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Customer Success Is Our Mission

2012 NDIA Joint Armaments Conference

Supporting a Blended Training Environment

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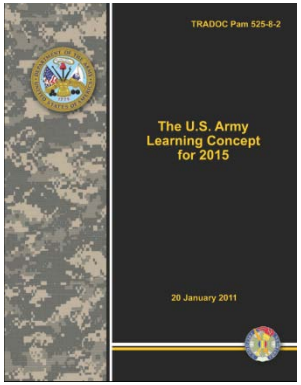
Agenda

- Blended Training
  - Concepts
  - Virtual and Gaming
- Improving Virtual Training
- Why Industry is Well-Positioned to Support
- Summary

Blended Training

- **Blended Training**
  - Blend Live, Virtual, Constructive, and Gaming environments into one collaborative model
  - Support the Army Learning Concept 2015 by combining conventional, face-to-face instruction with technology-delivered instruction
  - Leverage the strength's of the Digital Age Soldier
  - Allow Soldiers to train as they fight
- **Virtual / Gaming Training**
  - Virtual worlds, simulations, games
  - Often COTs products (VBS2)
  - Does not replace all live training but instead augments it:
    - Allow for multiple repetitions
    - Provided more training opportunities
    - Simulate environments that are difficult to replicate in live training



MCOE's Blended Training Concept

The U.S. Army's competitive advantage directly relates to its capacity to learn faster and adapt more quickly than its adversaries

Army Learning Concept 2015

Virtual / Gaming Training

Individual Skill Training and Education

- Formal weapons training to develop specialty and common skills
- Pros
  - Effective, instructor led training on specific weapon
  - Simulates form, fit, and function of real weapon
- Cons
  - Primarily used in schoolhouses
  - Hardware simulators go back in closet after course
  - Limited set of missions

Collective Training and Mission Rehearsal

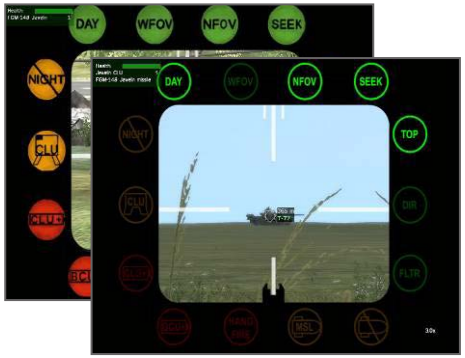
- Collective unit training and exercises to assess unit's ability to perform mission essential tasks
- Pros
  - Train as a unit
  - Unlimited set of missions and terrain
- Cons
  - Gaming representation of weapon
  - Mouse and keyboard used for many weapons
  - No form, fit, and function of real weapons

Collective / Gaming training can be improved by bringing the form, fit, and function back into the training exercise

Virtual Javelin Example

Basic Skills Trainer

- Individual skills trainer
- Standalone trainer
- Limited set of scenarios
- Primarily used in Schoolhouse
- Simulation Command Launch Unit (SCLU) used as controller
  - Form, Fit, and Function of real device



VBS2 Javelin

- VBS2 allows for collective training and mission rehearsal
- Gaming version of Javelin
- Many inaccuracies
  - Improper reticles
  - Incorrect thermal Image
  - No engagement sequence
  - Allows for improper targeting
  - Incorrect missile trajectory
  - Missile tube disappears off launcher

Raytheon Virtual Javelin

- Addition to VBS2 that provides an accurate representation of Javelin
  - Correct CLU functionality including engagement sequence
  - Requires proper target locking
  - Correct missile trajectories and time of flight
- Maintains the collective benefits of VBS2
- Integrates the SCLU from the Javelin BST as a controller

Raytheon's Virtual Javelin modifies VBS2 to provide a fully-functional Javelin in a collective environment

Beyond Virtual Trainers

Mobile Trainers

- Mobile versions of the Virtual Trainers
  - Focused on the technical aspects of training
  - Stand-alone & light-weight
  - Touch representations of controls
- Javelin Example:
  - Mobile trainer that teaches basics of operation
    - Image focus and contrast
    - Fire procedures

Virtual Learning Environments

- Web / mobile learning tools
  - Focused on the tactical aspects of employment
  - Supplemental training to reinforce concepts learned in school-houses
- Javelin Example:
  - Tool that teaches how Javelin usage in OEF
    - Employment
    - Lessons Learned

Embedded / Supplemented Trainers

- Integrated training using tactical weapon systems
  - Focused on the technical aspects of training
  - Uses tactical device
  - "Dock" a mobile device for computing power
- Javelin Example:
  - Dock the mobile trainer to the CLU
    - Walk through scenarios with actual tactical system

A suite of tools can be developed to enable training whenever and wherever needed

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Industry Support to Blended Training

