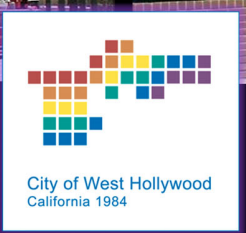




2019 CicLAVia Mobility After Action Report



Photo: Seth Granville



CicLAvia Mobility After Action Report

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Executive Summary

The City of West Hollywood (WeHo) and their public safety partners, the Los Angeles County Fire Department (LACoFD) and Los Angeles County Sheriff's Department (LASD) teamed up with Mobility 4 Public Safety (M4PS) and the Homeland Security Advisory Council at Pepperdine University's School of Public Policy (HSAC@SPP) to utilize a variety of mobile technologies for the CicLAvia biking event on August 18, 2019.

Having successfully utilized mobile technologies during prior events including the 2019 Los Angeles Marathon (LAM) and Los Angeles Pride Festival (Pride), WeHo and their county counterparts recognize the value mobile broadband-enabled technologies have for augmenting voice-only communications. The CicLAvia deployment built upon the lessons learned from prior events with a few notable changes:

- 1) A new public safety collaboration app being deployed under a Proof-of-Concept (POC) project by the U.S. Department of Homeland Security (DHS) was utilized to replace the commercial app used in prior events. The POC is focused on developing a low/no cost platform customized for the unique requirements of public safety which can be scalable throughout the industry.
- 2) Non-public safety city personnel were included in the deployment to see how the use of collaboration could improve communications across other stakeholder groups supporting event operations.
- 3) Workforce for ArcGIS was deployed to track LACoFD personnel to assess the impact of resource tracking to improve efficiency of dispatching.

CicLAvia provided an ideal operational environment for initial field deployment of the new tools. It is a fun, community biking event with a lower risk profile than other events that require city/county emergency services activation. It offered the opportunity to utilize the technologies for a full-scale event with fewer medical and law enforcement calls to "test" the new tools in a lower pressure environment. City and county agencies were co-located in a single Command Post (CP) which allowed leaders to see the technology in action, test new features, troubleshoot configuration issues, and collaborate on Concept of Operations (ConOp) for future deployments.

City personnel, LASD, and LACoFD command staff utilized the collaboration app on city or personal cell phones. LACoFD field personnel were issued Sonim XP8 ruggedized smartphones with FirstNet service utilizing MobileIron kiosk mode and the following apps:

- Survey123 to track patient contacts and public assists
- Workforce for ArcGIS to track resource locations for dispatching
- Public safety collaboration app for group messaging, picture/video, and file sharing

The deployment was overall successful with a few technical issues identified. The lessons learned from this event were important for shaping future deployments to optimize the use of the tools, identify new use cases, and confirm viability of new mobile apps. M4PS thanks the continued leadership of WeHo, LA County, and HSAC@SPP in advancing the mission of interoperable public safety mobility adoption throughout the Los Angeles region and sharing lessons learned with the rest of the industry moving into this new frontier of mobile public safety communications technology.

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Project Background

WeHo is a contract city within Los Angeles County meaning that they contract LASD and LACoFD to provide law enforcement and fire/EMS services within the city. WeHo was initially introduced to the Mobility Acceleration Coalition (MAC) during planning for the 2019 LAM. City and County public safety leaders instantly saw the potential these tools could provide for improving situational awareness and multi-agency communications. They were amongst the earliest adopters and heaviest users of the mobile broadband technologies during LAM. Additional details about the event can be found in the [2019 LAM Mobility After Action Report](#).

Based on the success of that event, WeHo and their County partners contacted M4PS, prime contractor for the MAC, to utilize the mobility technologies to support the other three large pre-planned events they host each year: Los Angeles Pride Fest (Pride), CicLAvia, and Carnaval - the city's annual Halloween celebration.

Pride, which is held exclusively in WeHo, was a tremendous success. As with LAM, users experienced improved communications between field and CP personnel through the use of mobile applications and a common dashboard for tracking attendance counts, patient contacts, and other vital event information. Additional information about the Pride deployment can be found in the [2019 Los Angeles Pride Festival After Action Report](#).

