HUMULO ENGINEERING, LLC

Immersive VR safety training with AI root-cause analysis for defense industrial operations

SDVOSB (SBA VetCert) · **Non-traditional** defense contractor · **Top Secret** FCL
CAGE **833T8** · UEI **CDTVMA9AB3H3**
NAICS **541511** (primary) · 541512 · 541519 · 611420 · 611430 · 611710

Assessed Awardable
CDAO Tradewinds Solutions Marketplace, Oct 2026

TSM Awardable solution video: **"Humulo: Immersive VR Safety Training with AI Root-Cause Analysis for Defense Industrial Operations"** Government Customers can view it at **www.tradewindai.com** (government login required).

SOLUTION

Every serious accident gets investigated, a root cause gets found, and too often the training never changes. Humulo closes that loop: our AI, built on **HFACS** (the human-factors framework every military service's safety center uses to investigate mishaps), helps a unit trace its own incident reports to root causes and points to the training that addresses them. Trainees then do the task in VR or mixed reality instead of watching it.

WHAT THE AI DOES

- Every VR attempt is data: which safety checks were missed, error patterns and decision timing, not just pass/fail.
- Incidents and near-misses are classified by HFACS layer in the **Safety Insights Portal**, next to the unit's training records.
- The AI correlates VR performance with incident and near-miss trends to show which HFACS layer is driving risk, which sites, teams and modules need attention, and what to retrain next.

TRAINING LIBRARY: 22 SCORED MODULES

VR and mixed reality, each mapped to a specific regulation: powered industrial trucks (29 CFR 1910.178), lockout/tagout (1910.147), fall protection (1926.502), fire extinguishers (1910.157), confined space, electrical safety, HAZWOPER/HAZCOM, CPR/AED & first aid, slips/trips/falls, ladder safety and more.

Physical controls where the skill is physical: sit-down forklift wheel & pedals; stand-up forklift controls.

CUSTOM MODULES ON YOUR EQUIPMENT

- Built from your procedures and equipment (SOPs, JHAs, drawings, CAD, on-site scans). You approve a storyboard before build; firm-fixed price per module.
- Days to customize an existing module · ~6 weeks for a typical new module · 12–14 weeks for highly complex environments.
- Navy shipyard scenarios already built: submarine confined-space entry in dry dock; dry-dock fall protection.

DIFFERENTIATORS

- Closes the loop from mishap investigation to retraining, HFACS end to end.
- Fully offline for secure sites; physical controls where the skill is physical.
- SDVOSB with a Top Secret FCL; founded by a former U.S. Navy submarine officer.

WHERE IT FITS: DEPARTMENT OF WAR

NAVSEA's four public shipyards, Air Force Sustainment Center air logistics complexes, and Army depots, arsenals and ammunition plants: wherever forklift, lockout/tagout, confined-space, fall and electrical hazards recur.

PLATFORM

- **LMS:** per-attempt scoring, audit-ready certificates, SCORM/xAPI export to the system you already run.
- **MDM built in:** kiosk mode, over-the-air updates, live fleet status.
- **Deployment:** runs 100% offline, on local servers, or deployable in an IL5 AWS GovCloud environment with a government ATO sponsor.
- **Collaboration:** multi-user sessions, Microsoft Teams integration, and Humulo Workshop mixed-reality model review with digital twins from on-site scans; cast up to 4 headsets to one display.
- **DoD hardware:** HTC VIVE Focus Vision enterprise headsets.

SUBSCRIPTION ENTITLEMENTS

Annual subscription per headset: the full library; every trainee gets their own login, scores and certificates with **no per-trainee fees**; device management, LMS, updates and new modules, and support. Options: physical forklift controls, casting kit, custom modules. Firm-fixed-price quotes on request.

EVIDENCE

- **Goodyear, Tupelo, MS (~2,000 workers):** four serious hand injuries in 2024; the AI portal recommended customizing VR hand-safety training to those incidents; the plant reported zero hand-safety incidents July 2025 – June 2026 (customer-reported).
- **Peer-reviewed:** ASCE 2023 and ASEE 2023 (Central Washington University: VR trainees outscored a classroom-plus-live-hands-on group at 30 days); BMC Medical Education 2022 (NIH/NIAID and Makerere University: VR-trained health workers outscored a classroom group).

PAST PERFORMANCE

DoW / federal: 60th Air Mobility Wing, Travis AFB · 99th CES Fire, Nellis AFB · prior performance for the Air Force, Navy, NIH (NIAID) and Department of the Interior.

Commercial: Goodyear (two plants), Emerson, Chemours, Coca-Cola Southwest Beverages (custom LOTO digital twins, 7 sites), Pratt & Whitney, Hexcel.

HOW TO BUY

1 **CDAO Tradewinds Solutions Marketplace:** Awardable, post-competition. Government Customers award through their own contracting activity, or email **success@tradewindai.com** for Tradewinds Acquisition Support.

2 **SDVOSB:** set-aside eligible; sole-source eligible under FAR Subpart 19.14 where its conditions are met.

3 **Small business** set-asides.

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