

Case Study

Interoperable Connectivity Solution For Rail - VLI Multimodal



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Company

Globalsat Group /
VLI Multimodal

Industry

Transport & Logistics - Rail

Country

Brazil

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VLI MULTIMODAL faced significant communication challenges in its railroad operations in Brazil, requiring a reliable and robust solution capable of continuous operation in the demanding railway environment. Leveraging its extensive experience in the railway sector—including a successful implementation with RUMO—Globalsat Group was selected as the strategic partner for this project.

Overview

To address these challenges, Globalsat Group joined forces with Viasat Enterprise to develop a tailored communication and telemetry solution designed to enhance operational efficiency and safety.

The solution integrates Viasat L-Band satellite communications with LTE/4G networks, ensuring seamless, uninterrupted connectivity across the entire railway network, including remote and challenging terrains.

This advanced interoperability framework enables real-time tracking of each locomotive, providing critical data for operational optimization, predictive maintenance, and improved decision-making.

Given that more than 58% of Brazil's landscape consists of forests and mountainous regions, ensuring continuous connectivity was paramount. Despite these environmental obstacles, the solution was successfully deployed, demonstrating resilience, reliability, and efficiency in the field.

By integrating satellite and terrestrial communications, Globalsat Group's innovative approach empowers VLI MULTIMODAL with enhanced situational awareness, operational control, and safety standards, reinforcing its commitment to technological excellence in railway logistics.

What sets our solution apart?

- > Globalsat Group has taken a significant step forward with this project, further solidifying its leadership in the railroad connectivity market. By leveraging its expertise in satellite communications and IoT solutions, Globalsat has developed an advanced interoperability mechanism that enables VLI locomotives to communicate seamlessly with two control centers simultaneously.
- > This innovative approach allows VLI to efficiently operate its fleet across multiple rail networks, ensuring continuous connectivity, enhanced coordination, and improved operational efficiency. The solution not only enhances situational awareness and decision-making but also optimizes railway logistics by minimizing disruptions and increasing the reliability of communications in complex and dynamic operational environments.
- > By integrating Viasat L-Band satellite communications with LTE/4G networks, this solution ensures resilient and redundant connectivity, even in remote and challenging terrains. This capability is crucial for railway operations in Brazil, where vast regions of dense forests and mountainous landscapes pose significant communication challenges.
- > Through this initiative, Globalsat Group continues to drive innovation in the transportation sector, reinforcing its commitment to delivering cutting-edge, mission-critical connectivity solutions that empower its partners to achieve greater efficiency, safety, and scalability in their operations.

Benefits of the Integration

- 01 Real-time communication:** Sending and receiving operational data between trains and control centers in under 3 seconds, representing a 500% improvement over the previous system used by VLI.
- 02 Optimized railway operations:** Significant reductions in train travel time, improving overall logistics efficiency.
- 03 Nationwide coverage:** Reliable and resilient connectivity, regardless of location.
- 04 Scalability:** The solution is designed to support future expansions, with the capability to scale up to 1,000 trains.
- 05 Seamless integration:** Fully compatible with existing train management and control systems.
- 06 Enhanced security:** Secure and private communication channels utilizing modern encryption protocols, including MPLS and IPsec.

Innovative evolution

This project represents an evolution of the solution implemented by Globalsat Group for RUMO Logística in 2020. The proven benefits and operational efficiencies achieved have led both RUMO and VLI to expand their fleet of modernized locomotives to more than 500 units currently operating nationwide in Brazil.

By integrating Viasat L-Band satellite communications with LTE/4G networks, this advanced connectivity solution ensures seamless, real-time data exchange between locomotives and control centers, even in the most remote and challenging terrains.

Conclusion

Through this cutting-edge, interoperable connectivity framework, Globalsat Group has reinforced its commitment to driving digital transformation in railway logistics, ensuring greater efficiency, safety, and operational reliability for its partners.