

# U.S. AIR FORCE IMPROVES INITIAL AND REFRESHER TRAINING WITH COMBAT ARMS VIRTUAL TASK TRAINER

Web-enhanced 3D simulations enable Airmen to receive weapons training anytime, anywhere

## BACKGROUND

The 342<sup>nd</sup> Training Squadron (TRS) at Lackland Air Force Base, TX, is responsible for training 3,000 Security Forces personnel annually through the U.S. Air Force Security Forces Craftsman course and Combat Arms Apprentice course. Training includes law enforcement, conventional weapons system security, ground combat skills, and small arms marksmanship training in nine ground weapon systems.

## CHALLENGE

All Airmen require weaponry certification through the Security Forces Craftsmen course and the Combat Arms Apprentice course. The current instructional process involves training with physical weapons, and referencing text-based manuals and/or video. However, instructors must deal with various challenges and limitations with this process. Though highly effective, physical weapons present the challenge of showing internal components and the interactions between them. Also, while low cost and easy to create, manuals and videos provide low learning effectiveness.

To increase instructional effectiveness and student retention, and to reduce instructional time, the 342<sup>nd</sup> TRS investigated ways to improve the current instructional process for weaponry familiarization through the use of web-enabled, 3D simulations.

## SOLUTION

To train Airmen to standard faster, the 342<sup>nd</sup> TRS is transforming its training process through *blended learning*, which integrates 3D simulations with traditional training methods such as technical manuals and video and physical weapons. The 3D simulations are used to provide Airmen with pre-classroom and refresher training on the cycle of operations

of each weapon. The same 3D simulations are used in the classroom to provide instructors with an interactive visual aid, and to provide Airmen with the ability to interact with 3D weapon models prior to training exercises on the physical weapons. The virtual training can be deployed via the USAF web site and or distributed by CD prior to attending class. To support this learning cycle, the 3D simulations are:

- Optimized for deployment via the Web or CD, without requiring plug-ins, to support pre-classroom and refresher training
- Highly interactive, providing students the ability to interact freely with the 3D models and view procedural animations
- Easy and quick to update to reflect new and/or updated procedures

## IMPLEMENTATION

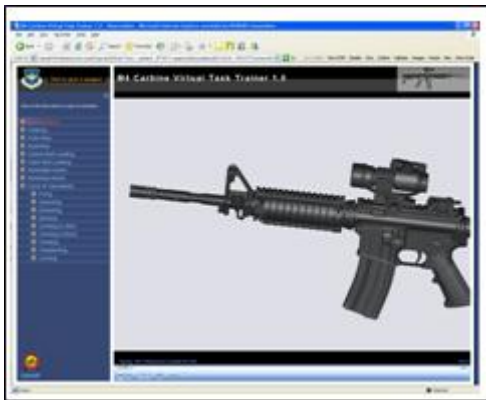
The AETC Education and Training Technology Application Program (ETTAP) funded the development of a Combat Arms Virtual Task Trainer.



USAF Combat Arms Virtual Task Trainer

The 3D virtual task trainer enables Airmen to access parts familiarization and animations depicting cycle of operations, and various procedures.

NGRAIN developed photo-realistic 3D models of the M203 Grenade Launcher, M4 Carbine, M240B Machine Gun, M249 Automatic Rifle, and M9 Pistol. Using NGRAIN Producer, these 3D weapons models were enriched with parts information and animations. The animations were created to show nomenclature, clearing, loading, field strip, reassembly, immediate and remedial actions, as well as the cycle of operations.



Virtual task trainer offers a better understanding between weapons' components and critical procedures

The virtual task trainer solution met the requirements of the 342<sup>nd</sup> TRS:

- The animations of critical procedures were exported to video files (AVIs), allowing Airmen to easily access the learning material over the Web and on CD without any plugs-ins
- The 3D models and animations used in the AVIs are made available to Airmen in the classroom for parts familiarization and review of procedures. Airmen are able to interact with the 3D models and animated procedures in real time, including disassembling and assembling, rotating, cross-sectioning, and viewing parts in context.
- Using NGRAIN Producer, subject matter experts and/or instructors can rapidly create and update the 3D animated procedures without any 3D experience or programming skills, thereby reducing the reliance on contractors and change orders.

## RESULTS

The USAF Combat Arms Virtual Task Trainer is currently implemented into the Security Forces Craftsman course and the Combat Arms Apprentice course at the 342<sup>nd</sup> TRS. It is also being made available online on U.S. Air Force training Websites and portals, making it accessible to any Airman no matter their geographic location.

The 342<sup>nd</sup> TRS expects that the implementation of the virtual task trainer will increase training effectiveness and student knowledge retention, as well as reduce the time required to train Airmen.

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