



File #:2016-0275, File Type:Informational Report

Agenda Number:34

**EXECUTIVE MANAGEMENT COMMITTEE
APRIL 14, 2016**

**SUBJECT: USE OF TECHNOLOGY TO IMPROVE CUSTOMER EXPERIENCE
ACTION: RECEIVE AND FILE**

RECOMMENDATION

RECEIVE AND FILE report back on a January 2016 motion and a **quarterly status report regarding improving customer service and experience through use of technology and innovation.**

ISSUE

This serves as a report back on a motion made in January 2016 by Directors Garcetti, Solis, Bonin and Najarian, and provides a quarterly status report on key accomplishments and technological activities in the last quarter to further the goal of improving the customer experience.

DISCUSSION

1. The following is a summary of initial findings and current status on directives initiated by the motion:
 - A. *Prioritize and accelerate the full installation of cellular and Wi-Fi infrastructure and service in MTA tunnels, underground stations, and provide a status report on the execution of agreements with cellular service providers, with the goal of a system with no “dead zones” for cellular and internet users.*

The installation of cellular service in the subway tunnels has been deemed a very high priority by the CEO. To that end, another major milestone was reached in Metro’s effort to provide wireless cellular coverage in our subway system. On February 18th, Sprint followed Verizon Wireless’s lead in signing a formal agreement with Metro’s contractor, InSite Wireless, to provide cellular service in our subway system.

When implemented, this system will provide continuous wireless phone coverage and Internet access to Verizon and Sprint subscribers from above ground, down onto the subway station platforms and then onto the subway trains.

It should be noted that Verizon is in the process of a major upgrade to their overall cellular

network technology. Rather than installing the older technology that they are phasing out, Verizon is implementing the newest technology in the Metro subway. As a result Verizon subscribers need to have newer phones in order to get service in the subway. Metro staff is exploring options with Verizon that would address people with older Verizon phones.

The necessary infrastructure for the cellular system is being installed in phases/segments. At this writing, Verizon is in the final testing phase for providing cellular service in the first subway segment (Union Station to/from 7th/Metro). The first segment is due to be fully operational for Verizon subscribers in early April 2016.

Subsequent phases include expanding the cellular coverage to the balance of the Red and Purple Lines as well as underground segments of Metro's light rail lines with the goal of creating a system with no cellular "dead zones."

In addition, efforts have been initiated to coordinate the installation of the necessary technology infrastructure for the underground segments of the ongoing rail projects such as Regional Connector, Purple Line Extension and Crenshaw. This will help expedite providing cellular service.

There is a significant amount of work needed to establish the Sprint service in our subway. InSite Wireless is working with Sprint and Metro to establish a schedule for implementation of the Sprint cellular service in the first subway segment.

Negotiations with the other two cellular wireless carriers (T-Mobile and AT&T) are ongoing. T-Mobile appears to be very close to signing up.

- B.** *Begin the development of a next-generation Transit Access Pass ("TAP") for customer payment of non-MTA services, including but not limited to Metrolink, taxicabs, ride-hailing companies, bikeshare, parking garages, etc.*

TAP is working with Planning staff to integrate TAP with Metro Bikeshare and rail station parking efforts. TAP cards will have the ability to be registered and will help expedite bike rentals or obtaining automobile parking. With TAP, Bikeshare and parking will be able to provide discounts to patrons who use transit.

Future TAP integration plans include using the TAP account as a transfer and payment option for those registered with either program. TAP is also working with the City of Los Angeles to see if state of the art parking meters can "top up" TAP cards. For example, a customer would load cash onto their TAP card at a parking meter and pay using a credit or debit card. Future integration projects may include City of Los Angeles' electric vehicle car sharing and mobility hubs.

- C.** *Identify existing transit applications that do not use real-time MTA data and explore the feasibility of sharing real-time data to enhance the user experience.*

RFP No.PS21480 will provide up to 300 real-time transit displays at various bus stop/shelters

throughout the county. Data will be displayed for all carriers that service the stop with real-time data being displayed for carriers that subscribe to a real-time service. Currently, 19 carriers provide real-time in the region with others planning to add real-time in the near future.

The current Trip Planner originally developed in-house does not include a real-time component and is being replaced with Open Trip Planner (OTP), an Open Source multi-modal routing application developed in conjunction with Google and now used by other agencies such as Tri-Met in Portland and Santa Clara VTA.

As an Open Source application there are no on-going license costs which are generally very costly.

During the replacement, Metro will retrofit OTP with real-time data for all carriers in the region that subscribe to a real-time service and support an externally accessible API. Metro is working in partnership with a private sector Internet Service Provider to speed development and ensure that the planner is available to other municipal operators using their own branding for a small monthly hosting membership fee.

