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EXECUTIVE MANAGEMENT COMMITTEE
JANUARY 21, 2016

SUBJECT: CUSTOMER EXPERIENCE TECHNOLOGY IMPROVEMENTS

ACTION: RECEIVE AND FILE

RECOMMENDATION

Receive and file the status report on efforts underway to use technology and innovation to transform the customer experience on Metro's Bus and Rail system, and mobility in the region in general.

RECEIVE AND FILE report of the **Customer Experience Technology Improvements.**

ISSUE

This report provides key accomplishments and technological activities since the last update in September 2015 to further the goal of improving the customer experience as well as a look-ahead to the next update in April 2016.

DISCUSSION

The following is a summary of progress on customer focused activities for the referenced period.

1. Formation of Coalition for Transportation Technology - Completed

The Metro Highway Program and Information Technology Services have been meeting with the County of Los Angeles Department of Public Works, Caltrans District 7, Southern California Association of Governments, City of Los Angeles and others to discuss the potential challenges and opportunities tied to the rapid advancement of transportation technology. These discussions have culminated in the formation of the "Coalition for Transportation Technology", a group focused on researching, planning, demonstrating, and validating emerging transportation technology concepts to increase mobility, relieve congestion, enhance safety, and improve quality of life. The Metro Highway Program has been identified by the partner stakeholders to serve as the Coalition lead, and the group is working on the development of a project charter to formalize the Coalition structure.

Some of the preliminary Coalition goals include the following:

A. Provide guidance and support for regional transportation technology deployments.

B. Identify and evaluate transportation technology demonstration opportunities.

C. Outreach to industry partners including but not limited to local agencies, private industry, academia and USDOT.

D. Pursue funding opportunities and strategic partnerships to support Coalition activities.

Among the technology applications of particular interest to the coalition are autonomous and connected vehicles, integrated corridor management, active traffic management, and local arterial transportation technology solutions.

2. Bus / Rail Fleet Technology Strategic Plan Tasks 1&2 - Completed

The Bus / Rail Fleet Systems Strategic Plan is being developed by Eiger Tech / IBI under the direction of the Transit Operations Applications group of Metro ITS.

When completed, the plan will provide the future strategic direction for all Metro bus / rail systems and will serve as the replacement blueprint for the current Advanced Transportation Management System (ATMS). The newly identified systems for passenger counting, fare payment, accident avoidance, security cameras etc., when combined with Wi-Fi communications, will transform the fleet into a fully connected transportation system to allow for true real-time monitoring, control and management to provide Angelenos with a cost efficient, environmentally friendly, reliable, and secure transportation experience.

Task 1 (Needs Assessment) and Task 2 (Communications Assessment) are now complete. Key individuals from all impacted departments were interviewed to determine existing functionality, shortfalls in the current system and both required and desired functionality for all replacement systems. A complete market review of the latest transit technologies in use and on the horizon was performed to provide a new state-of-the-art baseline.

The alternative and SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) portion of the study is currently underway. The final Strategic Plan is targeted for completion by August 2016.

3. Nextrip E-Signage RFP released - Completed

An RFP for Nextrip E-Signage (real-time bus arrival information) was released the week of 12/17. The RFP calls for up to 300 new real-time digital displays to be located at bus stop locations throughout the service area. The displays will continuously broadcast bus arrival times and alert information to keep passengers informed of potential delays which could impact their trip.

The signage locations chosen were based on the number of daily boardings and available facilities (bus benches, power etc.). Because of the newly developed real-time application program interface (API) described below (Item 5), locations served by more than a dozen other transit operators in the county will have their bus arrival data displayed as well thus enhancing the customer experience by providing a unified and consistent transit information experience.

4. Metro.net site security (SSL - HTTPS) Implementation - Completed

A White House Executive Directive released earlier this year directed all Federal websites to upgrade their communications to the more secure SSL-HTTPS protocol. At the urging of the Mayor's Chief Technology Officer, Metro Communications, along with other city agencies, has upgraded its primary website 'Metro.net' to the verified and more secure communications format.

The change will make the entire site more secure by limiting the potential for cyber breaches such as man-in-the middle-attacks and unwarranted browsing and data entry surveillance.

5. Digital Display Software Replacement for Countdown Clocks - Completed

A new digital display software system has been developed in-house by Information Technology staff to replace the current existing commercial display software. Although the existing software appeared to work well with static display data, our experience with dynamic display data such as countdown clocks for real-time bus arrivals was inconsistent and troublesome. After working with the software vendor for several months, it was still necessary to reboot the entire system twice daily to insure reasonable service levels.

