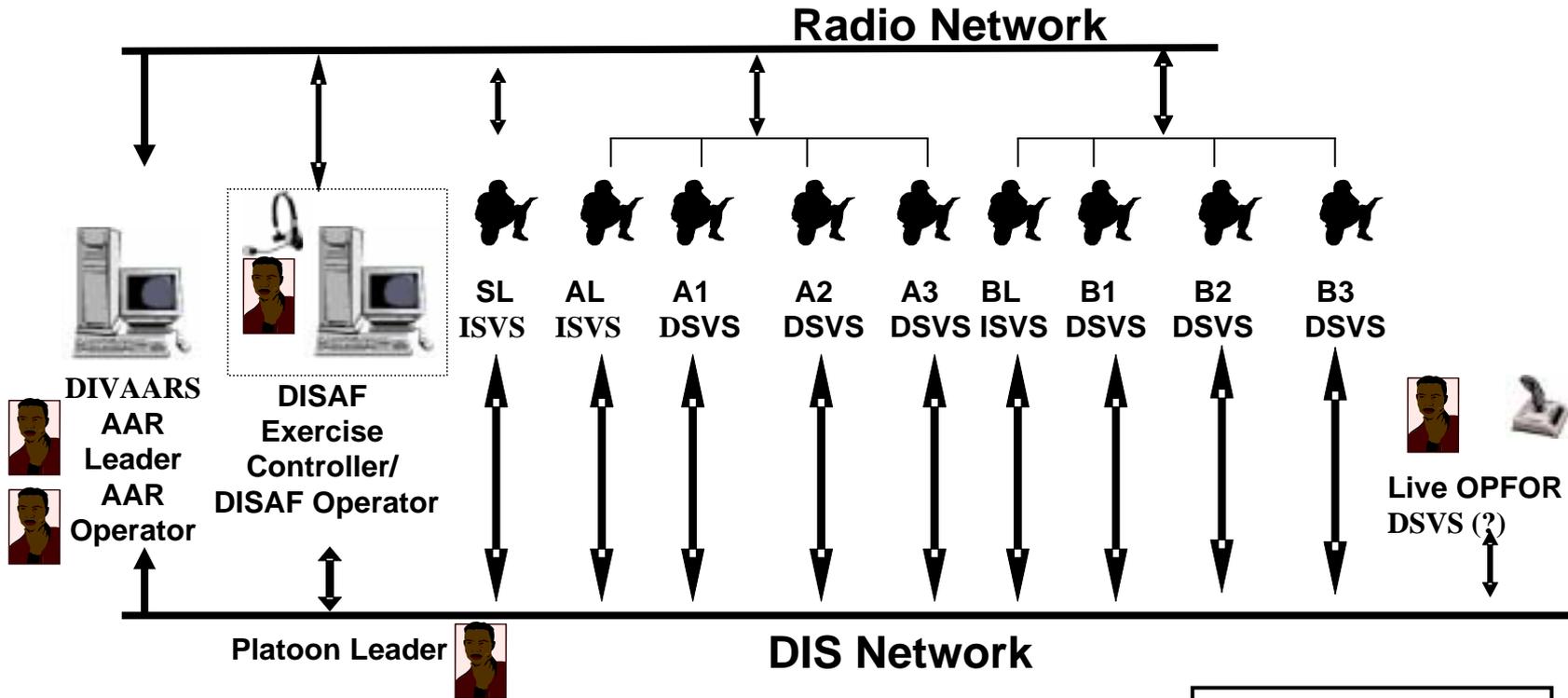
- Three squads of Soldiers conduct exercises using the immersive simulators
- Each squad participates in exercises over two days
  - The first and last exercises will be conducted in the live MOUT site
  - The remainder will be conducted in the virtual simulators
- Scenarios:
  - Search a building
  - Assault a building
  - Multiple variants of each mission
- Execution time for each scenario about 20 minutes
- Measures
  - Virtual AAR system records objective performance and communications during the virtual exercises
  - Soldiers rate the ease with which they could perform approximately 50 tasks in each simulator
  - Leaders rate their own skill improvement
  - Interviews for strengths and weaknesses



# V-IMTS Eval/Demo Design



Date	23 Sep	24 Sep	27 Sep <i>Hurricane Plan</i>	28 Sep	29 Sep	30 Sep
Squad	1	1	2	2	3	3
Exercise 1	Live	Virtual	<b>Live</b>	Virtual	Live	Virtual
Exercise 2	Virtual	Virtual		Virtual	Virtual	Virtual
Exercise 3	Virtual	Virtual		Virtual	Virtual	Virtual
Exercise 4	Virtual	Live		Live	Virtual	Live
Other		Questionnaires & Interviews		Questionnaires & Interviews		Questionnaires & Interviews



- Key Positions**
- AAR Leader – Actual Platoon Leader
  - Platoon Leader (role play) – Actual Platoon Sergeant
  - Exercise Controller/DISAF Operator (2)
  - AAR Operator
  - Live OPFOR (2)