- D.** *Work with transit technology companies to develop connectivity and demand-response systems that integrate with MTA's fixed-route transit lines to provide first-mile/last-mile connections in various modes.*

Metro Planning staff has been meeting with Lyft to explore potential ways to integrate the demand response service as first-mile/last-mile solution. To date, Lyft has exhibited some desire to participate and Metro is communicating with them to determine if a favorable partnership can be achieved.

Metro staff has met several times now with Xerox staff to explore the feasibility of adopting a variation of the newly announced goLA app for use by transit users at major hubs and transit stations. The goLA app is particularly comprehensive in the area of first-mile/last-mile intermodal integration and also includes Lyft mentioned above. Xerox has agreed to explore the feasibility of adopting a large format user interface needed by kiosks planned for several Metro stations. The current Union Station Interactive tower located in the East Portal would serve as a pilot for the concept.

- E.** *Improve real-time arrival service information, including, but not limited to:*

- 1)** Set a goal of repairing faulty displays within 24 hours of failure

The Rail Communication and Information Technology Departments are exploring a remote network monitoring system that can be easily integrated with Metro's current Transit Passenger Information System (TPIS) displays. The new network system would monitor the TPIS displays 24/7 and will report failures to a centralized location. The remote monitoring system will provide the visibility to respond to TPIS display failures within a 24-hour period.

In the meantime, Rail Operations is closely monitoring all TPIS displays and has committed to a 24 hour replacement cycle* once the defective unit is reported. Technicians have been assigned to sweep the Red Line daily, make minor repairs and provide a daily report.

*Some locations may take slightly longer, depending on the nature of the outage, as repair efforts may require work to take place after the trains have ceased daily operations to ensure the safety of maintenance staff.

2) Ensure consistency between countdown clocks displays at each rail station

Efforts are underway with the current real-time provider to address algorithmic calculations computed by the software to more closely predict actual conditions.

New improved maintenance procedures and monitoring capabilities being explored (see above) will ensure more optimal display synchronization.

3) Create true real-time feeds of bus and rail arrival times rather than the current practice of information feeds at set intervals.

For the short term, a new real-time Application Programming Interface (API) under development and in beta use by some Metro displays takes advantage of provider API's that support true real-time while still allowing slower API's to function.

For the longer term, Metro is exploring several efforts to unify real-time data such as the General Transit Feed Specification Real-time (GTFS-RT) as well as Open Source initiatives such as "One Bus Away" and "Transit Time".

The entire real-time product space is undergoing rapid change. Metro ITS will continue evaluating the new technology for future implementation considerations.

4) Work with Metrolink and Amtrak to install real-time arrival information at regional rail stations

Amtrak does have an external web service that can deliver train status, schedule and train consist information for passenger information systems in stations.

The process requires a written agreement explaining the service and the expectation of security. To access to the external web service outside of Amtrak's network a certificate and partner ID is required to connect. The system that needs Amtrak train status, schedules and consists has to make the request each time an update is needed. There are some costs involved to create this access for Amtrak trains.

Both Metrolink and Amtrak technical staff have agreed to meet with Metro to further explore opportunities for further data integration.

F. *Work with county transit operators to help improve bus speeds at key corridors where traffic*

signal priority technology exists.

Metro has and continues to fund the construction and implementation of transit signal priority for three of the municipal operators (total of four Rapid corridors) as part of the Metro Rapid Expansion Program with federal grants (a CMAQ and Very Small Starts grant). Those include Santa Monica Big Blue Bus, Torrance Transit and Culver CityBus.

In addition, bus signal priority projects are eligible projects for funding through Metro's Call for Projects Signal Synchronization and Bus Speed Improvements Mode. Metro has awarded Call for Projects funding and worked with multiple transit agencies and cities to construct and implement signal priority projects, including Foothill Transit, G-Trans (formerly Gardena Transit), Torrance Transit, Long Beach Transit, City of Downey, City of Glendale, Culver City, and others. The next Call for Projects will be in 2017. The Call for Projects is a competitive process in which agencies may apply and compete for funding.

In addition, Metro will be starting to explore Next Generation technologies for transit signal priority. This study will be completed in Spring 2017.

G. *Identify and utilize technology to better align arrivals and departures of different lines to streamline transfers.*

The current scheduling system and process's make every effort to optimize connections times but with the current grid type network optimizing one connection quite often foils the next connection down the line. The current "best average" computed by the system is about as optimal as can be achieved.

Metro also employs a software component in Hastus called "Meets" which allows schedules to be planned to allow schedules to be built that favor transfers at selected timepoints and selected trips. Using this feature, schedule makers do coordinate schedules to favor transfer opportunities. During the very early and late periods when headways are wide and options are few, Meets is used to create operator "Notes" to request them to hold for an arriving bus. Below are two examples.