The new software provides continuous updates without the need for rebooting and allows technical staff to monitor using network diagnostics for 24/7 support. A new application program interface (API) communicates with 5 different real-time providers used by the various transit operators in the region. The API consolidates the different data formats into a single generic feed for each display thus greatly simplifying the process and increasing communications reliability.

Metro's intent is to expand the use of the software to other dynamic display projects for a more unified approach to messaging and display maintenance. Because the software is open source, the agency will reap substantial savings in license costs now and in future years.

6. Metro Vanpool Website Interactive Map upgrade -Completed

The current Metro vanpool program is the largest in the country and consists of over 800 vanpools and generates up to $10 million annually. The Metro vanpool site allows users to either search for potential vanpools with unfilled seats or to begin the process of creating a new vanpool.

The site has been upgraded with a new interactive mapping service which makes the entire process more intuitive by providing simple visual point and click functions that streamline the user experience.

Changes in the design will allow for vanpool functionality to be integrated into the high volume Metro Trip Planner application which will dramatically increase exposure to this revenue generating program.

7. Metro Enterprise Map Server - Completed

A new enterprise map server has been implemented by Metro Information Technology staff. Similar to Google, Bing, MapQuest and Apple map services; this may server, based on the Open Street Map (OSM) project, will allow Metro to serve millions of maps images annually without the expense of license fees.

The OSM project is a world-wide initiative that provides routinely updated geographic data to most of the major mapping companies today. By using this open source data, Metro will be able to add custom layers for transit that are not available in commercial offerings such as recently acquired digital imagery from the Los Angeles Imagery Acquisition Consortium (LAR-IAC) for use by Metro applications such as Trip Planner, Nextrip, Metro.net website and GoMetro apps.

Other transit operators in the region will also be provided access to the map server so that agencies can pool their development resources while creating a geographically accurate and visually rich online map experience devoted exclusively to public transportation.

*8. Metro Rail System Cellular and Wi-Fi project, *Phase I - In Progress*

This project, when implemented, will provide continuous wireless phone coverage and Internet access to Metro riders from above ground, down onto the subway station platforms and finally onto the subway trains when travelling within the underground tunnels

InSite Wireless Group has completed construction work for Phase One* portions (Union Station to 7th / Metro Station) of the Red and Purple Line stations and tunnels. The Distributed Antenna System (DAS), required for maintaining signal strength within the tunnels, has also been completed.

On December 1, 2015, InSite Wireless Group and Verizon Wireless executed a Communications Master Sub-License Agreement which will allow Verizon customers to access cellular voice and data services by the end of the 1st quarter of 2016. At that time, construction work for Phase Two (7th / Flower to Vermont / Sunset and to Wilshire / Western) will also begin. Negotiations with Sprint, AT&T and T-Mobile are ongoing.

**Phase One stations include Union Station, Civic Center, Pershing Square and 7th Metro.*

9. USGS Earthquake Early Warning System - In Progress

Los Angeles Metro is currently a beta tester of the United States Geological Survey (USGS) ShakeAlert Early Earthquake Warning System (EEWS). The pilot project will integrate EEWS automation into various rail systems in an effort to minimize the loss of life and property in the event of a major seismic event. The objective of the pilot is to achieve a maximum benefit in the shortest possible time at a reasonable cost.

During this Quarter, secure high speed, redundant communications between the Regional Operations Control (ROC) and the USGS signal source were established.

Testing will begin by integrating the following rail systems and transit security functions:

- Rail Digital Radio and Public Address system - Automatic emergency broadcast
- Elevator - Automatic recall to safest floor position

- SCADA - Dispatcher alert
- Emergency Generator - Automatically start the generator

Risk Management is leading the pilot assessment, Rail Operations Control is responsible for the actual implementation, and ITS is evaluating the technical options for extending the technology enterprise-wide.

This project represents the crucial first step in creating a comprehensive earthquake early warning system for transit users throughout the county.

10. ShakeCast 7.2 Earthquake Simulation Test - Completed

On Tuesday, 12/8/2015, a 7.2 earthquake simulation was successfully created using the USGS ShakeCast system installed at Metro Gateway Headquarters to show the potential damages to Gateway and display the capabilities of the Mobile Operations Command Vehicle (MOC1).