**ISVS = Immersive SVS**  
**DSVS = Desktop SVS**



# Evaluation Data



- **Simulator Capability Questionnaire**
  - **Soldiers rate how well they could perform a variety of activities in the simulators**
- **Training Effectiveness Questionnaire**
  - **Leaders and Soldiers rate performance changes on 11 functions**
- **Symptom Checklist**
  - **Leaders and Soldiers rate physical symptoms**
- **Structured Interview**
  - **Leader/Soldier feedback**



# Simulator Capability Questionnaire



## Representative Items

- **Move through open areas as a widely separated group**
- **Maneuver around obstacles**
- **Determine other team/squad members' positions**
- **Locate assigned areas of observation, e.g. across the street.**
- **Distinguish between friendly and enemy fire**
- **Identify civilians.**
- **Communicate enemy location to team member**
- **Aim weapon**
- **Fire weapon in short bursts**
- **Engage targets within a room**



# Training Effectiveness Questionnaire



## Representative Items

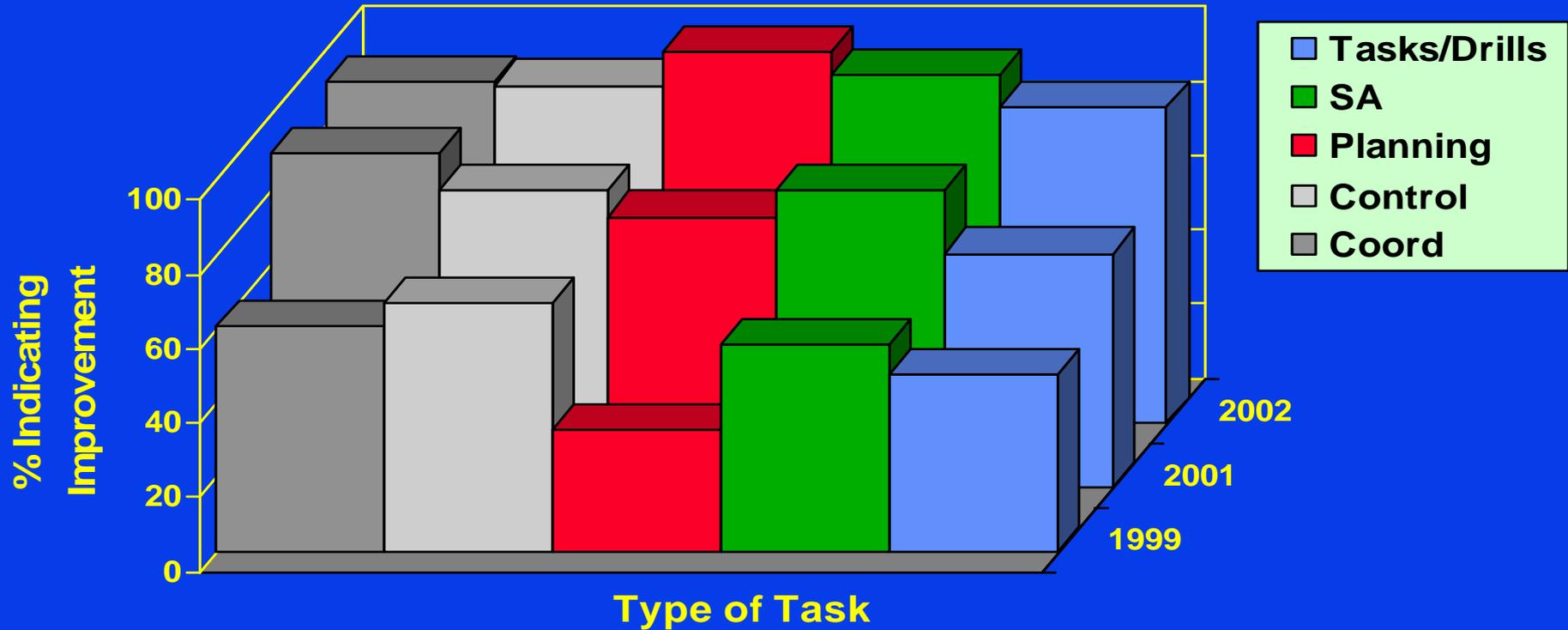
- **React to Contact Battle Drill**
- **Assess the tactical situation**
- **Control squad or fire team movement while *NOT* in contact with the enemy**
- **Plan a tactical operation**
- **Control your squad or fire team**
- **Coordinate activities with your chain of command**
- **Communicate with members of your team or squad**



# What We Expect to Find (Data from 1999 – 2002 exercises)



## Percentage of Leaders Indicating Improvement



# System Commonalities



## Immersive Trainer

Terrain Databases  
Rapid Terrain Gen  
AAR/SAF Station  
SAF Behaviors  
Models



Soldier Combined  
Arms Tactical  
Trainer  
(S-CATT)

Reconfigurable  
Vehicle Simulator



Virtual  
Emergency  
Response  
Training System  
(VERTS)

Integrated MOUT  
Training System  
(I-MTS)



★ Combining requirements for  
integrated materiel solutions



Combat Trauma  
Patient System