



CASE STUDY

Interactive 3D

Beyond the Manual: Interactive 3D
Training for Comprehensive Engineering
Equipment Care

Dorado Learning January
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Introduction

Project Overview

As industrial automation systems grow increasingly complex, maintaining and repairing critical control equipment requires high levels of technical precision, safety compliance, and procedural accuracy. Traditional training methods reliant on manuals, classroom instruction, or limited hands-on exposure often fail to adequately prepare technicians for real-world fault diagnosis and repair.

To bridge this gap, Dorado Learning developed an Interactive 3D training solution that enables technicians to safely practice inspection, fault identification, and repair of industrial controllers within an immersive, guided environment, ensuring procedural accuracy, compliance adherence, and workforce readiness before live operations.



Business Need

A global leader in industrial automation manufactures a wide range of advanced controllers used across critical infrastructure, manufacturing, energy, and process industries. These controllers operate in high-stakes environments where errors in maintenance or repair can lead to operational downtime, safety incidents, or regulatory non-compliance.

Key challenges identified

Complex Maintenance Procedures: Controllers involve intricate internal components and precise repair sequences that are difficult to master through manuals alone.

Safety and Compliance Requirements: Strict safety standards and operational protocols must be followed during inspection and repair.

Limited Hands-on Training Opportunities: Access to physical equipment for training is often restricted due to cost, availability, and operational risk.

Inconsistent Skill Levels: Technicians across regions and experience levels require standardized, repeatable training.

Solution

Dorado Learning identified these gaps and developed a scalable, cost-effective solution that combines Interactive 3D technology packaged in a SCORM packet for LMS hosting.

Proposed Solution

Interactive 3D Simulation Environment

Dorado Learning developed a high-fidelity Interactive 3D simulation representing multiple industrial controllers. Each controller was recreated with accurate geometry, component hierarchy, and functional behavior to reflect real-world equipment, where learners can:

- Explore the controller in a fully navigable 3D environment
- Identify internal and external components
- Understand functional relationships between modules and sub-assemblies

Step by Step Guided Repair Workflow

The core of the solution is a guided, step-by-step repair simulation designed to replicate real maintenance procedures. The experience allows users to:

- Diagnose faults within the controller
- Perform disassembly and reassembly in the correct sequence
- Replace or repair faulty components
- Follow mandated safety checks and compliance steps at every stage

Each action is validated in real time, ensuring procedural accuracy and preventing incorrect operations.

Compliance-First Learning Design

Safety and regulatory compliance were embedded directly into the learning flow:

- Mandatory safety checks before initiating repair tasks
- Visual and contextual prompts highlighting risk areas
- Lock-step progression to ensure no critical steps are skipped

This ensures that learners not only understand how to perform a task, but also why compliance is essential.

Solution Summary

By combining immersive 3D visualization with guided procedural learning, Dorado Learning delivered a cost-effective and scalable alternative to traditional equipment training. The solution bridges the gap between theoretical knowledge and hands-on expertise while maintaining the highest safety and compliance standards.

Business Impact

Enhanced Operational Efficiency	Improved Skill Retention
Technicians trained using the interactive 3D simulation demonstrate improved accuracy and faster task execution during equipment maintenance and repair. This directly contributes to reduced downtime and improved operational reliability.	The hands-on, experiential nature of 3D learning significantly enhances knowledge retention compared to static documentation or classroom-only instruction. Learners retain both procedural steps and safety-critical considerations more effectively.
Safety and Compliance Assurance	Flexible and Scalable Training
By embedding compliance into every stage of the simulation, the training ensures consistent adherence to safety standards, reducing the likelihood of human error during live operations.	The digital nature of the solution allows organizations to train distributed teams consistently, without logical constraints related to equipment availability or location.

Conclusion

This Interactive 3D training solution demonstrates how immersive learning can move beyond traditional manuals to deliver practical, compliant, and scalable engineering equipment training. By enabling technicians to practice complex repair procedures in a risk-free virtual environment, organizations can build workforce confidence, improve maintenance quality, and safeguard critical operations.

As industrial systems continue to evolve, interactive 3D training will play an increasingly vital role in preparing technical teams for precision-driven, safety-critical environments.