The goal of the test, developed and sponsored by Metro Risk Management, was to introduce the senior leadership team to Metro Emergency Operations Center (EOC) capabilities and to familiarize designated staff with their responsibilities in the event of a major disaster.

ShakeCast compares intensity measures against Metro's facilities, and generates potential damage assessment notifications, facility damage maps, and other Web-based products for emergency managers and responders.

The implementation at Metro allows rapid response by engineers following an earthquake to assess damage to rail stations and other transit facilities and take precautionary measures to ensure public safety and create real-time preliminary cost estimates for inclusion in state / federal financial aid programs.

The test was successful and well received by senior leadership.

NEXT STEPS

Staff will 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 April 2016 with a progress update on a variety of customer related technology initiatives, including:

A. Caltrans Freeway Signage project

B. Technology Innovation Collaboration website

C. ITS Innovation Lab

D. TAP Mobile app RFP

E. Expansion of Wi-Fi pilot for buses

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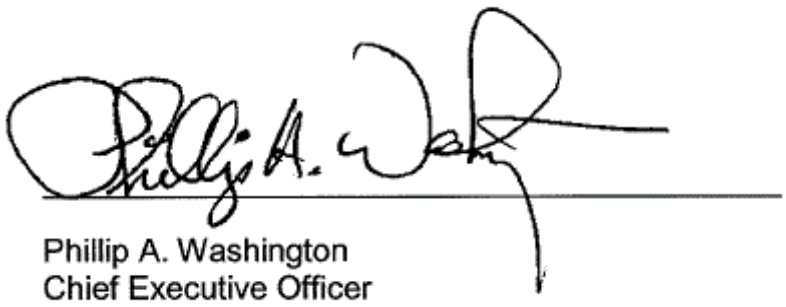

Phillip A. Washington
Chief Executive Officer

Los Angeles County
Metropolitan Transportation Authority

Information Technology Services

Customer Experience Technology Improvements

January 2016 - Quarterly Status

Doug Anderson

Board Meeting

January 28, 2016

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Background – Board Motions

Garcetti/Dupont-Walker Motion *(July 2013)*

- *Transit Customer-Oriented, Technology, Enhancements & Innovations*

Knabe Motion *(December 2013)*

- *Innovative Ways to Improve Customer Access to the Metro Bus and Rail System*

Garcetti/Knabe Motion *(March 2014)*

- *Customer Experience Technology, Enhancements & Innovations*

Garcetti Motion *(July 2014)*

- *Customer Service Based Technology Prioritization*

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Progress - Customer Focused Activities

Coalition for Transportation Technology

Goals

- Provide guidance and support for regional transportation technology deployments.
- Identify and evaluate transportation technology demonstration opportunities.
- Outreach to industry partners including but not limited to local agencies, private industry, academia and USDOT.
- Pursue funding opportunities and strategic partnerships to support Coalition activities.

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Caltrans

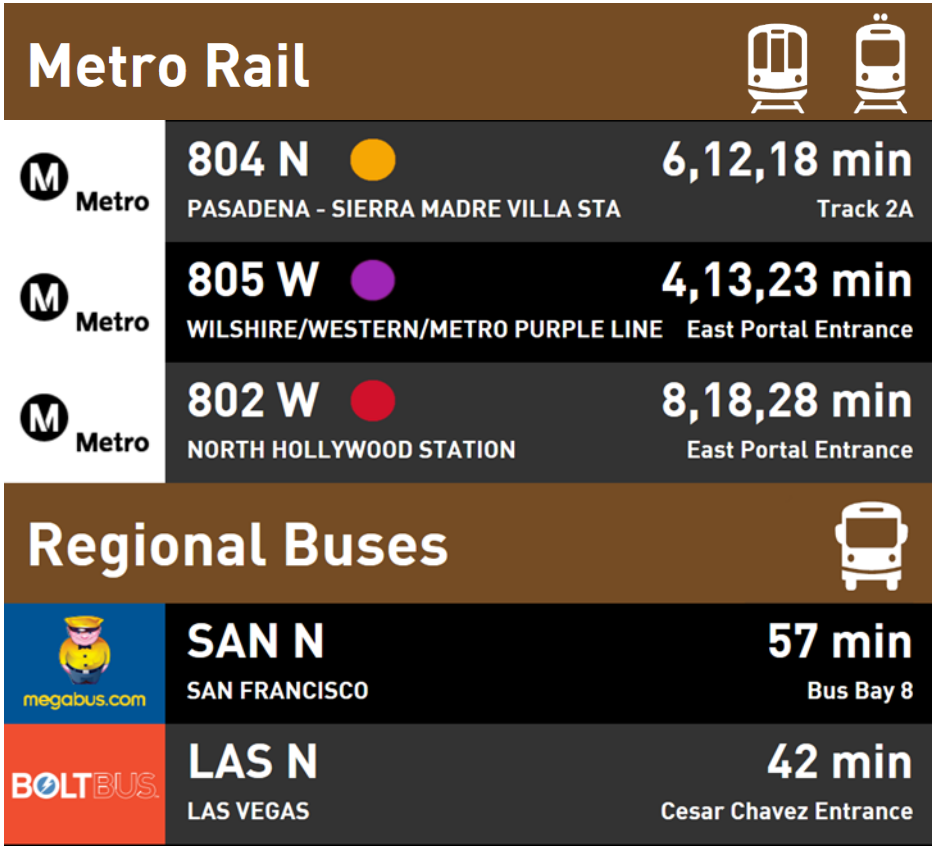
SOUTHERN CALIFORNIA ASSOCIATION of GOVERNMENTS