City personnel contacted M4PS after the event to confirm the use of the mobile apps would be available for their subsequent events. M4PS explained that the CicLAvia 2019 Aid App and associated SALUS CicLAvia 2019 Dashboard, which are provided by HSAC@SPP, would continue to be available at no charge as HSAC@SPP strives to catalyze and support a multi-jurisdictional and comprehensive approach to preparedness, security, and resiliency in the Los Angeles region by providing innovative technology and opportunities for engagement, capability building, and partnerships for the public, private, and civic sectors across the region. It was further explained that no more product funding was available under the DHS BAA to maintain the app licenses for the collaboration app.

Due to the funding constraints, M4PS was actively working with DHS on a POC for a low/no-cost public safety messaging and collaboration platform that could be provided to the entire public safety industry. Not only was it deemed that public safety has unique functional requirements that do not currently exist in any commercially available products, but resource disparities across departments would prevent multi-agency interoperability if some departments purchased enterprise collaboration platforms while responders from other agencies had nothing available or relied on free, commercial apps.

WeHo Public Safety Director, Kristin Cook, and LACoFD Battalion Chief, Brian Kane, suggested that CicLAvia would be a good candidate for the first field deployment for the POC. While the city and county take all mass gathering events seriously, the anticipated risks were relatively low as compared to high-profile security events or planned MCIs such as the marathon. With Carnaval having significantly higher attendance and medical incidents related to drugs and alcohol, WeHo officials and their County counterparts believed that CicLAvia would provide a good opportunity

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to test the new app during a full-blown event with all agencies activated and operating from a single CP in advance of Carnaval.

A common factor in all successful mobility deployments is having visionary leaders who are open to innovation and using technology to solve operational problems in a well-planned, secure manner. The willingness of WeHo and LA County leaders to identify an event and work with M4PS personnel to develop operational plans and contingency measures was key to the success of this deployment.

Operational Overview

Planning

It is important for the success of mobility deployments to identify appropriate use cases and user groups. This task is less straightforward than other planning activities since the National Incident Management System (NIMS) Incident Command System (ICS) structure used as the standard for event and incident planning across the country has not yet adopted guidance and templates for how to incorporate mobile broadband-enabled technologies into Event Action Plan (EAP) development.

This is one factor why there is still relatively low adoption of multi-jurisdictional mobility adoption for large-scale pre-planned events. In lieu of repeatable templates, executives and command personnel must be more actively engaged in mobility planning than other aspects of EAP development that can be coordinated by the Planning Section or otherwise delegated to other personnel.

Mobility Concept of Operations (ConOp)

The general mobility ConOp was similar to prior events with two notable exceptions:

1. **Personnel tracking:** In addition to collaboration and patient tracking which had been successfully demonstrated in previous deployments, LACoFD wanted to add the tracking of mobile resources to see how this could improve dispatching. Other special event deployments have noted the use of personnel tracking technology as improving the efficiency of dispatching the nearest resources and reducing radio traffic.
2. **Non-public safety city personnel:** Prior deployments have included command staff, medical, and law enforcement personnel. WeHo added city staff to the identified user group for CicLAvia to test the viability of collaboration technology for improving information sharing and efficiency of communications across non-public safety personnel supporting event operations such as public works, traffic, and public officials.

Identifying users is an important aspect of planning. Command staff and city personnel are identified by name with personal user credentials. Resources are assigned generic accounts based on the type of resource and unit ID (i.e. Engine 7 or Squad 407). Resource assignments were provided in advance of staffing plans being finalized. This not only allowed for the

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identification of specific resources by type and equipment, but the team did not have to wait until staffing plans were complete to create individually named user accounts.

Technology Overview

Hardware, Cellular Service, & Device Management

As with previous deployments, users were issued ruggedized Sonim XP8 smartphones with FirstNet service to avoid competing with commercial users for network bandwidth. The XP8s utilized MobileIron - Unified Endpoint Manager (UEM) / Mobile Device Manager (MDM) to automate configuration, control access to devices, and remotely manage configuration changes.

