



Computers, Sensors, AI

Rail Vision

Driving Operational Continuity – The Strategic Role of Advanced Yard Perception

The consequences of a shunting yard incident ripple far beyond the immediate site. David BenDavid, CEO of Rail Vision, explains how AI-powered perception is giving operators the situational awareness to stop incidents before they happen.

In the complex and high-stakes environment of a modern rail yard, operational continuity is everything. The ability to keep trains, crews and cargo moving safely and without interruption is the bedrock of an efficient logistics network.

However, even a minor incident can cause significant disruption, delay shipments and impact productivity across the entire supply chain. It's a world where limited visibility, complex movements and human error can have costly consequences.

To address these challenges, operators are increasingly turning to advanced technology. Rail Vision, a leader in AI-based safety systems for the railway industry, has developed its ShuntingYard system to provide the real-time situational awareness needed to prevent incidents and ensure a predictable flow of traffic. The system transitions rail safety from passive detection to active intervention, creating

a more resilient and efficient operational environment.

Overcoming Human Limitations

At its core, ShuntingYard is designed to overcome the inherent limitations of human sight in a busy yard. Rail yards are very complex environments where operators often face visibility challenges due to rail car movements, infrastructure, weather, or poor lighting. The ShuntingYard system continuously analyses the environment using advanced sensors and AI.

Providing a clear view of the track and its surroundings up to a range of

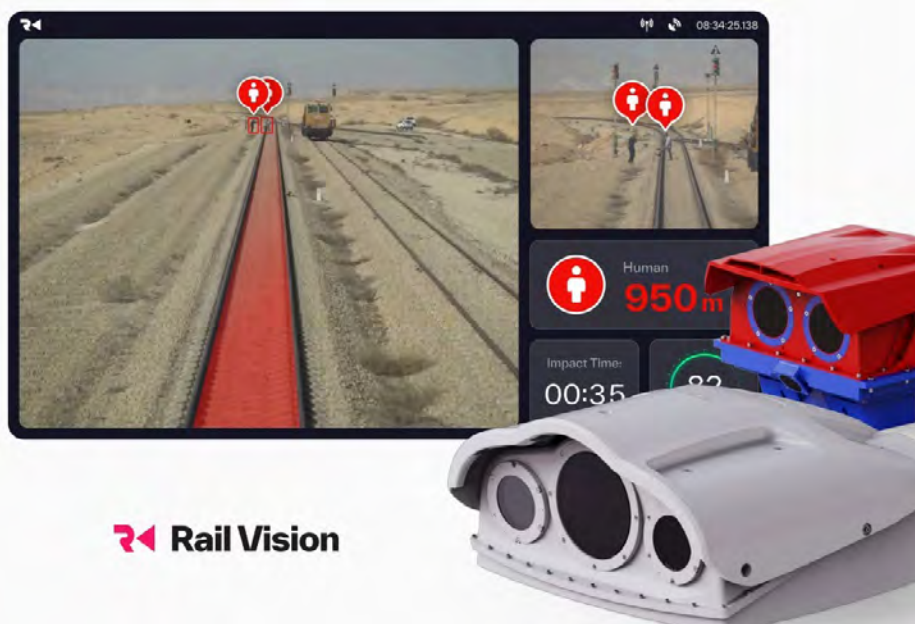


David BenDavid
CEO, Rail Vision

200 metres, the system automatically detects and classifies objects, including yard staff, misaligned switches and unexpected obstacles, identifying emerging risks before they become incidents. By providing this critical layer of real time intelligence, the platform enables earlier decisions and safer operations.

More than Hazard Notifications

Crucially, this technology has evolved beyond just providing warnings. While alerts are useful, Rail Vision recognised that they're not always enough to prevent an accident. Even experienced operators can become distracted or overloaded with



Real-Time Visual Intelligence

The system's value extends far beyond the locomotive cab. ShuntingYard is designed for deep integration with existing yard management and locomotive control systems. It can function as the 'perception layer' for larger safety and automation platforms providing critical data to other systems.

This was recently highlighted through Rail Vision's partnership with Railserve, a Marmon Rail company. ShuntingYard has been integrated as the core perception component within WatchGUARD, which is part of YardGUARD, Railserve's commercially launched safety intelligence system, providing the real-time visual data required to trigger automated safety actions.

Alongside these real-time safety interventions, the system automatically sends metadata and short video clips of incidents to a cloud-based intelligence portal.

