

Mobile Mesh Gateway



Mesh Asset Tag



Fixed Mesh Gateway

Actionable Information to  
Manage Your Operations

# RAIL INDUSTRY SOLUTION

## REAL-TIME MONITORING AND EVENT REPORTING

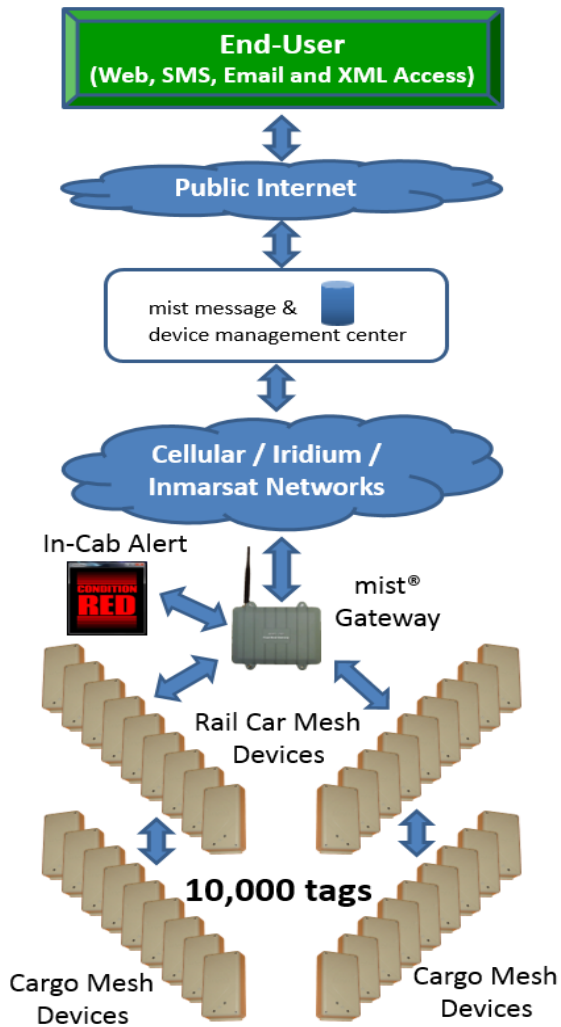
Reduce Risks; Increase Profits

Whether operating across the United States or shipping between the U.S. and Mexico, RSAE Labs will ensure your valuable assets are safe and secure across the entire enterprise through real-time monitoring and instant reporting.

Our Global Sentinel® devices and mist® Mesh Asset Tag sensors continuously monitor the position, status and security of assets to provide logistics intelligence, intrusion detection, and situational awareness across your entire rail enterprise. By incorporating both satellite and cellular communications, RSAE Labs provides total coverage, which enables alerts with exact locations or event notifications in near real-time.

RSAE Labs can monitor cars on sidings and in yards and can detect rail car intrusion. We can also help you improve your bottom line by giving you the ability to know where your rail cars are and allowing you to reduce the amount of time containers and rail cars are inactive in the rail yard. From a safety perspective, our devices have the ability to send an alert from wheel bearings to the engineer quickly enough to prevent or reduce the consequences of derailling.

Our rail solutions rely on sensors called Mesh Asset Tags and form our mist® network. These tags give you the ability to monitor wheel bearings (hot box), weight and balance, temperature, humidity, door state, G-force, movement, tanker car hatches and valves, and rail support equipment (vehicles, trailers, chassis, etc.). When the need arises, you can even change the business rules and reporting requirements on the devices remotely.



The mist<sup>®</sup> mesh protocol, which is compliant with a 802.15.4 physical layer, autonomously creates an optimized mesh network topology allowing the tags to communicate encrypted data from tag to tag until it reaches a Fixed Mesh Gateway or Mobile Mesh Gateway. A mist<sup>®</sup> mesh network can scale to 10,000+ tags and hundreds of hops. The Global Sentinel<sup>®</sup> device serves as the Mobile Mesh Gateway and has the ability to track and monitor rail assets, too. The Fixed or Mobile Mesh Gateways communicate to RSAE Labs' Device Management Center, which acts as an intermediary between asset monitoring and tracking equipment and the customer's back office system. The DMC is web accessible and provides you with secure data collection, analysis and dissemination between your deployed devices and authorized users. The ultra-low power mist<sup>®</sup> mesh network technology is available for licensing and integration into sensors, detectors and other devices.

### Key Features and Benefits

- Guaranteed global coverage through Mesh, GSM, & Iridium, with low latency reporting
- Minimum operating costs due to tailored communications and aggressive power management
- Remotely configure and upgrade devices through two-way communications
- Securely communicates information about assets through encrypted data
- Expanded asset visibility: wheel bearings (hot box), weight and balance, door state, G-force, movement, door state, intrusion detection tanker car hatches and valves, and rail support equipment (vehicles, trailers, chassis, etc.)
- Yard management and consist management with hump and dark car communication

#### Mesh Asset Tag (MAT)

- Tracks location of asset to improve asset visibility and operational efficiency
- Flexible, adaptive architecture minimizes IT infrastructure
- Allows immediate remote device reconfiguration and upgrades
- Encrypts communications to ensure privacy

#### Fixed Mesh Gateway (FMG)

- Provides RSAE Labs mesh network authorization and security
- Portal for mesh network configuration and management
- Bi-directional data interface between mesh network and DMC
- Back haul via wired or wireless internet for Fixed Mesh Gateway
- Integration into train management systems providing on-train information

#### Device Management Center (DMC)

- Configures, manages, maintains, and monitors devices
- Continuous monitoring by high availability servers receiving messages from devices
- Data feeds to customers available using standards such as secure sockets and XML
- Application Programmer Interface (API) for customers to update devices
- Customized notifications and reports to users through e-mail and SMS

#### Mobile Mesh Gateway (MMG)

- Provides data communications for mesh networks and monitored assets like refrigerated containers
- Redundant two-way global communications using Iridium Short-Burst-Data (SBD) and GSM
- Location provided via GSM and GSM-tower data
- Internally or externally powered

