MTA and Google Public Sector Announce Preventive Track Maintenance Pilot Program

Cost-Effective Program Retrofits Subway Trains with Sensors and Leverages Cloud and AI Capabilities to Detect and Analyze Potential Track Defects

Enhances Track Inspection Process, Making Subway System Safer and More Reliable

The Metropolitan Transportation Authority (MTA) today announced a pilot program in partnership with Google Public Sector, building on the success of its proven TrackInspect prototype, to proactively detect potential track defects before they escalate into operational issues that disrupt service to customers.

The TrackInspect prototype, developed in partnership with the Rapid Innovation Team at Google Public Sector, integrates sensor hardware with advanced cloud and artificial intelligence (AI) capabilities to detect potential track issues. Through this program, Google Pixel smartphones with standard, off-the-shelf plastic cases were retrofitted onto R46 subway cars on the **A** line to capture subtle vibrations and sound patterns through built-in sensors equipped with an attached microphone, signaling the need for preventive maintenance.

The sound and vibration data is sent in real time to cloud-based systems, where artificial intelligence and machine learning algorithms generate predictive insights. New York City Transit (NYCT) track inspectors serve as “humans in the loop,” inspecting locations highlighted by the system and confirming whether there is an issue, providing feedback to continuously train the model. TrackInspect also utilizes Generative AI for natural language processing, allowing inspectors to ask questions about maintenance history, protocols, and repair standards, with clear, conversational answers.

“By being able to detect early defects in the rails, it saves not just money but also time – for both crew members and riders,” said **New York City Transit President Demetrius Crichlow.**“This innovative program – which is the first of its kind – uses AI technology to not only make the ride smoother for customers but also make track inspector’s jobs safer by equipping them with more advanced tools.”

“The TrackInspect pilot is a game-changer for the MTA, combining advanced cloud, AI, and real-time sensor technology to transform how we maintain and monitor our subway infrastructure,” **said MTA Chief Technology Officer Raf Portnoy**. “It reflects our commitment to uniting technology and operations to drive innovation and safety.”

“As more agencies adopt generative AI, Google Public Sector is excited to partner with innovative government leaders, like the leadership team at the Metropolitan Transportation Authority,” **said Google Public Sector Vice President, Go-to-Market, Brent Mitchell**. “The TrackInspect pilot program identified 92% of the defect locations found by track inspectors,

illustrating that enhanced data analysis can help expedite problem identification and resolution to improve railway reliability.”

In the initial pilot, TrackInspect collected 335 million sensor readings, one million GPS locations, and 1,200 hours of audio. The data was combined with NYCT’s database of track non-conformities and ingested into a machine learning model running on Google Cloud.

The data provided by the TrackInspect prototype complement the significant amount of information provided by the MTA’s track geometry cars. When used together, these technologies are a cost-effective way to make the track repair process faster and more accurate by finding and diagnosing potential track problems. Finding and fixing track issues faster means fewer train delays, and smoother service for millions of daily riders.

TrackInspect began as a proof-of-concept prototype developed by Google Public Sector exclusively for the MTA at no cost to the Authority. The results were officially presented by the MTA at this morning’s *Google Public Sector, GenAI Live & Labs* event in New York City.

Transforming Subway Maintenance for the Future
By investing in predictive maintenance and AI-driven solutions, the MTA is taking a major step toward modernizing its operations and ensuring the long-term sustainability of its subway network. The agency’s vision for the future includes scaling AI-driven track inspections across the entire subway system, enhancing data-sharing and collaboration between maintenance teams and AI systems, and leveraging real-time insights to reduce unplanned service disruptions.

The MTA’s commitment to embracing innovation reflects its ongoing efforts to improve service, enhance safety, and optimize operational efficiency.

In parallel with advancing this pilot program, the MTA is releasing a Request for Expressions of Interest for other companies who have developed sensors or analytical capabilities that can “plug in” to this ecosystem.

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