Modular Augmented Reality Tracking Equipment for Observers

Ravenswood Solutions combines synthetic elements with the real-world field of view.

Better Calls for Fire

In partnership with Lockheed Martin and SRI International, Ravenswood Solutions is pioneering an Augmented Reality (AR) capability to transition observers from classroom Virtual Reality (VR) simulators to personnel-worn AR devices that are hardened and designed for repeated field-use. The system was developed for the Office of Naval Research on behalf of the US Marine Corps.

This technology can be used anywhere in the world and substantially lowers training costs by simulating vehicles, aircraft and munitions. AR eliminates the boundaries of ranges, aircraft and munitions availability, and weather. With AR, troops can train wherever and whenever they want.

AR is invaluable in terms of training Fires Observers and Tactical Air Controllers. Deployed to actual ranges, in austere conditions, troops can hone their skills in calling for Close Air Support (CAS), artillery, naval gunfire, and Casualty Evacuation (CASEVAC), when air assets, artillery, targets, or munitions are unavailable, or their use is cost-prohibitive. Bypassing legacy training limitations of live fire, the training can be used on non-traditional ranges, such as an actual urban metropolis or a no-fly zone. With multiple iterations, observers exponentially increase proficiency with each evolution. Troops who once trained annually can practice regularly, and troops who are not specialized Fires Observers or Controllers will be able to train for incidental fire support. Finally, AR conserves financial and environmental resources while contributing to a safer, controlled training environment.

Modular Augmented Reality Tracking Equipment for Observers (MARTE-O)

Ravenswood's Modular Augmented Reality Tracking Equipment suite can be used alone or integrated with the larger ORION exercise control system, displaying live, virtual, and constructive entities in the context of a common operating picture. This AR system is tailored for indirect fire weapons, vehicles, air defense, special missions, naval gunfire, and other scenarios that are hard to replicate in live training. It is integrated with live force-on-force training.

Specifically designed for the nuances of fires observer training, Ravenswood's MARTE-O prototype system is comprised of five components:

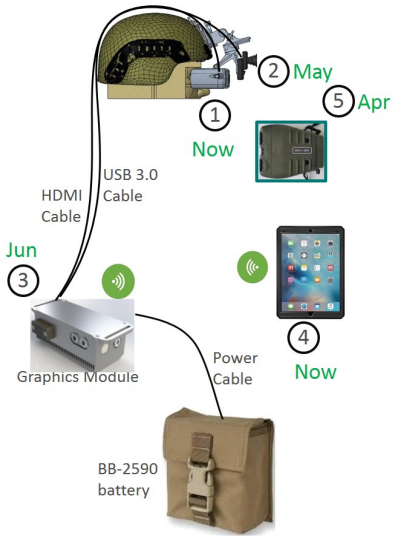
1. Head Mounted Display (HMD)
2. Sensor Module
3. Graphics Module
4. Instructor iPad
5. Vector-21 Binos Module

Synthetic aircraft and vehicles, and their direct/ indirect fires effects are observed within a video display (head-mounted, surrogate observer devices, or other) of the live operating environment with realistic physical movement. The synthetic elements interact with and can be obscured by real-world environmental factors, such as smoke, weather, or foliage.

AR breaks the live-synthetic barrier within the observer's field of view, displaying synthetic aircraft, enemy forces (OPFOR), friendly forces, and weapons effects against a video-generated backdrop of the real world.

Training Application Example

A pilot flying a synthetic fixed-wing aircraft (via a remote virtual simulator in Yuma, Ariz.) can receive a live call for fire from a Joint Terminal Attack Controller (JTAC) operating on the Chocolate Mountain Aerial Gunnery Range in Riverside County, Calif. The pilot can then engage the live OPFOR actors, recreated in her simulation, and the JTAC can respond properly upon "seeing" the synthetic aircraft and fires via his AR-equipped headset and binoculars. This level of awareness will enhance training and allow readiness to be more realistically assessed.



Key Features

- Allows for outdoor training on a range
- Mobile, deployable equipment
- Real-world conditions, visual obscuration incorporated
- Virtual targets displayed in the real world
- Can be used stand-alone or interoperable with other LVC systems
  - Can be used to "kill" MILES
  - Can work with existing flight simulators
  - Replicates fielded equipment for use in training (binoculars, laser range finders, etc.)
- Modular design allows for replacement with newer technology
- Iterative, accessible training
- Enhanced Perspective After Action Reviews
- No need for live munitions
  - Safety
  - Cost savings
  - Reduced environmental impact

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