fats AR AUGMENTED REALITY WEAPONS TRAINING

Revolutionizing the Realism, Performance Assessment and Economics of Training

Developed for today's highly mobile military, security, and law enforcement entities, fats® **AR** by InVeris enables training with virtual targets in real-world locations. Users experience a new level of realism and performance assessment that aid in perfecting critical engagement techniques. fats® **AR** is highly scalable and portable making it ideal for training mission rehearsals in various locations to address short windows of opportunity. Unrivaled After-Action Review (AAR) capabilities with quick reset of scenarios enable more training sessions with a greater throughput of operators, thus changing both logistics and the economics of training.

IMMERSIVE REALISM FOR SUPERIOR RETENTION

Unlike virtual reality (VR) systems that provide a fully synthetic environment, fats® **AR** blends real physical environments, obstacles and live team members with Computer Generated Imagery (CGI) virtual characters, avatars, and assets for an unparalleled training experience. Trainee/operators see their own hands, feet, weapons, teammates and surroundings as well as CGI elements enabled by fats® augmented reality (AR) / mixed reality (MR) headset and system. fats® **AR** supports mission rehearsals in both the actual target location (such as diplomatic, vital assets, ships, schools, etc.) as well as training in a virtually-replicated layout of the specific location utilizing the real-time environment scan data and creation capability. Additionally, real and digital environments can be customized to emphasize various training techniques or to support specific scenarios. fats® **AR** is optimized for close quarter techniques (such as, urban, trench, shoot house), de-escalation of force scenarios, and other critical applications for military and law enforcement.

UNPARALLELED PERFORMANCE ASSESSMENT CAPABILITIES

fats® **AR** supports real-time monitoring and immersive multi-viewpoint After-Action Review to definitively identify trainee/operator performance and actions. This includes eye, head and muzzle tracking of all team members. The fats® **AR** AAR provides instructors and trainee/operators the ability to see progressive improvement for individuals and teams while conducting close quarter (urban, trench, shipboard, etc.) operations training which can't be achieved in a VR system.

fats® **AR** records and assesses performance, including shot placement of each trainee/operator, in real-time. This establishes a baseline that allows instructors and trainee/operators to accurately assess performance down to the second. As soon as the training is over, the environment can be easily and promptly reset.

CHANGING THE ECONOMICS AND LOGISTICS OF TRAINING

fats® **AR** changes the economics and logistics of readiness training and mission rehearsal. With fats® **AR** environment scanning and replication capability, training sessions can be held in almost any indoor location. This enables instructors and trainee/operators to be geographically separated in remote locations yet interact as if they were together for coordinated actions. This feature significantly reduces the cost of transporting and housing large groups and equipment for an on-site rehearsal and enables training at the point of need.

With conditions reset capability, one group of trainee/operators can evaluate performance in AAR while the next group trains soon after. This dramatically reduces idle time for each group and increases throughput over traditional training methods.

KEY PRODUCT FEATURES & CAPABILITIES

fats® **AR**'s immersive environment and interaction capabilities include:

- Support up to four trainee/operators simultaneously in the actual or 3D augmented live/virtual environment, posing realistic stress in a safe training setting.

- All trainee/operators see the real world, including their own physical features, weapons and magazines, and their actual co-located training partners.

- Interactive avatars provide adjustable actions, either during scenario setup or runtime, resulting in unexpected and dynamic scenarios for trainees/operators

- Realistic and customizable avatars can be easily changed, based on age, sex, race, body type and clothing style.

- Large room scanning. Participants can scan and train in rooms up to 10,000 square feet.

- High fidelity BlueFire™ weapons, including recoil, magazine replacement, weapon cant sensing, lockback on empty magazine, reloading and instructor-controlled simulated failures.

- Unparalleled After-Action Review allows for instructors to replay the trainee/operators actions for enhanced training recognition utilizing:.

  - Multiple eyepoint views
  - Shot placement
  - Operator's head direction
  - Birds eye view
  - Barrel/muzzle tracking
  - Immersive Observer runtime views and AAR walk-through
  - Shot trajectory
  - Multiple operator views
  - Operator's eye gaze
  - Movable camera
  - Active timeline

- Character actions for de-escalation. Instructors can make selected characters perform numerous actions, such as, getting on the ground, putting their hands behind their backs, and more.

- Microphone communication. Includes microphone recordings in after action reviews, and radio simulation between the instructor and trainee/operators.

- fats® **AR** Kits are supplied in compact, ruggedized cases for secure storage and transport in the military and law enforcement environments.

COMPARISON BETWEEN AUGMENTED REALITY AND VIRTUAL REALITY WEAPONS TRAINING	VR	AR
Possible motion sickness in trainee/operators from headsets.	yes	no
Able to use corrective eyesight lenses.	yes	yes
See and interact with the actual live environment.	no	yes
Move and engage through large areas, multi-room spaces, and multi-level buildings.	no	yes
Can use actual stairs.	no	yes
Can see your own body, team members weapons and equipment.	no	yes
Higher fidelity trainee/operator team interaction creating more effective skills transfer.	no	yes
Ability to conduct movement training without the risk of injury to trainees due to lapses in situational awareness between the physical and virtual world.	no	yes
Allows for an infinite number of scenarios that can be created on the fly that are driven by any new physical training space.	no	yes
Inherent supplied system ability to 3D map a location and import into system for mission rehearsal and remote training.	no	yes
Near future planned capability to be used with live weapons and devices.	no	yes
WEAPONS & DEVICES		
Bulky trackers on weapons or compromised ergonomics.	yes	no
Ability to use multiple weapons and devices per trainee/operator.	yes	yes
Conduct weapon drills including magazine changes, stoppages, etc.	no	yes
Use currently fielded BlueFire® weapons on projection systems (such as FATS 100, EST, ISMT, DCCT, WTSS, WTS) on fats® AR.	no	yes
TRAINING		
Use of hand field signals.	no	yes
Ability to tap/ touch other team members.	no	yes
Train in close formation with your team without bumping or tripping over them or their equipment.	no	yes
Able to interact with actual objects in the training area.	no	yes
Able to interact with your own and other team members equipment. E.g. Radios, medical equipment, breaching equipment, flash bangs etc.	no	yes
Utilizing your real environment as the training area. e.g. Rehearsals in a live shoot house prior to live	no	yes
Utilizing your real environment as the training area. e.g. Vital asset protection of aircraft in the actual hanger with a augmented aircraft allow for in location training without endangering the vital asset.	no	yes
Quickly mapping and importing 3D mapped environments that can be used in remote locations for mission rehearsal.	no	yes

InVeris