ON ARRIVAL AT THE LINE-UP AT BROADWAY & 7TH St.| WAIT FOR TRANSFERRING PASSENGERS FROM OTHER LINES. LEAVE ONLY WHEN AUTHORIZED BY SUPERVISOR OR RADIO DISPATCHER.

BETWEEN THE HOURS OF 11PM AND 430AM ALL BUSES ON ARRIVING AT VERMONT AVE| WESTERN AVE| AND FAIRFAX AVE| WAIT FOR TRANSFERRING PASSENGERS FROM LINES 204| 207| AND 217 RESPECTIVELY| IF IN SIGHT.

Connections with other carriers may possibly be improved through a coordinated effort. To explore the potential for tighter municipal operator connectivity, IT staff has processed data for all locations shared between Metro and Municipal Operators with special focus at Metro rail stations to indicate the number of peak and off-peak daily runs along with current scheduled average transfer times. This data will be analyzed by the Scheduling department to determine

what optimizations might be possible

2. The following is a summary of additional progress on other customer focused activities for the quarter ending in April 2016.

A. *Personal Electric Transport (PET) Study - completed*

A white paper on personal electric transports (PETs), sometimes referred to as just electric vehicles (EVs), was prepared by Coro Fellows. The focus of the report was to begin to classify the various transport types, bike, scooter, hoverboard etc. to in order to identify and compare the various attributes of each transport class in the context of a potential first-mile/last-mile solution. Electrifying personal transports increases the access range around transportation hubs and thus the pool of potential transit users.

The personal transport market is growing, with new models being introduced for public use at a rapid pace. While many are being introduced with a focus on entertainment value, others have been designed specifically to support first-mile/last-mile initiatives or to replace the auto use for short trips.

The report includes data on many models with valuable early information about safety and usability by various demographics. There is a special section addressing hover-boards which have proven particularly troublesome with some manufacturers.

The intent of the paper is to give decision makers early useful information for determining how to support, introduce and integrate these new transports safely into the transit environment similar to bicycles.

B. *Union Station Passenger Enhancements - completed*

Two new passenger enhancements have been recently added to Union Station.

New East Portal real-time digital displays - A series of 4 vertical displays display next arrival information about ALL available services in and around the station including, Patsaouras Plaza bus bays, the corner of Cesar Chavez & Vignes, as well as the entrance to El Monte Express Lanes.

New push-to-talk audio units for the sight impaired have been activated at all Patsaouras Plaza bus bays to provide audio announcements on demand for next arrivals at each particular bus bay.

C. *Nextrip E-Signage RFP released - in progress*

RFP No.PS21480, which will provide up to 300 real-time transit displays at various bus stop/shelters throughout the county, was released earlier this quarter. Proposals have been received and are currently being evaluated.

When implemented, data will be displayed for all carriers that service each stop with real-time data being displayed for carriers that subscribe to a real-time service. Locations will be chosen based on average daily passenger counts and the number of connecting services. Currently, 19 carriers provide real-time in the region with others planning to add real-time in the near future. For carriers without real-time services, scheduled information will be displayed.

D. *ITS Innovation Lab - completed*

A new ITS Innovation Lab located on the 5th floor USG Headquarters Building was created by repurposing an older multi-purpose room in dire need of refurbishing. The lab has been equipped with moveable furniture to support various developmental, training, and demonstration activities along with the latest communications equipment for teleconferencing world-wide with various innovators and high-tech companies. Additionally, the lab supports test equipment and computing resources in support of current innovation initiatives underway at Metro.

E. *Open Trip Planner OTP - in progress*

Recently, Metro has made the decision to drop its existing in-house developed Trip Planner in favor of the Open Trip Planner (OTP). While the older planner has served travelers for over a decade, it is showing its age and becoming increasingly time consuming to modify, enhance and support.

OTP is an open source, multi-modal planner used by several transit agencies already with planned adoption by many others. It was developed in partnership with Google and features a very efficient path finding engine capable of supporting the high-volume usage required by a region the size of Los Angeles and adjacent counties.

Metro has made special arrangements with the Metro Cloud Alliance (see below) to further speed up adoption and add real-time enhancements. By adopting the planner via a membership arrangement, the planner will be available to other transit agencies in the region for only a negligible membership fee.

F. *Metro Cloud Alliance - established*

In order to speed up the development and testing of new innovative software technologies and share data resources with the private sector and other carriers, Metro has partnered with Nexidyne in Tustin, CA to create an open source transit membership. Members share in the further development of open source transit applications such as Open Street Map and Open Trip Planner and are provided with an environment and support to host their own branded transit applications for web and mobile devices.