- Supporting the Warfighter with better training tools ensures our product's are fully understood and utilized
  - Mitigates negative training often encountered with gaming representations of systems
- Industry is uniquely well-positioned to provide support
  - Complete knowledge of the weapon system and its functionality
  - Often responsible for the high-fidelity simulations
    - Reuse of models, images, and algorithms
  - Virtual products are very valuable for internal use
    - Demonstrate products to customers at trade shows and meetings
    - Demonstrate localized products to International customers
    - Virtually prototype capabilities for internal product development
- Industry can provide the tools that fill the gaps in blending training capabilities

Industry supporting Blended Training with virtual representations of systems is beneficial for all parties

Internal Use Example:
Precision Terminal Guidance (PTG) Viability

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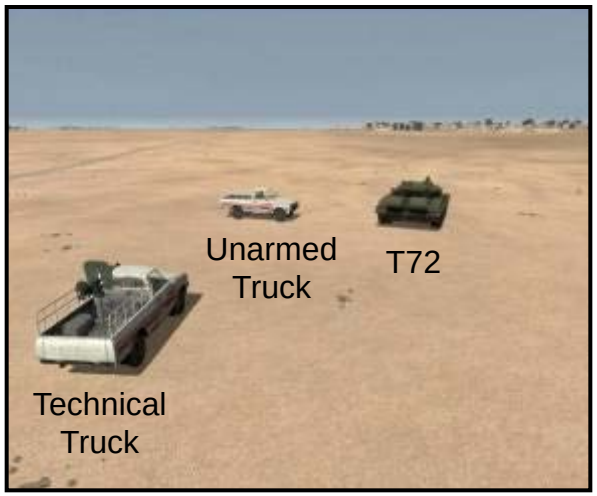
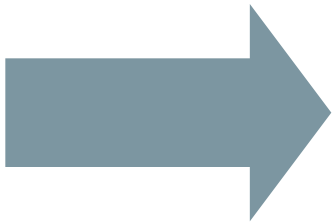
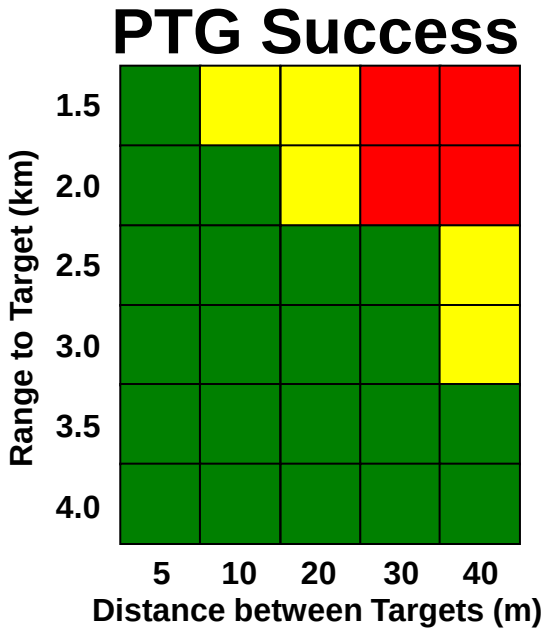
Analysis Question: Can gunner reliably re-designate the Javelin with proposed PTG functionality?







- Create scenario with 3 targets randomly placed
  - Gunner locks onto and fires at the T72
  - Gunner must positively identify technical truck and re-designate missile to it with PTG
- User test scenario with Engineers and ROTC cadets as Javelin gunners
- Answered questions on interface and GUI

User testing PTG with ROTC cadets as gunners allowed for Raytheon to prove feasibility of capability and improve the user interface

Raytheon's Virtual Combat Systems

Three Land Combat Systems have been completed

Virtual Javelin

Virtual SMAW II

Virtual TOW/ITAS

Two more are being developed in 2012

Virtual Excalibur

Virtual Stinger

- All systems are plug-ins for VBS2
  - Replaces gaming representations that lack appropriate fidelity
  - Can augment all existing Army trainers
- Mobile Versions of the trainers are in the future roadmap

Raytheon stands ready to support Blended Training

Summary

- Army Blended Training Model requires a Virtual / Gaming piece
  - Allows for repetition and modeling of difficult scenarios
  - Gaming products are often COTS software, resulting in “gaming” representations of weapons
- Training can be improved through the use of Virtual System “plug-ins” for the COTS software
  - Provides appropriate fidelity and allows for actual system hardware controllers
  - Mobile versions can be self-contained apps that teach the basics of the weapon system with touch interfaces
- Industry is uniquely positioned to help improve Blended Training with Virtual Systems
  - Experts on the systems and its simulations
  - Internal Uses:
    - Customer demonstrations
    - Internal prototyping and development

Industry is committed to providing the Warfighter with accurate training representations of their systems

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Questions?

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