Progress - Customer Focused Activities

Digital Display Software Replacement for Countdown Clocks

- Developed In-House
- Network Monitoring
- Rapid Updates
- Targeted Messaging
- No License Fees
- Integrated Real-time
- Multi-Agency Feeds
- Unified Experience

* East Portal in beta



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Progress - Customer Focused Activities

Metro Rail System Cellular Service in Subway

Phase I – Union Station to 7th/Metro
Estimated Completion 1st Quarter 2016

Phase II – 7th/Flower to Vermont/Sunset & Wilshire/Western
Construction Begins March 2016

Verizon Wireless Agreement
December 1, 2015

Sprint, AT&T, T-Mobile
negotiations on-going

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Progress – Customer Focused Activities

Nextrip E-Signage RFP released

- ✓ Up to 300 High density shelters throughout LA County
- ✓ Multi-agency real-time feed with digital displays
- ✓ ADA compliant
- ✓ 24/7 performance monitoring
- ✓ Advertising Potential for increased revenue generation
- ✓ Emergency Alerts

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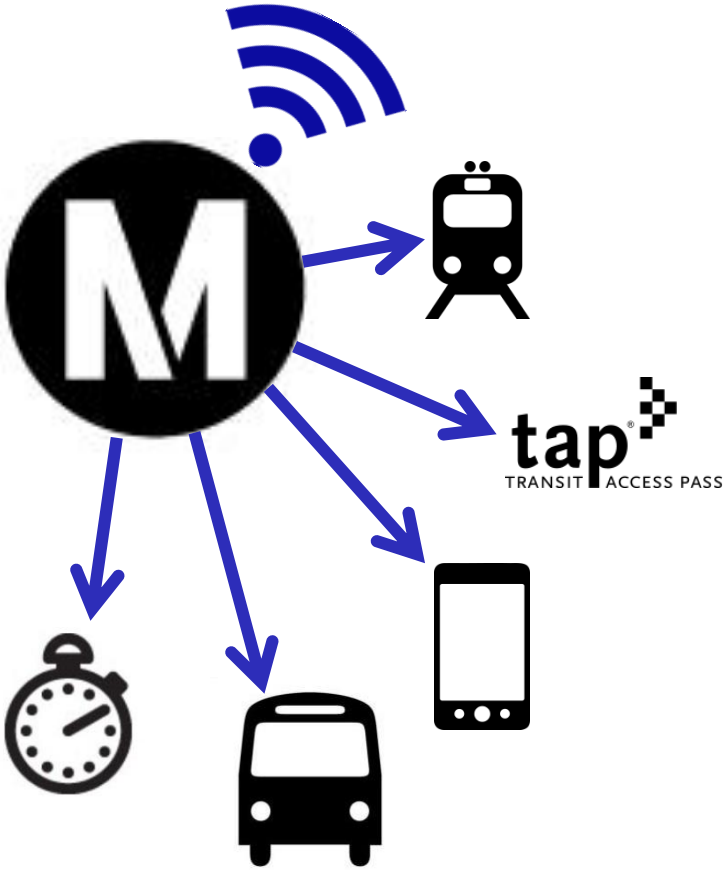

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Thank you