Devices were put into the MobileIron “kiosk” mode which allowed end-user access to only authorized apps and settings. As was demonstrated in previous deployments, the use of kiosk mode significantly reduced configuration time and simplified the end-user experience. Users not familiar with the Android operating system did not need to learn how to navigate Android or accidentally wind up in an app or screen that they did not know how to exit to return to the home screen.

Mobile Apps

Survey 123 – HSAC@SPP provided the SALUS mobile apps Survey123 and Workforce for ArcGIS which fed the SALUS CicLAvia 2019 Dashboard in the CP. The questions for the Survey123 app were developed in conjunction with the Medical Unit Leader for LACoFD to capture the necessary patient contact information. While the same app has been used for the same use case during prior events: tracking patient contacts, the information needed and the questions for each survey were customized for every individual operation. HSAC@SPP personnel worked with LACoFD to validate the operational environment to tailor the CicLAvia 2019 Aid App for CicLAvia operations.

Setup: User account credentials were set up by HSAC@SPP and provided to M4PS and LACoFD for installation and login on the XP8s. The installation was straight-forward through MobileIron as the Survey123 was already installed on the phones and just required a software update. Once logged in, the CicLAvia 2019 Aid App survey had to be downloaded into the app.

Workforce for ArcGIS - LACoFD wanted to test the use of location tracking to automate tracking of personnel and dispatching; however, they did not want the app visible in the kiosk mode so that personnel could not disable the location tracking – accidentally or intentionally. Workforce was added to the kiosk mode but hidden from the home screen.

Setup: Since this was the first deployment of Workforce, the app was downloaded through the Play Store capability inside of MobileIron and automatically pushed to each phone. The same SALUS user credentials were used for logging in the Survey123 and Workforce apps.

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Public Safety Collaboration POC - M4PS utilized the public safety collaboration app being developed under the DHS POC. It is based on an open-source platform being customized for the unique needs of public safety users with more features than previously available in other apps.

Setup: User accounts were created through a bulk import using a single generic password. An Setup Guide was provided to users with detailed instructions on how to install the app from the App or Play Stores and login using email address and the generic password. Users were instructed to use the “Forgot Password” link to reset a private, personalized password.

Configuration

The Public Safety Collaboration app has three types of channels:

1. Public channels - searchable by any member of the organization, but only automatically populated in the channels list for invited members.
2. Private channels - this is secure, group collaboration where the channel is only visible or searchable by invited members of the channel.
3. Direct message - this allows individual users to have direct messages one-on-one without being in the larger group channels.

Channels also can be set to “Read-Only” or “Broadcast”:

1. Read Only channels only allow authorized members to publish content into the channel. Other members of the channel cannot respond or publish content.
2. Broadcast channels allow only authorized members to send messages, but other members can reply through a Direct Message to the sender.

Channels

Like all public safety collaboration deployments, a key success factor is the setup of channels to enhance information sharing while simultaneously reducing unnecessary distractions with content not relevant to your role.

The channels were setup based on the EAP and several meetings with WeHo and county leaders to understand the operational communications environment. Unlike LAPD Officer Diaz Funeral in which the channel plan was based on the EAP org chart, M4PS built a cloud-hosted spreadsheet template where department personnel could access it and add user contact information directly. A table was then built to assign the device, app credentials, and channel(s) for each user/resource.

Requires Account	Username	given_name	family_name	email	ed pho	Device #	Unified Command	Tac	Admin	WeHoExecStaff	WeHoStaff
<input checked="" type="checkbox"/>	engine.7	Engine	7	e7@weho.org	<input checked="" type="checkbox"/>	MAC031	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	engine.8	Engine	8	e8@weho.org	<input checked="" type="checkbox"/>	MAC032	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	engine.208	Engine	208	e208@weho.org	<input checked="" type="checkbox"/>	MAC033	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	squad.7	Squad	7	s7@weho.org	<input checked="" type="checkbox"/>	MAC034	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	squad.407	Squad	407	s407@weho.org	<input checked="" type="checkbox"/>	MAC035	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	quint.8	Quint	8	q8@weho.org	<input checked="" type="checkbox"/>	MAC036	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	qrv.1	QRV	1	qrv1@weho.org	<input checked="" type="checkbox"/>	MAC037	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	qrv.2	QRV	2	qrv2@weho.org	<input checked="" type="checkbox"/>	MAC038	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	qrv.3	QRV	3	qrv3@weho.org	<input checked="" type="checkbox"/>	MAC039	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	bt.1	Bike Team	1	bt1@weho.org	<input checked="" type="checkbox"/>	MAC040	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	bt.2	Bike Team	2	bt2@weho.org	<input checked="" type="checkbox"/>	MAC041	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	HMTF-150	HMTF 150	150	hmtf150@weho.org	<input checked="" type="checkbox"/>	MAC042	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	ESU.159	ESU	159	esu159@weho.org	<input checked="" type="checkbox"/>	MAC043	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Reactions