The overall focus of the membership is to reduce costs, share resources, provide consistent applications within the region and streamline support of customer-facing transit applications.

G. *Connected Buses Pilot - in progress*

An important milestone was reached during the period. The specification was changed with New Flyer to switch to a router that is capable of connecting wirelessly from the bus to the internet and Metro's enterprise network. As of the last week in March, all New Flyer buses that are received from the manufacturer are now being delivered with the more capable routers. In addition to the advantages in capabilities, this will result in a savings of approximately \$70,000 for the remaining 145 buses in the New Flyer order. A more comprehensive report will be provided for this project next quarter once the newly equipped buses are put into service.

NEXT STEPS

Staff will continue to work on the directives in the motion. Staff will also develop and implement customer experience related initiatives as well as continue to evaluate other technology applications that will benefit Metro's customers.

Look-Ahead for Next Period

Staff will report back in July 2016 with a progress update on a variety of customer related technology initiatives, including:

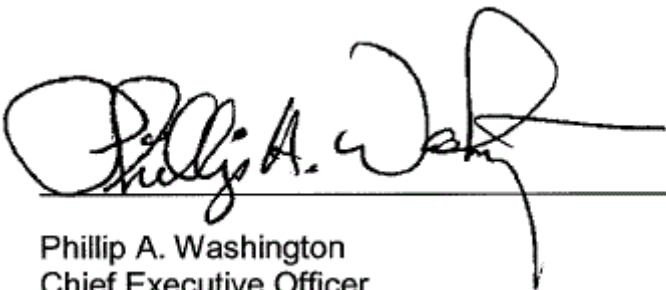
- A) Selected items included in the January 2016 Board Motion
- B) Connected buses progress
- C) OTP progress
- D) New real-time initiatives

ATTACHMENTS

Attachment A - Motion Board Report 2016-0086

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Phillip A. Washington
Chief Executive Officer



Board Report

File #:2016-0086, **File Type:**Motion / Motion Response

Agenda Number:

**REGULAR BOARD MEETING
January 28, 2016**

Motion by:

**MAYOR ERIC GARCETTI, SUPERVISOR HILDA SOLIS,
DIRECTOR MIKE BONIN & DIRECTOR ARA NAJARIAN**

January 28, 2016

**Item #44; File ID 2015-1783
Technology & Transportation Investments to Improve Customer Service**

The quality of the customer experience is directly relevant to how attractive the MTA system is to potential riders, and more riders translates into the furthering of MTA’s goals of easing congestion, cleaning our air and keeping our economy moving.

Technological sophistication is expected by today’s customers within all economic and demographic strata.

A majority of people across all economic and demographic strata carry cellular and/or internet enabled devices on their person.

People want to be constantly connected to cellular and Internet service, especially when traveling.

Transportation information applications are among the most downloaded smart-phone programs.

Technology has the potential to improve customer service, “first-mile, last mile” connections by linking the transit system with car sharing, taxi, bike and other modes of transportation; provide real-time bus and train timetables; streamline transfers; and more.

As MTA proceeds with its unprecedented expansion of Los Angeles County’s transportation network, it is essential that these investments are complemented by the best possible technology.

MOTION by Garcetti, Solis, Bonin, Najarian that the Board direct the CEO to:

- A. Prioritize and accelerate the **full** installation of cellular and Wi-Fi infrastructure and service in MTA tunnels, underground stations, and provide a status report on the execution of agreements with cellular service providers, with the goal of a system with no “dead zones” for cellular and

internet users.

- B. Begin the development of a next-generation Transit Access Pass (“TAP”) for customer payment of non-MTA services, including but not limited to Metrolink, taxicabs, ride-hailing companies, bikeshare, parking garages, etc.
- C. Identify existing transit applications that do not use real-time MTA data and explore the feasibility of sharing real-time data to enhance the user experience.
- D. Work with transit technology companies to develop connectivity and demand-response systems that integrate with MTA’s fixed-route transit lines to provide first-mile/last-mile connections in various modes.
- E. Improve real-time arrival service information, including, but not limited to:
 - 1. Set a goal of repairing faulty displays within 24 hours of failure
 - 2. Ensure consistency between countdown clocks displays at each rail station
 - 3. Create true real-time feeds of bus and rail arrival times rather than the current practice of information feeds at set intervals.
 - 4. Work with Metrolink and Amtrak to install real-time arrival information at regional rail stations.
- F. Work with county transit municipal operators to help improve bus speeds at key corridors where traffic signal priority technology exists.
- G. Identify and utilize technology to better align arrivals and departures of different lines to streamline transfers.
- H. Report back on all the above during the April 2016 MTA Board cycle.