



CASE STUDY · COMMERCIAL

An autonomous rail innovator brings real-time AI hazard detection to the locomotive.

Retrofitting locomotives for autonomy meant running AI vision in rugged rail conditions. Weaver delivered a ruggedized Dell PowerEdge XR12 edge server and moved from kickoff to a working prototype in 1 to 3 months.



CUSTOMER

Autonomous Rail
Technology Company

INDUSTRY

AI-Powered Autonomous
Locomotives

PARTNERS

Dell Technologies

DEPLOYMENT

1 to 3 months

THE CHALLENGE

Autonomy in places where visibility is limited.

The company retrofits existing locomotives with next-generation autonomous capabilities. By combining advanced artificial intelligence with human-in-the-loop controls, its systems are designed to improve operational safety, reduce human error and enhance situational awareness in rail operations.

The goal was to retrofit locomotives for up to SAE Level 4 autonomy in yard and industrial environments where visibility is limited. The existing system relied heavily on human oversight.

To improve safety, autonomy and resilience, the company needed to integrate AI that could process camera data in real time, on board, in rugged rail conditions.

THE STARTING POINT

Level 4

SAE autonomy target for yard and industrial environments

Limited visibility

Operating conditions where hazards are hard to see

Human oversight

An existing system that relied heavily on people to spot hazards

THE APPROACH

The Weaver Way: fit the technology to the environment.

Weaver partnered with the company and its solution providers to deploy a resilient edge solution built for the locomotive environment. That meant a ruggedized proof-of-concept server aligned with the company's AI software and camera systems, enabling real-time hazard detection and autonomous decision-making on board.

PROJECT CAPABILITIES

Ruggedized edge computing	AI vision hazard detection	Proof of concept and prototype testing
Hardware selection	Collaborative deployment support	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

THE RIGHT IT SOLUTION

A rugged edge server running AI vision in real time.

Weaver deployed a Dell PowerEdge XR12 ruggedized server to process AI vision workloads at the edge. Paired with the company's proprietary machine learning software, the system identifies track hazards and optimizes autonomous train behavior.

EDGE COMPUTE

Dell PowerEdge XR12

A ruggedized server with edge capabilities, built to run AI vision workloads in rail conditions.

AI INTEGRATION

Hardware and software aligned

Matched to the company's machine learning software and camera systems for real-time hazard detection.

VALIDATION

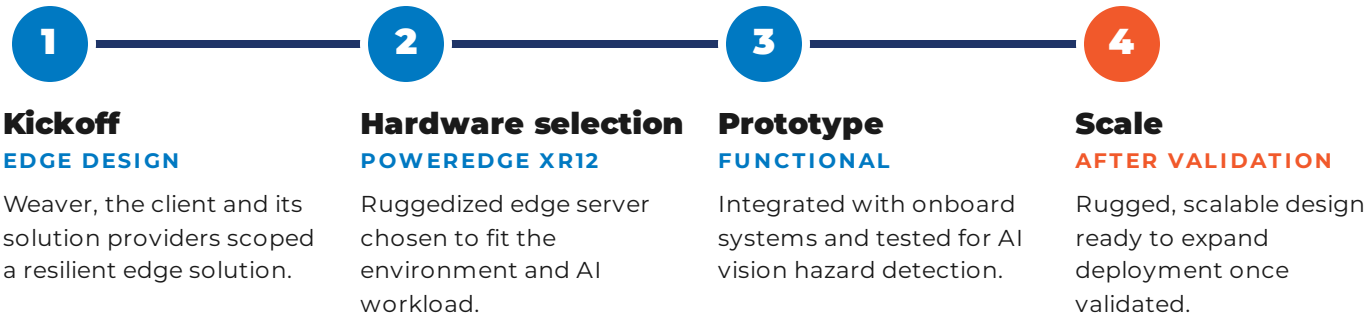
Deployment support

Weaver supported deployment to validate performance in the test environment.

THE RIGHT TIME

From kickoff to functional prototype in 1 to 3 months.

The project moved on a compressed timeline. Weaver collaborated closely with the company to integrate the server with onboard systems while addressing the environmental constraints of a working locomotive.



OUTCOMES

Early testing confirms the edge platform.

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

■ Real-time hazard detection	■ Ruggedized edge performance	■ Faster prototyping and deployment
■ Scalable AI infrastructure	■ Seamless hardware and software integration	■ Successful in-field testing

THE RIGHT REASON

The right fit for the environment

Weaver recommended the PowerEdge XR12 not only for its performance, but because it fit the company's environment, goals and vision.

An ambitious idea made practical

By aligning technology with purpose, Weaver helped turn a vision for safer autonomous rail into a practical, scalable solution.

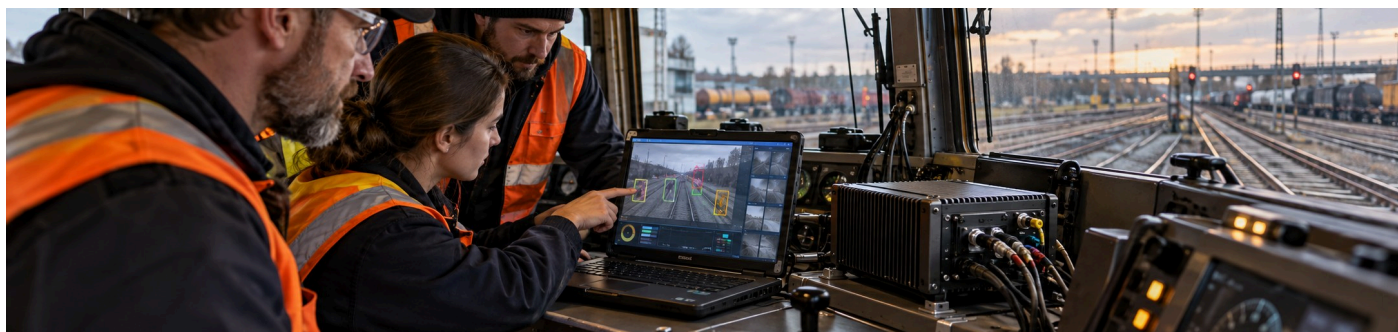
A COMMON CHALLENGE IN INDUSTRIAL AI

AI workloads increasingly need to run where the work happens, not in a data center. Harsh conditions and limited space often rule out standard servers, so choosing hardware built for the environment is as important as the software it runs.

Taking AI to the edge?

Weaver can help you choose and validate edge hardware that fits your environment before you scale.

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WEAVER

ABOUT WEAVER

Dell Titanium Partner. Since 2006, Weaver has helped organizations build IT strategy and security so they can focus on their craft. We serve education, state and local government, healthcare and commercial customers across the U.S. and internationally.

Right IT Solution.
Right Time. Right Reason.