ONEBONSAI

CASE STUDY

Tactical Combat Casualty Care (TCCC)

Mobile VR training that prepares soldiers to perform lifesaving medical interventions under combat conditions.

Platform: Mobile VR



Project overview

Mobile VR training that prepares soldiers to perform lifesaving medical interventions under combat conditions.

About the project

OneBonsai created a mobile VR training system for the Department of Defense to teach Tactical Combat Casualty Care (TCCC) using the MARCH protocol. The solution improves retention, scales training to large groups, and prepares soldiers to perform lifesaving interventions under battlefield conditions.

Challenge

Training Soldiers in Combat Medical Care

On the battlefield, the ability to provide rapid and effective medical care can mean the difference between life and death. Soldiers must master the MARCH protocol (Massive hemorrhage, Airway, Respiration, Circulation, Hypothermia/Head injury) and apply it under chaotic, high-pressure conditions.

Traditional training methods such as classroom lectures, limited field drills, and live exercises, were expensive, logistically complex, and often too infrequent to provide the repetition required for mastery. Simulating combat conditions realistically was difficult and risky, especially when training large groups of recruits. There is a clear need for a solution that could scale training, ensure retention, and prepare soldiers for real combat injuries without the risks and costs of live drills.

> *"Training soldiers in lifesaving medical care was logistically complex and difficult to scale effectively."*

Solution

Mobile VR TCCC Training System

OneBonsai developed a mobile VR training system specifically designed to teach Tactical Combat Casualty Care. The platform immerses trainees in realistic battlefield environments where they encounter wounded soldiers with a range of injuries. Using the MARCH protocol as a framework, soldiers must apply the correct medical interventions step by step: stopping hemorrhages, securing airways, treating respiratory issues, and preventing shock.

The VR scenarios replicate the noise, stress, and unpredictability of combat, forcing trainees to make decisions quickly and effectively. Because the system is fully mobile, training can be delivered directly on bases or in classrooms without needing extensive physical setups.

Approach

Combining Realism with Mobility

The VR TCCC solution was developed in close collaboration with military medical experts to ensure alignment with NATO's updated guidelines. Scenarios were designed to be repeatable and adaptive, meaning soldiers could train multiple times and face variations in injury types, severity, and battlefield conditions. Performance metrics were built into the system, enabling instructors to track progress, measure retention, and identify areas for improvement.

The mobile design ensured the system could be deployed anywhere, making it practical for both new recruits and experienced soldiers who required refresher training. By combining immersive realism with scalable deployment, the approach bridged the gap between theoretical learning and real-world application.

> *"I now feel confident applying the MARCH protocol under pressure."*

Outcome

Improved Retention and Scalable Deployment

The VR TCCC training significantly improved retention of lifesaving procedures compared to classroom methods. Soldiers reported feeling more confident applying the MARCH protocol under pressure, and instructors observed faster decision-making and greater accuracy in simulated emergencies.

The scalability of the system meant large groups could be trained more efficiently, supporting NATO's push for standardized, high-quality medical training across member forces. By reducing reliance on costly and risky live drills, the solution provided a safe, repeatable, and effective way to prepare soldiers for battlefield medicine, ultimately helping save more lives in combat situations.

> *"VR provides us with options to train at scale. We therefore see it as a force multiplier."*

Discuss a similar project

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