IITSEC 2021: MVRsimulation integrates Part Task Mission Trainer with Varjo XR-3 headset

The PTMT with integrated Varjo XR-3 headset is being demonstrated in the Varjo booth (#3010) and the Battlespace Simulations booth (#1049) at I/ITSEC 29 November – 3 December, 2021.

Sudbury, MA, 30 November, 2021:

MVRsimulation has integrated the Varjo XR-3 mixed-reality headset into the fixed-wing Part Task Mission Trainer (PTMT), increasing suspension of disbelief for military fixed-wing pilot training.

MVRsimulation designed and built the PTMT to provide a very low-cost, quick-deploy cockpit training solution to fill the gap in current in-use mission tactics training systems for military fixed-wing pilots. The system aims to maximize suspension of disbelief for trainee pilots as they practice mission tactics and coordination in joint, networked environments. It can also operate as a standalone training solution.

The PTMT comprises an all-welded aluminum structure fabricated in the U.S., fully integrated cockpit shell, a curved display and notional aircraft hardware represented by touch screen displays for pilot interaction. The PTMT can be configured for training for current 3rd and 4th generation combat aircraft currently used by NATO nations thanks to its specially designed, patent-pending flight control stick that can be easily adjusted between side-stick and center-stick positions.

When integrated with the XR-3 headset, pilots are fully immersed in the real-time, 360° virtual world created by MVRsimulation's Virtual Reality Scene Generator (VRSG®) high-resolution, geospecific terrain and 3D models, while still being able to interact with physical equipment in the real world. Computer-generated/semi-automated forces are managed via integration with Battlespace Simulations' MACE, allowing solo or networked trainees to practice mission tactics in peer/near-peer complex training scenarios, such as penetrating advanced adversary air defences, air-to-air/air-to-ground engagement, and achieving and maintaining air supremacy.

The XR-3 integration also enables a real-time, pilot eye gaze tracking facility. VRSG harnesses the XR-3 headset's built-in, real-time 200 Hz pupil-tracking capability that can precisely capture even the smallest eye movement of the wearer when training in virtual reality and mixed-reality environments. VRSG then exports this data via DIS as a PDU log at the end of the training mission, and visualizes the pilot's head position, orientation, and gaze vector (with the gaze of each eye depicted as a color-coded cone) over the events of the training session for after-action review.

The PTMT-XR-3 integration will be demonstrated at I/ITSEC showing high speed/low altitude simulated flight over VRSG's geospecific terrain of Albacete, Spain, including dense urban building structures and 3D replica of Los Llanos Air Base; as well as showcasing the eye-gaze tracking capability.

Image: Flying in MVRsimulation's Part Task Mission Trainer (PTMT) wearing the Varjo XR-3 mixed reality headset. VRSG renders the out-the-window view in the headset and on the curved display. (Notice the pilot's hand on the controls is visible in the VRSG view.)

A video of the PTMT integrated with the XR-3 can be viewed [here](#).

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Notes to editor:

At I/ITSEC 2021, MVRsimulation technology will be demonstrated in the following booths:

Varjo (Booth #3010)

- The PTMT with XR-3 mixed reality headset.

Battlespace Simulations (Booth #1049):

- The PTMT with XR-3 mixed reality headset. See the PTMT running missions with computer-generated/semi-automated forces and virtual flight models managed via Battlespace Simulations' MACE. The self-contained, all-aluminum welded cockpit-based simulator will run high speed, low altitude air-to-air and air-to-ground missions over MVRsimulation's high-res, geospecific dense urban terrain of Albacete, Spain, with 3D replica of the Los Llanos Air Base. Also featuring the Varjo XR-3 mixed reality headset, which enables full immersion in the virtual world and real-time eye gaze visualization, while pilots interact with cockpit hardware.
- Battlespace Simulations will also demonstrate a new high-fidelity pilot Head-up Display (HUD) for a VRSG-simulated camera view from an MQ-9 Reaper. The MVRsimulation software provides both the 3D virtual world and KLV metadata for the simulated camera,

with the MACE software providing the training scenario and 2D HUD symbology to mimic a real MQ-9 Reaper unmanned vehicle.

ZedaSoft (Booth #1573):

- As delivered to U.S. Air Force Academy Multi-Domain Laboratory (MDL): Demonstrations of flight simulator and UAS/RPA Mockingbird Drone simulator as delivered recently to the U.S. Air Force Academy. The flight simulator utilizes ZedaSoft's Zuse simulator station in a three monitor out-the-window configuration, featuring VRSG visuals and 3D content. The UAS/RPA Drone simulator includes ZedaSoft's Mockingbird software with VRSG providing the HUD camera and sensor ball (EO/IR and SAR) simulation.
- XR Drone Training Demonstration: A drone pilot experience showing first-person viewpoint of a virtual flight environment mixed with a physical handheld drone controller to provide realistic drone pilot training. Featuring VRSG visuals and Varjo XR-3 head-mounted display.
- XR Flight Simulation Demonstration: ZedaSoft's Zuse simulation station with the Varjo XR-3 mixed reality headset to immerse the pilot in a high-fidelity realistic training environment. Virtual out-the-window view generated by VRSG visuals and 3D content.

Bugeye Technologies (Booth #1549):

- Mixed Reality Apache Simulator Demonstration: Bugeye Technologies is demonstrating its latest Reconfigurable Virtual Cockpit Trainer (RVCT) configuration integrated with ZedaSoft's CBA for Simulation framework and AH-64 Apache plug-in software. The latest upgrades to the RVCT include a mixed reality experience provided through a Varjo XR-3 head-mounted display combined with VRSG visuals and the cockpit's physical displays and hands-on controls. The realistic Apache flight model verified by U.S. Army aviators is provided by Bihrle Applied Research, Inc.

Immersive Display Solutions (Booth #1768):

- Trailer-Based Joint Fires Training System (TBJFTS) demonstration system: The TBJFTS is a self-contained mobile classroom for (accreditable) joint fires training that supports Type I, II, III, Laser, Day, Night-aided and Night Unaided digitally-aided close air support training. The trailer includes a Student Station, Ground Commander Station, Instructor Station, Pilot/Role Player Station and Mission Brief and After Action Review capability, with shore connections and optional generator supplying all required power to the training systems and trailer environmental systems. The system includes an IDSI VisionStation3 220 x 55 domed display with both Emulated (Mil-reticle Bino, PLRF, LTD) and Simulated (GPS receiver, ROVER video downlink, PRC-117/152 radio) military equipment at the student station. Featuring MVRsimulation's VRSG visuals.

TRU Simulation + Training (Booth #1201):

- Bell Invictus 360 simulator: Visitors will be able to experience the future of attack reconnaissance by flying the Bell Invictus 360 simulator. Featuring VRSG visuals and 3D content.

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About MVRsimulation

Founded in 1997, MVRsimulation develops commercial PC-based software for the military simulation and training markets, featuring high-speed 3D visualization content and rapid creation of networked virtual worlds using real-world data. MVRsimulation's real-time visual systems provide the fidelity of geospecific simulation with game-quality graphics. Users can build (with real-world photographic imagery, elevation data, and feature data) high-fidelity virtual worlds with our terrain generation tools, and render in real time, at 60Hz frame rates, the resulting virtual world with our real-time 3D visualization application, Virtual Reality Scene Generator. MVRsimulation systems are used for applications such as UAS/RPA trainers, manned flight simulators, mission planning and rehearsal, joint fires and JTAC simulation training, urban operations training, and emergency response management training. For more information, visit www.mvrsimulation.com.

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