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

*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
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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

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

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.

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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
Questions?

Brian Gaume
Raytheon Missile Systems
520.665.7057
Brian.Gaume@raytheon.com

Jon Peoble
Raytheon Missile Systems
520.545.7841
Jon.Peoble@raytheon.com