Metro

Board Report

Los Angeles County
Metropolitan Transportation
Authority
One Gateway Plaza
3rd Floor Board Room
Los Angeles, CA

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AD-HOC CUSTOMER EXPERIENCE COMMITTEE
JANUARY 18, 2018

SUBJECT: DIGITAL COUNTDOWN DISPLAYS AND REAL-TIME
ACCURACY IMPROVEMENT STATUS UPDATE

ACTION: RECEIVE AND FILE

RECOMMENDATION

RECEIVE AND FILE status report on Metro's bus and rail arrival countdown clocks.

ISSUE

Metro's bus stops and rail stations equipped with arrival/departure countdown clocks allow us to provide our customers additional transit customer service that enhances overall customer experience in terms of service and information.

DISCUSSION

Metro uses the NextBus system to provide bus and rail arrival/departure information to customers via the internet, smartphone, or electronic signage placed at high volume passenger boarding bus stops and rail stations across Los Angeles County. There are currently two algorithm predictions in use by NextBus: one for Bus and one for Rail. Nextbus is the current contractor which provides real-time predictions used by Metro on nearly 900 transit passenger information system (TPIS) monitors for Rail and 100 for Bus.

The bus arrival information system uses a data feed supplied by Metro that is created using global positioning satellite (GPS) from buses. As NextBus was the first company to provide real-time bus predictions, this process is mature and generally accurate. Accuracy is based on a polling rate of 3 minutes. The cellular Wi-Fi equipped buses poll every 5 seconds for improved accuracy. The Wi-Fi equipment is currently being installed on the existing fleet at the rate of 400 per year, and new electric and zero emission buses will have the equipment installed upon delivery.

The rail arrival information system uses a data feed supplied by Metro which is created using location information from the rail supervisory control and data acquisition (SCADA) system that relies on track circuits per block data information as opposed to continuous GPS readings. Metro IT has been working with NextBus to improve the process where the original system was not working acceptably; however, the data provided to NextBus for the rail predictions must be improved to provide a higher

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level of accuracy.

Two of the main challenges that impact the accuracy of countdown clocks on the bus and rail systems are: providing a way to inform the NextBus system of unscheduled service changes particularly at terminals, and the limited number of track circuit data sources.

IT and Operations are working in collaboration to address countdown clock accuracy challenges with NextBus. To date, efforts to improve the accuracy of bus and rail arrival time information include:

- Enhancements to input map which will allow for the input of additional unscheduled service changes.

- The SCADA feed to NextBus was increased from 90 seconds to 20 seconds for improved accuracy.

In addition, staff monitors the reliability of existing bus and rail countdown clocks through the following efforts:

Major components of the rail countdown clock system (media players) are checked every day by Rail Communications staff remotely to report failures.

- Typically, problems with information being displayed on the Rail countdown clock monitors are reported by Metro staff.
- Rail Communications staff and/or a Contractor responds to rail countdown clock system issues such as frozen screens and late updates, etc. Some issues can be addressed remotely or may require a Rail Communications Inspector to be dispatched for troubleshooting/corrective action. Response and restore times can vary depending on the issue.
- Operations and IT are working towards a more proactive monitoring strategy that would reduce the number of malfunctions, overall response times and improves the reliability of countdown clock monitors.
- Rail system interruptions are handled through a combination of Nextrip system prediction adjustments and priority messages that are displayed on countdown clock monitors.
- Ad-hoc messages along with service announcements are used to provide delay information that may impact schedules as a result of unplanned events to deliver customers the most accurate service information possible.
- Bus countdown clock interfaces are monitored by IT staff 24/7 and can be addressed remotely through the coordination of IT staff and NextBus engineers in an effort to improve bus countdown clock accuracy.

Current and Future Projects
Early 2017, a seven-foot transit information tower was implemented at the new Wilshire Grand Center which provides 24/7 real-time arrival information for nearby Metro Rail, Metro Bus and 10 local transit carriers. The City of Los Angeles sponsored the project in collaboration with the building owners. Metro IT developed a real-time application program interface (API) which integrates the real-time feeds for all carriers in the region into a single feed to drive the three digital displays.

The NexTrip e-signage project will implement 302 real-time digital displays at existing bus shelters throughout the LA Metro service area. These signs display real-time arrival information and alerts for Metro and all other municipal operators that operate at these stops. The new signs will also have Push-to-Talk (PTT) technology, allowing the arrival times to be audibly played over a nearby speaker; making this information ADA accessible for the visually impaired. To date, 31 locations have been outfitted with the new technology. Project completion is scheduled for first quarter of 2019. Two of the technology demonstration bus shelters adjacent to City Hall, sponsored by the City of Los Angeles and LA Metro, will be retrofitted with touch-screens and interactive maps to support local way-finding in addition to real-time arrival data. The touch-screen shelter upgrades are scheduled for completion early February 2018.

Connected Bus Capital Program -This program is an enterprise scale project to provide cellular Wi-Fi communications to over 2,200 Metro's bus fleet. The project will allow for public Wi-Fi for passengers, real-time data improvements and additional marketing/advertising opportunities. To address countdown clock accuracy, this project will retrofit the Metro bus fleet with cellular routers. The new routers will provide GPS location data every 5 seconds in contrast to the current 3 minute data collection cycle. Currently, over 200 buses have the new routers and Operations is installing the new routers on 400 buses a year. In addition, all new buses will be delivered with the routers pre-installed. Metro's contract services fleet of over 150 vehicles will be retrofitted with the new cellular routers through a private contracting services to be completed by June 2018.

Connected Rail Pilot Project - A pilot project to install GPS equipment on the Blue and Red/Purple Lines is targeted to begin in early spring of 2018. Currently, Metro IT and Rail Engineering are assessing and evaluating equipment installation requirements in preparation for the pilot. Once preliminary engineering is completed, equipment retrofitting will begin and allow the pilot rail cars to broadcast their GPS coordinates at 5 second intervals to the NextBus application for more accurate arrival predictions.

The timeline for the project is estimated to run 75 weeks and expected to be complete by the end of 2019. The engineering/procurement phase of the project is estimated to take 9-11 weeks and 66 weeks for the equipment installation; resulting in approximately 330 GPS newly-equipped rail cars.
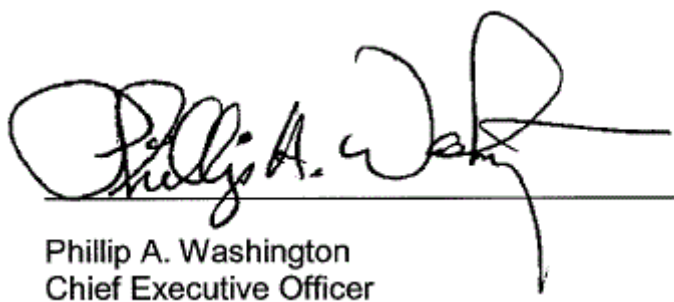
DETERMINATION OF SAFETY IMPACT

This report on Metro's bus and rail countdown clocks will not have any impacts on the safety of our customers and/or employees.

NEXT STEPS

Staff will return to the board as necessary to provide updates regarding initiatives to improve the customer experience, inclusive of bus and rail real-time arrival countdown clock information.

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