Case Study

Enhanced New York's Crosstown Line Operations Through Upgraded Communication Systems & Private 5G Network

Industry Transportation

Location New York, USA

Partner Hitachi Rail

End User New York Crosstown Line

Reference

Overview

Hitachi Rail, a global leader in sustainable transportation solutions, is modernizing metro systems worldwide by integrating advanced 5G communications with its SelTrac™ Communications-Based Train Control (CBTC) technology. One of its landmark projects is the deployment of a private 5G network on New York City's Crosstown Line, a critical metro line serving 70,000 passengers daily. This innovation underscores Hitachi Rail's commitment to enhancing urban mobility through cutting-edge technology.

Challenges

Legacy Communication Systems

Traditional train-to-ground communications rely on outdated technologies like radio and Wi-Fi, which are costly, require extensive trackside infrastructure, and struggle in challenging environments like tunnels.

Operational Demands

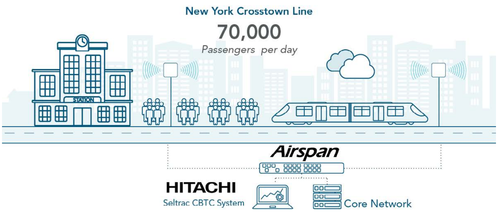
Metro systems must maximize capacity, reliability, and safety while minimizing lifecycle costs and maintenance complexities.

Future-Proofing

With a 30-year infrastructure lifecycle, operators need solutions that can adapt to evolving demands without significant overhauls.

Solution & Benefits

Hitachi Rail, acting as the system integrator, designed and deployed a cutting-edge 5G private network for the New York Crosstown Line using Airspan's 5G small cells technology. This deployment exemplifies a seamless integration of advanced 5G communications with Hitachi Rail's SelTrac™ CBTC system, creating a robust, reliable, and high-performance train-to-ground communication network.



Improved Performance & Efficiency

Reduced Infrastructure

The 5G solution requires significantly fewer radio access points compared to Wi-Fi, streamlining trackside deployment and reducing costs.

High-Bandwidth Connectivity

Utilizing the 4.95GHz to 4.99GHz public safety spectrum band, the network ensures seamless, high-capacity train-to-ground communication even in tunnels, improving real-time data reporting for operations and maintenance.

Sustainability & Scalability

Private Network Deployment

Hitachi Rail's private network model minimizes dependence on public operators, granting full control over critical communications infrastructure.

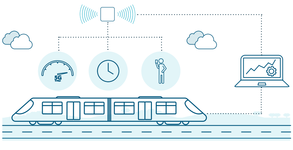
Enhanced Operational Reliability

Real-Time Data Insights

The system enables advanced digital asset management, optimizing both train and track maintenance, thereby reducing downtime and enhancing passenger safety.

Seamless Mobility

The private 5G network supports uninterrupted communication, ensuring precise control of train movements and allowing for closer scheduling, which increases line capacity coverage.



As transportation increasingly becomes one of the key verticals within critical infrastructure, the benefits of 5G private networks—such as enhanced reliability, real-time data capabilities, and streamlined operations—are transforming the way urban mobility systems operate. Hitachi Rail's Managing Director of Urban Rail Signaling, Ziad Rizk, highlighted the breakthrough:

"Our first-of-its-kind 5G solution is a game changer for the urban rail market. We are proud to deliver this transformative technology to our customers and the benefits it will deliver to passengers."

Results & Impact

The Crosstown Line project represents a paradigm shift in urban rail communication.

Increased Passenger Capacity

Improved signaling precision enables higher train frequencies, accommodating more passengers and reducing wait times.

Cost Savings

Reduced infrastructure needs and enhanced maintenance efficiency lower both capital and operational expenditures.

Global Leadership

This deployment solidifies Hitachi Rail's position as an innovator in urban mobility, attracting interest from global operators seeking to modernize their networks.

Hitachi Rail's integration of 5G with SelTrac™ CBTC sets a new standard for metro systems, ensuring safer, more efficient, and sustainable urban transportation. This project demonstrates the transformative potential of private 5G networks in delivering smarter, greener mobility solutions.

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Laying the Foundation for 5G Software and Hardware

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