A new feature in the POC platform is the ability to “Add Reaction” which allows users to acknowledge a message with an emoji. The benefit of this feature is that Reactions do not create notifications for other users in the channel. One of the biggest challenges in large-scale public safety collaboration deployments is the high volume of unnecessary or distracting notifications. Most collaboration tools have features to 1) allow for controlling the right content getting to the right users and 2) providing users the ability to manage notification preferences to receive alerts for content they want while “muting” other content. Regardless of the platform used, it is a tricky task to balance app configuration and end-user proficiency to strike the optimal balance. App configuration is important to manage the overall information architecture for getting the right content to the right groups. End user proficiency is necessary for users to manage their personal settings to reduce the “noise” they are receiving from others and appropriately utilize collaboration features to cut down on the “noise” that they are creating for others.

As a first deployment to explore how this type of a tool might work with non-public safety personnel supporting the event, WeHo decided to create two channels:

- 1) **#weho.execstaff** - a group channel for supervisory level staff in which all members could post and respond to messages
- 2) **#weho.staff** - a Read-Only channel for all city personnel which only allowed members to “react” to messages posted by users designated as Moderators in the channel

It was unclear how the use of reactions would be utilized, but WeHo, LA County leaders, and M4PS anticipated this would be a valuable tool. There were three notable observations from the use of reactions.

- 1) **New Feature Proficiency of Non-Editors** - With no other ability to communicate in the app, city personnel quickly adopted the use of reactions with instructions provided in advance of the event as well as during the event from WeHo executives. By approximately the 4th hour of the operation, city staff were instructed to submit their Personnel Accountability Reports (PARs) exclusively through the app by “reacting” to the PAR check submitted each hour.

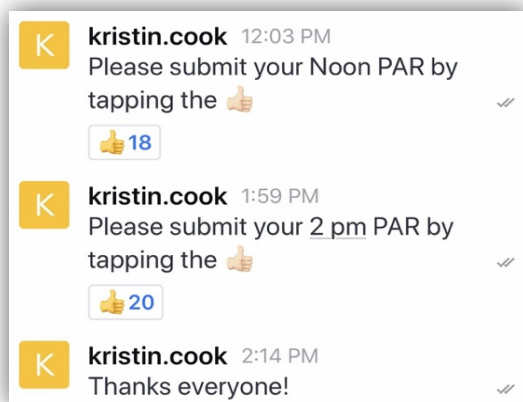


Figure 1 PARs Using “Reaction” Feature

SIMPLIFIED PAR SUBMISSIONS

The reaction feature simplified the PAR process for city staff by just clicking a “thumbs up” button to confirm their status as opposed to crafting an email, text message, or making a phone call.

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SINGLE LIST OF PARs

Reactions also simplified the process for management by having a single list of PAR responses. Benefits included:

- Consolidated list of responses from all staffers
- Eliminated need to manage PARs across multiple mediums (i.e. email, text, app, phone)
- Reduced alerts from text, email, and app

