



U.S. Department of Transportation
Federal Transit Administration



Greater Cleveland Regional Transit Authority Radio/ITS Project: Final Evaluation Report

Background

The Greater Cleveland Regional Transit Authority (GCRTA), established in 1974, is a multi-modal transit agency that serves Cleveland and surrounding suburbs in Cuyahoga County, Ohio. GCRTA Radio/ITS system planning started in 1998 to replace an existing radio system and deploy new ITS technologies to increase the overall quality of GCRTA's service delivery while minimizing operating cost and increasing safety. The technologies were expected to assist GCRTA in real-time service monitoring and archived data analyses for resource and capacity management, service adjustments, and efficiency in data reporting. The deployment process took 10 years, and the system was finally accepted in October 2012. This study was an assessment of the deployment process and documents the impact of technologies on GCRTA business functions. To date, GCRTA has installed and accepted the following technologies:

- Voice and data communication system infrastructure, including towers
- In-vehicle equipment to support voice and data communication
- Computer Aided-Dispatch/Automatic Vehicle Location (CAD/AVL)
- Automated Vehicle Announcements (AVA)
- Automated Passenger Counters (APCs)
- Vehicle Component Monitoring (VCM)

Objectives

The overall objectives of this study were to evaluate the quality of the deployed technology, the deployment process, and GCRTA's utilization of deployed technologies to meet intended goals and objectives and to determine reasons for delayed acceptance of the system.

Findings/Conclusions

Issues related to language requirements, vendor management changes, implementation process, system training and documentation, and integration with current systems significantly affected the implementation and acceptance of the GRCTA ITS system.

Based primarily on qualitative assessments from GCRTA staff and a review of other data/reports, key findings are as follows:

- Requirements were written primarily for radio infrastructure development, with limited clarity in how CAD/AVL functions such as vehicle tracking, route and schedule adherence, incident management, and single-point logon should be verified in the field, resulting differences in the interpretation between the vendor and GCRTA.
- Vendor management changed several times throughout the course of the deployment, causing delays and renegotiation of contracts that resulted in several change orders.
- Contract milestones were designed based on radio and other hardware-related requirements; thus, 80–85% of the total contract value was paid before any testing was performed on TransitMaster functions.
- The lack of a formal implementation process based on systems engineering was a key reason for delays and current issues with the system. Sufficient checks and balances were not in place to determine the readiness to move forward with each stage in the implementation. Further, the radio and CAD/AVL systems were designed and implemented separately and sequentially even though both sets of hardware were procured at the same time. Most of the CAD/AVL system integration was performed long after the radio system was installed, and testing was not performed until 2009, when the hardware was 10 years old.
- Rail was included in the CAD/AVL deployment to replace obsolete equipment. However, TransitMaster functions do not address management of rail operations, so GCRTA still uses separate tools for Supervisory Control and Data Acquisition (SCADA) and signal control; TransitMaster is used only for operator logons and canned data message exchange.
- There have been several changes in management at GCRTA since the project was commissioned. Original staff have either retired or left the organization, thus causing a loss of institutional knowledge. Also, the level of staffing dedicated to the project and interdepartmental communication have been limited.
- The level of training provided by the vendor was very limited and documentation was not developed specific to GCRTA. Also, due to initial issues with the system, users developed a low confidence in the system, so adoption of the system was not as expected.

Benefits

Key findings from GCRTA's experience were compiled in form of "lessons learned" for the benefit of other agencies pursuing similar technology deployments aimed at increasing the overall quality of service delivery while minimizing operating cost and increasing safety. Lessons learned in real-time service monitoring and archived data analyses for resource and capacity management, service adjustments, and efficiency in data reporting are applicable to any system considering similar technology deployments.

Project Information

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