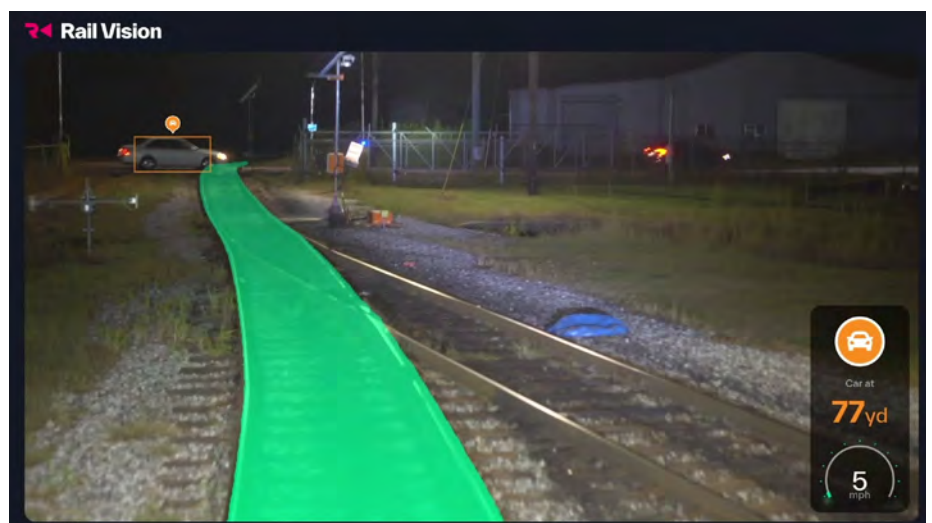
This allows safety and maintenance teams to analyse historical data,

information. Our goal has always been accident prevention, not just hazard notification. This ambition drove the evolution of ShuntingYard into an active intervention platform capable of automatically applying the brakes if an operator fails to respond to a critical alert.

To ensure smooth integration into daily workflows, the system follows a structured escalation process that allows time for an operator response before initiating automated braking actions tailored to the operator's specific yard policies.

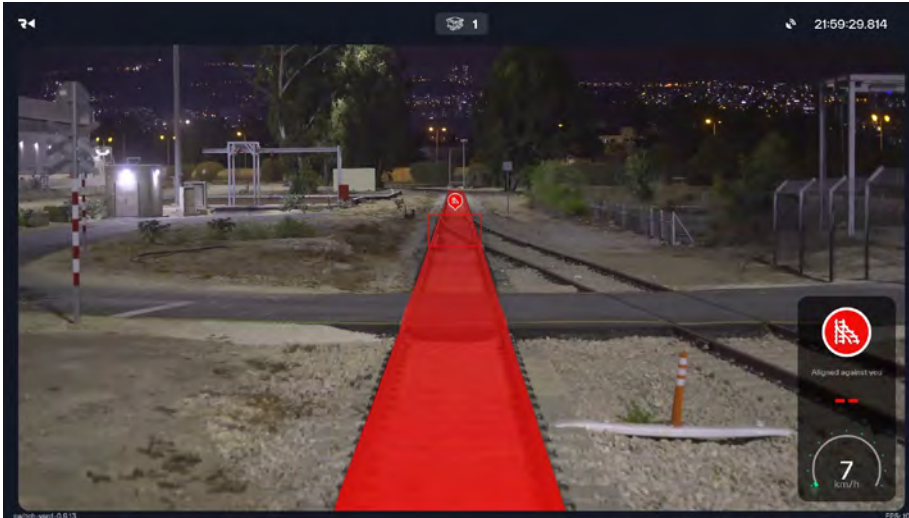
Making this leap required an AI perception layer of exceptionally high quality. The system's models had to be trained on vast datasets captured across a diverse range of operational scenarios and environmental conditions to reliably distinguish genuine threats from normal yard activities. Every hour the platform is deployed in the field helps strengthen the AI models, making the entire system more accurate and effective over time. A shunting locomotive coupling with a wagon, for example, should not trigger an emergency stop.

The system's algorithms are designed to identify standard operational movements, preventing unnecessary disruptions while ensuring that true emergencies are met with an immediate response. Built on deep learning models and advanced sensors, this robust perception system provides the critical situational awareness required for daily safety, while laying the technical foundation needed to scale locomotive operations from driver assistance to fully autonomous execution.



Vehicle detection at night

Industry-first switch state detection at night



generate heat maps of high-risk areas and gain a deeper understanding of operational patterns. It transforms the system from a real-time safety tool into a powerful resource for long-term process improvement.

Rail Yard Digitisation

As Rail Vision prepares for InnoTrans 2026, the focus is on positioning

ShuntingYard as a key enabler for the digitisation of both European transit hubs and industrial yards. With Europe pushing to shift more freight from road to rail, optimising yard safety and efficiency across all rail and industrial operations has become a critical objective. Rail Vision's technology is engineered for these regional requirements from day one, handling specific challenges like congested track

layouts, complex switching zones and severe weather. In these demanding environments, the ShuntingYard system is highly optimised for close range dynamics, providing real time track path validation and switch monitoring to protect ground crews, reduce accidents, and prevent costly equipment damage across complex industrial operations.

By providing a reliable foundation for automation, Rail Vision's ShuntingYard system offers a clear path towards transforming high-risk shunting yards into safer, more predictable and highly efficient logistical hubs.

Preventing yard incidents entirely allows operators to eliminate direct consequences like physical damage and worker injuries, ensuring that operational continuity is not just a goal, but a reality.

For more information about how Rail Vision can benefit your rail operations, [visit our website](https://www.railvision.io) or contact marketing@railvision.io.

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September 22-25, 2026

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