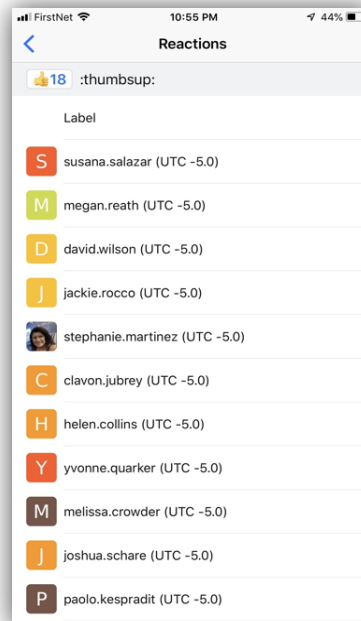


Figure 2 Consolidated List of PAR Responses

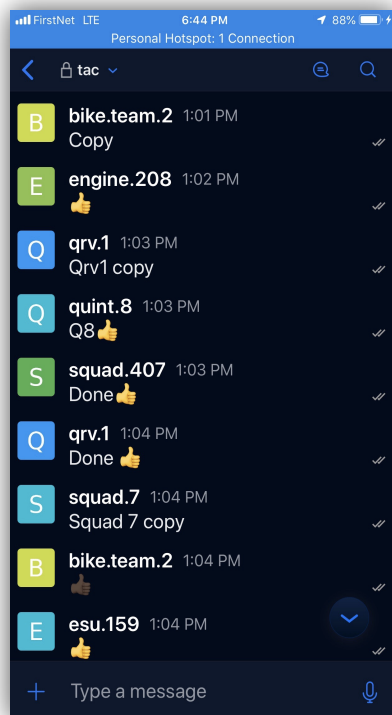


Figure 3 Responses Not Using Reaction Feature

2) **New Feature Proficiency of Editors** - LACoFD personnel were allowed to respond in their assigned channels. Unlike WeHo personnel who were forced to use the React feature in lieu of another means of responding, LACoFD personnel reverted to traditional texting behavior as shown on the left. This not only produced unnecessary notifications for other members of the channel, but the messages took up substantial “real estate” in the channel. This sort of “noise” can make it more difficult for members to go back to find prior content if they are not proficient with using tools like Search or the Files menu to quickly find content inside a channel.

An interesting observation was the difference in proficiency between the users who were forced to respond with Reactions because of no other means of responding versus those who had full edit rights and had limited success in utilizing the new feature.

3) **Cultural** - During app training at LACoFD roll call, one firefighter asked, “You mean they want us to use emojis?” M4PS personnel explained that it was a way to allow for acknowledgements without creating unnecessary notifications/alerts for every other member of the channel. Another firefighter who had been observing the training immediately responded “Oh yeah! I know exactly what you mean. I’m in some group texts that people are always sending ‘copy, got it, 10-4, roger, etc. and it’s so annoying!”

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Deployment Overview

Device Provisioning

M4PS worked with LACoFD several days prior to the race to provision the phones. The kiosk profile in MobileIron Go was built to include Survey123, Workforce for ArcGIS, and the public safety collaboration app. In order to avoid users being able to disable location tracking, Workforce for ArcGIS was hidden from the home screen so that only authorized administrators could access the app.

The phones were powered on and the app installations were pushed through MobileIron Go. Each loaner phone was assigned to a specific resource, so labels were made for each assigned resource. App credentials had been built in ESRI and the collaboration app to designate the resource (i.e. Engine 7). Each of the three apps were logged in according to each phone assignment.

The CicLAvia 2019 Aid App was downloaded into Survey123. The location service was tested in the Workforce admin portal, and the list of channels in the collaboration app was confirmed.

Technical Challenges

During the operation, two technical issues were experienced:

- 1) **Audible alerts** from the collaboration app were not allowed in the kiosk mode. After some troubleshooting, it was discovered that the phones would receive the audible alert from the app when taken out of kiosk mode. This is likely a configuration issue or setting that can be resolved rather simply. M4PS will work with the manufacturer, MDM provider, and app developers to troubleshoot the issue before the next deployment.
- 2) **Location tracking** in the Workforce app was not updating, so all resources showed at the original roll call location where the phones were powered up. Using test phones to troubleshoot, M4PS and LACoFD discovered that the location setting on the phones was set to "Device Only". This setting was changed to "High accuracy", and the phones immediately appeared on the Workforce map. Remote instructions were provided to end users to try various actions. It was eventually discovered that the app required a fresh login which required the admin to go to each location to take the phone out of kiosk mode to enter the app credentials. Once completed, the tracking worked as intended.

