

# case study.



## Train Rider Detection System (TRiDS™)

A large rail company in the western United States runs freight trains along the border between the U.S. and Mexico. Trains are often comprised of flat cars hauling metal shipping containers and are extremely vulnerable to stowaways (illegals) and cargo theft.

**Railroad Company,  
Western United States**

### CHALLENGE

Distances are vast, authorities overextended, and railroad profitability dependent upon maintaining train velocity - strict schedules ensure timely intermodal transfer. Stop and search protocols are ineffective, sporadic, and waste time.

### SOLUTION

**The Train Rider Detection System (TRiDS™)** automatically captures inspects and processes real time images from freight trains moving at speeds of up to 70 mph, digitally searching for unauthorized riders and minimizing the need to stop trains for inspections - with the objective to maintain train velocity throughout the route. Three levels of technology combine to form TRiDS™, providing highest level of accuracy, minimizing false alarms, and offering the optimum solution for intrusion detection:

**Level One High Speed Image Capture** - Level One employs specialized high speed cameras to capture digital still images of each container car as it passes through a nondescript checkpoint. Images are processed to analyze container wells for anomalies. For instance, a person hiding in the container well does not fit expected geometry and is therefore flagged as a suspicious anomaly.

Digital images of suspicious anomalies are transmitted using a custom browser based interface and user-friendly GUI accessible from the customer network. Slow motion image playback allows operators to quickly review suspect container cars. Archived images can be downloaded for review as required.

**Level One Thermal Camera** technology provides additional images for analysis. Thermal technology substantially increases accuracy of unauthorized rider detection, as thermal cameras illuminate heat sources for anomalies and show them in color.

**Level Two Container Radio Frequency Identification (RFID) Tag Monitoring** - electronic RFID tags provide container identification and "lock" containers. An RFID reader verifies tag integrity as trains pass through the checkpoint. Broken or compromised tags generate an alarm, and rapid analysis enables law enforcement personnel to determine if, when, where, and which container has been breached, and indicates container location and pinpoint train boarding locations. Ruggedized handheld RFID readers enable railroad personnel to verify tag status within a radius of 100 feet.

**Level Three Remote Viewing** - provides real time electronic inspections and archived data access for customer security personnel, the U.S. Border Patrol and other agencies, reducing the need to deploy field personnel and rendering inspections more efficient and effective through leveraging the technology.

### BENEFIT

The system minimizes the need for interaction in that it cues Border Patrol officers and/or other law enforcement personnel which rail cars warrant investigation.

