Project Completion Report

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Demonstration of Real-Time APTA TCIP Compliant Passenger Information On-Board Transit Vehicles and at the Way Side

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Project Summary

This project demonstrated how the American Public Transportation Association (APTA) standard Transit Communications Interface Profiles (TCIP) facilitates the interoperability of systems provided by different suppliers. This project leveraged the existing TCIP compliant system at LYNX that was implemented as a result of Transit Ideas Project 60.
There were two aspects to this passenger information project; 1) Getting standardized Real-Time Information to passengers waiting at the way side and 2) Informing passengers riding the transit vehicle of the upcoming stops with Real-Time visual displays.

There were two 46" Liquid Crystal Displays (LCD) installed; one at the Orlando International Airport and one at the Orlando Convention Center. These displays are high brightness direct sunlight readable that display estimated time of departure for the routes running between the Airport and Disney University. The displays also include advertising and public service announcements concurrently with the service information.

LYNX provided ten transit vehicles that service Link 111 between the Airport and Disney University to be equipped with Vehicle Logic Units (VLU) and On-Board Displays (OBD).
The OBDs display upcoming next stop information to the passengers, route destination, and location based advertising. The OBDs consist of two 15" LCD monitors mounted above the right wheel well just behind the front door.

Project Purpose and Background

Intelligent Transportation Systems are rapidly advancing and are provided by many different vendors. TCIP is the US balloted standard for data communication and this project demonstrated how multiple sets of proprietary data from different business areas can be standardized and shared. The Automatic Vehicle Location (AVL) Data from Mentor Engineering Inc. was translated into TCIP format and used by aE's AVL Server and aE's Transit Traveler Information Server to create the passenger information that was displayed on the signs at the Airport and the Convention Center. The schedule data that was provided by LYNX was also

translated into TCIP and used by aE's VLU along with location data to provide the next stop visual announcements and location based advertising.

Lessons Learned

Originally the service information provided at the Airport and the Convention Center was going to be for Link 111 Orlando International Airport to Disney University. After further discussion with LYNX, the concern that passengers riding other routes at the two stops with the passenger information displays would not see the departure time for their routes and therefore worry that they had either missed their bus or it was not coming. In order to eliminate confusion and improve the ridership for LYNX passengers, the GIS data for all routes that include the stops at the Airport and the Convention Center were translated and estimated departures were displayed for all routes related to those stops.

The on-board portion of the project presented obstacles that prevented the demonstration from occurring in time for the ITS World Congress. During the survey of the transit vehicle aE was faced with two major issues. The first issue was that an ambient noise sensing microphone was required in order to adjust the announcements on-board according to the ambient noise levels. This was something that aE had to develop before the installation and did so. The second issue was the location of the OBD. The OBD that was purchased for this project was designed to have the monitors side by side. The location that the OBD was designated to be installed by LYNX required the OBD to have the monitors placed one above the other. This issue was addressed in the lab and the install dates were not affected.

During the installation of the on-board equipment, there was electromagnetic interference (EMI) on the OBD that was not present during lab testing. It was concluded that the on-board system could not be installed until the EMI issues were resolved. There was not enough time to resolve the issues prior to the ITS World Congress. The solution was to redesign the cabling to eliminate the interference. In addition to the changes required to fix the EMI issues, aE designed and manufactured new OBDs so that the monitors would be vertical instead of horizontal. The system has been reinstalled and there is no interference on the display.

Conclusions

Although the on-board portion was delayed, the way side system got great reviews and high visibility. Immediately after the installation of the passenger information signs, LYNX passengers were using the sign to check the departure times. Even LYNX staff was intrigued by the displays and validating that the departure times were correct. Once the World Congress started there was positive feedback from many attendees and much curiosity from attendees that had not seen the passenger information displays.

There has not been any feedback from the on-board systems because they have not been installed long enough to receive feedback from LYNX customers or employees.

These systems are going to remain installed at LYNX running in regular service. aE will be providing LYNX with the Content Manager office application to manage the displays and the content that is scheduled on the displays in the upcoming months. We also plan to provide other upgrades to the system at no cost to LYNX, ITSA, or the FTA. LYNX staff have indicated that they are eager to receive the Content Manager application and plan to continue using the displays to communicate with their customers.