



MARTA Restores Confidence in AVL Data with Vontas IVLU Modernization

Metropolitan Atlanta Rapid Transit Authority (MARTA)

Solution

Vontas OnRoute AVL System, IVLU Hardware Upgrade, Enhanced Route Tracking Vehicle Intelligence

“The upgrade has significantly improved both the completeness and accuracy of our AVL data.”

Meghan Kazanski,
Manager of Transit Analytics, MARTA

The Challenge

Accurate Automatic Vehicle Location (AVL) data is essential for transit agencies seeking to improve service reliability, measure on-time performance, and make informed operational decisions. At MARTA, aging onboard Intelligent Vehicle Logic Units (IVLUs) were creating increasing challenges for the agency’s ability to collect reliable AVL data.

A portion of MARTA’s fleet was operating with IVLUs that had reached or were approaching end-of-life, resulting in software compatibility limitations, continued reliance on odometer-based tracking, and growing concerns around AVL data accuracy and availability.

The impact extended beyond technology. Data quality concerns became significant enough that MARTA had to exclude portions of the affected fleet from bus on-time performance reporting.

“Available adherence data from the affected sub-fleet had to be quarantined from our Bus OTP reporting for a time due to accuracy concerns. These completeness and accuracy issues limited our ability to identify and address the greatest opportunities for on-time performance improvement.”

– Meghan Kazanski, Manager of Transit Analytics, MARTA

For MARTA’s Transit Analytics team, improving data quality was critical to ensuring the agency could accurately evaluate service performance and identify opportunities for operational improvement.

Solutions

To address these challenges, MARTA partnered with Vontas to replace legacy IVLU hardware and implement Enhanced Route Tracking across the affected fleet.

The project was built on close collaboration between MARTA’s Transit Analytics Unit, Radio Maintenance Team, and the Vontas implementation team.

While Radio Maintenance and Vontas coordinated the hardware replacements, the Transit Analytics Unit leveraged Vontas OnRoute (formerly TransitMaster DataMart) to verify installation progress, monitor outcomes, and identify vehicles requiring additional attention.

Regular project reviews and continuous communication enabled the teams to quickly address issues and keep the modernization effort on track.

The project also established a collaborative framework that MARTA continues to leverage for ongoing system monitoring and future onboard technology initiatives.

Results



SIGNIFICANT IMPROVEMENTS
in AVL Data Quality



RESTORED CONFIDENCE
across the organization

Significant Improvements in AVL Data Quality

Following project completion in March 2026, MARTA achieved dramatic improvements in both AVL data completeness and accuracy.

The percentage of active fleet vehicles reporting insufficient AVL data, defined as missing data for more than 25% of timepoints crossed, fell from 40-50% during Summer and Fall 2025 to approximately 15%. At the same time, vehicles reporting excessive questionable adherence values declined from more than 30% to approximately 8.5%.

“Since project completion, the share of the active bus fleet reporting insufficient AVL data has remained stable at approximately 15%, down from 40-50% in Summer-Fall 2025. Similarly, the share of the active fleet reporting a high proportion of questionable early or late adherence values has declined to approximately 8.5%, down from more than 30%.”

– Meghan Kazanski, Manager of Transit Analytics, MARTA

These improvements significantly increased the volume of trustworthy operational data available across the organization.

“More vehicles are consistently reporting adherence data, and the data they provide are more accurate, substantially increasing the volume of usable data feeding into our Bus OTP metrics and the operational decisions and processes they inform.”

– Meghan Kazanski, Manager of Transit Analytics, MARTA

Restored Confidence Across the Organization

The benefits of improved data quality extended well beyond reporting.

With more complete and accurate AVL data, garage personnel gained more reliable information for operator coaching, schedulers gained access to a larger and more representative dataset, and operational leaders received a clearer view of system performance.

“The upgrade has significantly improved both the completeness and accuracy of our AVL data. These improvements have gone a long way toward restoring institutional confidence in the AVL data used to support operational processes and improvement at MARTA.”

– Meghan Kazanski, Manager of Transit Analytics, MARTA

As a result, MARTA's reliability metrics now provide a more accurate reflection of the customer experience across the network.

“MARTA's AVL data, and the bus reliability metrics they support, now provide a more complete and accurate representation of the service our customers actually experience.”

– Meghan Kazanski, Manager of Transit Analytics, MARTA

Creating a Sustainable System Health Strategy

In parallel with the hardware modernization effort, MARTA established a proactive fleet-wide system health monitoring process to help sustain improvements over the long term.

The Transit Analytics Unit now conducts weekly audits to identify vehicles experiencing AVL issues, generate work orders, and track corrective actions through resolution. This ongoing process helps ensure the gains achieved through the IVLU replacement project continue to deliver value well into the future.

The data-driven approach developed during the project has since been applied to additional initiatives involving MARTA's onboard systems and Vontas technology.

Partnership Highlights

Throughout the project, Vontas worked closely with MARTA's technical and analytical teams to ensure successful deployment and issue resolution.

“Paul Switalski and the rest of the Vontas team were highly collaborative and responsive throughout the project, and continue to be on service tickets and special projects since.”

– Meghan Kazanski, Manager of Transit Analytics, MARTA

Regular biweekly reviews, responsive support, and a shared commitment to solving challenges helped strengthen the partnership throughout the implementation process.

Lessons Learned

For MARTA, one of the most important outcomes of the project was reinforcing the value of collaboration between operational, technical, and analytical teams.

“The primary lesson was the importance of strong collaboration between Vontas and MARTA's technical and analytical teams, with each playing a critical role in the success of the IVLU replacement project.”

– Meghan Kazanski, Manager of Transit Analytics, MARTA

The agency also found that ongoing monitoring processes are essential not only for tracking project progress and validating results, but for sustaining improvements after implementation is complete. Additionally, feedback from operators, dispatchers, and frontline personnel continues to provide valuable context for identifying and resolving system issues.

Key Results

- Reduced vehicles with insufficient AVL data from 40-50% to approximately 15%.
- Reduced vehicles with questionable adherence values from 30%+ to approximately 8.5%.
- Increased availability of usable AVL data supporting on-time performance reporting and operational decision-making.
- Restored organizational confidence in AVL data and performance metrics.
- Established a sustainable fleet-wide system health monitoring process.
- Strengthened collaboration between MARTA and Vontas teams for future technology initiatives.

Conclusion

By modernizing onboard IVLU hardware and implementing Enhanced Route Tracking, MARTA transformed the quality, completeness, and reliability of its AVL data. Through a strong partnership with Vontas and a disciplined, data-driven approach, the agency not only improved performance visibility but also established a long-term framework for maintaining system health and driving continuous operational improvement.

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– Meghan Kazanski, Manager of Transit Analytics, MARTA

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