BACK TO THE FUTURE: HIGH-TECH IMMERSIVE APPLICATIONS IN LOW-TECH ENVIRONMENTS

EXECUTIVE SUMMARY

Immersive simulation represents a necessary evolution in high-fidelity training. It also represents a shift away from fixed-location, complex rules-based air traffic control (ATC) training tools toward mobile, readiness-focused wearables that accelerate learning and adaptation to low-tech contingency environments.

Adacel's MaxSim VR trainer reframes immersion as a mission tool, expanding realism, not as an end in itself, but as a means to produce measurable combat readiness gains beyond traditional academic milestones. The VR configuration blends commercial-grade simulation with military-centric scenarios to enable rehearsal of landing zone operations and safe, efficient airspace management (e.g., Uncrewed Aircraft Systems (UAS) access/anti-access, area denial, air/point defense, static airborne surveillance, etc.).

ASSUMPTION

For decades, ATC personnel have assumed control of non-traditional landing surfaces in combat zones without proper training, equipment, or experience. Additionally, the proliferation of smart weapons and UAS threats have increased the risk for personnel who support operations from fixed ATC facilities. ATC and related command and control (C2) personnel must have the capability to transition expeditiously from static, high-tech operating environments to a mobile, low-tech means of feeding the fight. Without realistic full-immersion simulation to support training and complement live exercises, preparing mission-ready personnel for future combat roles and demands becomes increasingly difficult.

PURPOSE

Immersive simulation is designed to prepare ATC and distributed C2 personnel for contested, austere, and non-standard aerodrome operations using an integrated virtual reality (VR) and mixed reality (MR) technologies (referred to as "XR" in proposal literature) simulation stack. Combining upgraded speech recognition, dynamic 4K+ image generation, real-time geolocation, and tactile wearables with live training exercises in controlled environments can and *will* accelerate mission-relevant competencies, while reducing live-asset risk. Ultimately, Adacel's immersive technology delivers repeatable, measurable rehearsals for high-end fight scenarios.

TRAINING MODALITY

A scalable immersion model progresses learners from a first-person, skills-focused training environment, where fundamental skills are repeated until desired learning objectives are met, into a full-scale operating environment. In this configuration, multiple VR-equipped personnel are managing landing zone operations as a cohesive, networked team within one shared training area. Decisions are synchronized, airflow is managed in real-time, emergencies and other duties are addressed and assessed, and persistent immersion is continuously reinforced through supervisor-initiated scenario "injects."

PRODUCT PHASING

Adacel continues to lead the way in delivering advanced VR modality to its military customers. Leveraging a multiphase approach and years of firsthand in-the-field combat experience, Adacel specialists are building a future-proofed and fully integrated training ecosystem. This ecosystem brings together high-fidelity TSS-based simulation, networked in a live, virtual, constructive environment and capable of low-latency interoperability with fully immersive wearable tech that operationalizes Adacel's iconic TSS product line.

KEY MESSAGE

Fully immersive, wearable tech is a critical component in achieving desired learning outcomes for contingency and combat operations, accelerating readiness through live exercise integration and low-tech adaptations—all delivered at the speed of need.

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