U.S. Army Squad Overmatch Study

Focus on the Human Dimension to Optimize Performance

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Force 2025 Human Dimension Objectives*

**Cognitive Dominance**

**LOE#1: Strategic Objective**
By 2025, the Army has the capability and capacity to optimize the performance of every Soldier and Civilian in the Total Force.

**Endstate**
An Army of cohesive teams of trusted professionals who adapt and win in a complex world

**Realistic Training**

**LOE#2: Strategic Objective**
By 2025, the Army conducts training in complex environments to build cohesive teams that thrive in ambiguity and chaos.

**Institutional Agility**

**LOE#3: Strategic Objective**
By 2025, the Army Institution rapidly adapts to changing situations, seizes opportunities, and fields innovative solutions in advance of need, while maintaining the Army as a profession.

*LTG Brown’s briefing to Force 2025 Human Dimension Realistic Training Industry Forum, 05 February 2015.*

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Squad Overmatch Study Vision

What
Optimize squad performance and build cohesive teams

How
By integrating training for cognitive, physical, and social skills with combat realistic stressors into existing gaming, virtual, live training environments

A human dimension flu shot in order to optimize human performance
Study Origin

• 2011 AUSA Conference, MCoE CG presented the concept for the Squad as the Foundation of the Decisive Force

• Presentation seeded concept for Squad Overmatch Study submission in 2012 to the Army Study Program Management Office

• The Army Study Program Management Office (Army Chief of Staff G-8) awarded the Squad Overmatch Study as its top priority program
Squad Overmatch Road March

**FY13 (Concept)**
- Integrated Training Concept
- Training Aids Assessment
- Technology Evaluation

**FY14 (Evaluate / Demonstrate)**
- Foundation Education
- Stressors
- Gaming/Virtual/Live Scenarios
- Cognitive Focused AAR

**FY15 (Define / Refine)**
- Training Course Evaluation
- Cognitive, Physical, Social
- Training Program Insertions
- Combat Casualty Demonstration

**FY16 (Design / Develop)**
- Integrated Training Blueprint
- Develop Train-the-Trainer
- Analyze Soldiers and Trainers
- Training Support Package
- Design Experiment

**FY17 (Experiment)**
- Conduct Experiment
- Revise Blueprint
- Submit Requirements

**FY18 (Advise)**
- Influence and serve in advisory capacity to Army TRADOC
Squad Integrated Training Approach

Cognitive Skills Training$^1$

Physical Skills Training$^2$

Social Skills Training$^3$

Stress Exposure Training (SET) based exercises in existing Gaming, Virtual, and Live environments augmented w/technologies to enhance combat realism

Integrated AAR

Strategic Objectives:

1) CSF2 Mental & Resilience Skills
2) Warrior Skills from Battle Drills
3) CSF2 and ASA Skills

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Post Event Mental State

**Warrior Skills**
- Accept
- Reject
- Adapt

**Cognitive Skills**
- See
- Evaluate
- Realize

- Had a close call, was shot or hit, but protective gear saved you
- Being responsible for the death of an enemy combatant
- Exposure to Dead bodies or human remains
- Member of Patrol/Unit Killed in Action
- Engaging enemy with direct fire or returning fire
- Being responsible for the death of a noncombatant
- Attack by enemy on Forward Operating base or patrol base Perimeter
- Clearing or searching homes or buildings
- Seeing ill or injured women or children whom you were unable to help

Wounded in action or have a team member wounded in action
Indirect fire attack from Incoming artillery, rocket, or mortar fire
Existing Training Aids

- Army Games For Training (AGFT)
- Dismounted Soldier Training System (DSTS)
- Engagement Skills Trainer (EST)
- Shoot House (SH)
- Combined Arms Collective Training Facility (CACTF)
# Technology Selection Methodology

**Goal**: Optimal Human Performance

- **Achieve**: Proficiencies
  - Cognitive Skills
  - Physical Skills
  - Social Skills

- **Develop**: Skills
  - Problem Solving
  - Attention Control
  - Kinesics

- **Stimulate**: Stressors / Scenarios
  - Member of Patrol Killed in Action
  - Exposure to Dead Bodies
  - Seeing Injured Women / Children

- **Provide**: Training Aids / Technologies
  - Virtual Humans
  - CACTF
  - Game Engines
  - DSTS

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Foundation Education
Blending existing and new training programs

Foundation resilience and stress management training

**Baseline + Anomaly = Decision**

- Baseline Cues (anomalies) come in Clusters. The combat rule of 3’s dictates that anytime 3 or more anomalies are observed an action must be taken!

**Advanced Situational Awareness (ASA) - deception, atmospherics**

**CSF2 – building resilience**

**Stress Resilience in Virtual Environments (STRIVE) - introspective**

**Stress Resilience Training System (SRTS)**
- biofeedback, self-regulation
Technologies Selected for Demonstration

**Virtual Humans**

**Scents**

**Graphic Realism**

**Haptic**

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Virtual Training
Immersing Soldiers in the Game

DSTS with VBS2
Develop and Integrate
WRAIR Stressors

Realism Enhancement Enables
Cognitive and Situational
Awareness Training

- Squad member KIA
- Death of enemy combatant
- Death of innocent civilian
- Direct fire engagement with enemy
- Clearing & searching homes
- Seeing injured women you couldn’t help
- Squad member wounded in action

Technology Enhancement Demonstration:
Immersive lifelike resolution provides
cognitive realism

- Enables reading body language, facial
  expressions, atmospherics
- Realistic wounding models, building resilience
  and SA skills.

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Live Technologies

**Existing TADSS**
Limited Training

**Realism Enhancements Enable**
Warrior, Resilience and SET Training

- **Dynamic Human Interaction with Targets**
- **Virtual Targets & Interactive Avatars**

**Scenario / Environment Realism**
- IED / Indirect Fire
- Wounding / Trauma
- Improved Scenario Smells

**Integrated SET Scenarios with various technologies**

- **Haptic Technology:**
  - Pop-up Targets
  - MILES hit/kill feedback (vibration)

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Live Training Technologies

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Squad Overmatch Demonstration-2014

WHO: ASP (sponsor) – MCoE, PEO STRI, MITRE, ARL
WHAT: Training Demonstration for 3rd BCT/3rd ID Squads
WHEN: 17-26 June 2014 (Final Report: 30 September 2014)
WHY: Influence/Accelerate Army training technologies, strategies
SO WHAT: Reduce Soldier incidents of PTS and suicide
WHERE: Ft. Benning, GA (Clarke Simulation Center, CACTF Phase II)

RESILIENCE & SITUATIONAL AWARENESS TRAINING via STRESS EXPOSURE
Phase I - Information Provision

Phase II - Skills Acquisition

Phase III - Practical Application

Combat Realistic Technologies
Scents  Haptic  Interactive Targets

Graduated Training Continuum (Integrated Training)
Gaming  Virtual  Live

Technology Infusion into Army Training Aids

Data Collection: Structured Group Interviews w/Squads
After Action Reviews: Human Dimension-Focused

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Soldier Feedback

- 90% Agree: Training programs that focus on self-monitoring and self-regulation are important

- 90% Agree: High fidelity Game implementations of training scenarios are effective for training how to identify patterns of human behavior

- 100% Agree: Training applications that provide realistic scenarios are helpful in preparing for stressful combat situations

- 90% Agree: Use of Virtual technologies is effective for training situational awareness and resilience

- 90% Agree: Technologies that complement Live training, by introducing more realism, are effective at enhancing stress
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Squad Overmatch Study Team

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AEWE & NIE 16.2

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