CASE STUDY

AI-Powered Safety in Motion: Modernizing Locomotive Operations with Resilient Edge AI

COMPANY SNAPSHOT

Industry: Rail/Transportation

This client specializes in retrofitting existing locomotives with next-generation autonomous capabilities. By combining advanced artificial intelligence with human-in-the-loop controls, their systems are designed to improve operational safety, reduce human error, and enhance situational awareness in rail operations.

THE CHALLENGE

The client needed to retrofit locomotives for up to SAE Level 4 autonomy in yard and industrial environments with limited visibility. Their existing system relied heavily on human oversight, and they needed AI integration to improve safety, autonomy, and resilience in rugged rail conditions.

THE WEAVER WAY

Weaver partnered with the client and solution providers to deploy a resilient edge solution tailored for locomotive environments. This included a ruggedized proof-of-concept server aligned with their AI software and camera systems, enabling real-time hazard detection and autonomous decision-making.

PROJECT CAPABILITIES SHOWCASE

- **Ruggedized Edge Computing**
- **AI Vision Hazard Detection**
- **Proof-of-Concept & Prototype Testing**
- **Collaborative Deployment**
- **Dell™ PowerEdge™ XR12 Integration**

This project was about more than technology — it was about helping the client bring their vision for safer, smarter rail operations to life. The Dell PowerEdge XR12 was the perfect fit to make that happen.

Sarah Wassef
Account Executive
Weaver Technologies

WHY WEAVER?

The client chose Weaver due to our deep AI deployment experience and our ability to operate as a flexible, agile partner in nontraditional environments. Our engineering team worked closely with the client's AI developers to validate software compatibility, hardware durability, and field adaptability. With both the technical depth and responsiveness needed for this complex environment, Weaver provided end-to-end support—from concept to implementation.

THE RIGHT IT SOLUTION

Weaver Technologies deployed a Dell™ PowerEdge™ XR12 ruggedized server with edge capabilities to process AI vision workloads in real time. Paired with the client's proprietary machine learning software, the system identifies track hazards and optimizes autonomous train behavior, with deployment support to validate performance in the test environment.

THE RIGHT TIME: EXECUTION

Completed in 1–3 months, the project moved from kickoff to functional prototype on a compressed timeline. Weaver collaborated closely with the client to ensure seamless integration with onboard systems while addressing environmental constraints.

OUTCOMES

Early testing shows the Dell™ PowerEdge™ XR12 platform successfully supports AI vision hazard detection, improving autonomous response and safety. The solution's ruggedized, scalable design positions the client to expand deployment after validation.

Engineering Solutions for Any Environment

At Weaver Technologies, we believe great IT solutions should fit the environment as seamlessly as they fit the business need. Whether it's a data center, the cloud, or a locomotive, we design and deliver technology that works where it's needed most.

Our approach combines deep technical expertise with a commitment to doing what's right for the customer. By focusing on long-term value, adaptability, and real-world results, we help our clients innovate confidently in even the most challenging conditions.

Explore our capabilities at Weaver Technologies.

KEY BENEFITS

- **REAL-TIME HAZARD DETECTION**
- **RUGGEDIZED EDGE PERFORMANCE**
- **FASTER PROTOTYPING & DEPLOYMENT**
- **SCALABLE AI INFRASTRUCTURE**
- **SEAMLESS HARDWARE–SOFTWARE INTEGRATION**

WEAVER

THE RIGHT REASON

At Weaver Technologies, our goal is to deliver solutions that make a real impact. For this project, that meant enabling a safer, smarter path to autonomous rail operations. We recommended the Dell™ PowerEdge™ XR12 not just for its performance, but because it was the right fit for the client's environment, goals, and vision. By aligning technology with purpose, we helped turn an ambitious idea into a practical, scalable solution.

WHERE CAN THE RIGHT IT SOLUTION TAKE YOUR ORGANIZATION?

Unfold the possibilities with Weaver Technologies. As a comprehensive IT solutions provider, we partner with diverse industries, turning challenges into success stories.

LEARN MORE ABOUT OUR TRANSFORMATIONAL IT SOLUTIONS HERE!
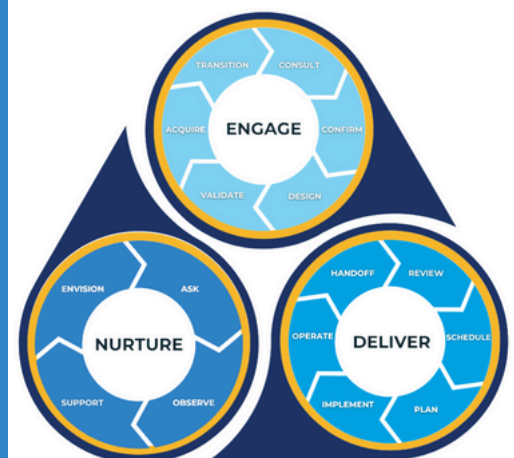
The Right IT Solution

We focus on creating the Right Solution for our customers. You will never find us pushing unneeded products.

The Right Time

We believe the Right Time will reveal itself if we take a patient and deliberate approach. We don't believe in pushy tactics.

The Right Reason

We believe integrity is real, that it is valuable and it's all about doing things for the Right Reason – the only way we know how.

THE WEAVER WAY
Right Results. Right Way.

WEAVER