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Lessons Learned

1. **Account setup** - Users confirmed that the app setup process was greatly simplified by using centrally administered temporary credentials and eliminating the requirement for end-user action during the account activation process. This feature was developed by Oasys International Corporation as part of the DHS POC based on feedback from prior deployments. Additional work is being done in the area of Identity, Credential, and Access Management (ICAM) to improve scalability, security, and end-user experience across mobile platforms.
2. **Culture & Operational Changes** - New technologies often require adaptation to public safety cultural norms and expectations. They can also influence operational procedures, such as how PARs are conducted. Public safety personnel are trained to acknowledge receipt of information over the radio. The acknowledgement of messages can become distracting in mobile apps. Utilizing features generally thought of for personal use such as emojis can have a legitimate operational purpose in allowing active acknowledgement (versus simply a Read Receipt) while reducing or eliminating unnecessary “noise” for other members.
3. **Proficiency** - Collaboration tools are designed to enhance information sharing. They are inherently designed to allow for more efficient distribution of information across larger groups than traditional, consumer texting/messaging apps. It is important that users learn to utilize the enhanced features of these tools in order to avoid creating distracting notifications and unnecessary “noise” for other members. Introducing new features incrementally and developing ConOps which require users to utilize them before evolving to more advanced deployment models can be a good way of training users to take advantage of these enhanced features and mitigate negative experiences with the tools.
4. **Configuration Testing** - Functional testing of individual apps and overall device configuration is important prior to deployment. In addition to testing access to the CicLAvia 2019 Aid App, location tracking, and channel availability, the team learned the following lessons for future deployments:
 - a. Notifications – In the future, the team will send and receive messages in any messaging/collaboration app to ensure that there are no issues with notifications, content sharing, or other unanticipated performance problems.
 - b. Location tracking - In addition to confirming the phones were visible on the SALUS CicLAvia 2019 Dashboard, future deployments will include drive testing to verify location accuracy while moving as opposed to just stationary verification. It is anticipated that the location setting change from “Device Only” to “High Accuracy” would have been identified prior to rollout if this testing had been conducted.
 - c. Multiple testing periods - Future deployment plans will include sufficient time to test during initial provisioning and at least one day later. Powering down phones and observing app logout behavior after reboot and identifying auto-logout

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periods is important to ensuring that all apps work properly during the operation. Not all apps behave the same. For apps that require credentials to be re-entered after reboot or timeout periods, operational procedures should be developed to account for re-logging in during the operation. These procedures should include assignment of the task to users or administrators with corresponding access to the app and credentials, designated frequency, and testing/accountability measures.

5. **Spare phones** - The team had spare phones available and pre-provisioned with the CicLAvia kiosk in the event any devices needed to be swapped during the operational period. These phones were used to troubleshoot the audible alert and location tracking issues as they were identified which helped minimize the disruption to field users. Often times problems cannot be replicated using other types of devices, such as personal cell phones that do not have the same firmware, app configuration, and/or MDM.
6. **Log configuration issues** - The team created an AAR channel which members could mute in order to efficiently capture challenges, observations, and/or ideas for future enhancements in a single location. It is sometimes difficult to go back after the event and remember all the challenges or good ideas that were thought of during the operation. Having a single place for key team members to capture real-time feedback and was valuable in logging issues and documenting troubleshooting activities to reference for after action reporting and future event planning.

Conclusion

As anticipated, CicLAvia was a great opportunity to deploy new apps in advance of Carnival. The user feedback from the public safety collaboration app was positive and valuable lessons were learned which will influence the development of the ConOp for Carnival and other future deployments. The introduction of the location tracking app and associated lessons learned for configuration and testing will ensure smoother deployments in the future.

M4PS once again would like to thank the leaders in the City of West Hollywood, Los Angeles County Fire Department, and Los Angeles County Sheriff's Department for their continued leadership in advancing the mission of public safety mobility. We would also like to thank DHS, HSAC@SPP, Oasys International Corporation, MobileIron, Sonim Technologies, and FirstNet built with AT&T for their continued support of the MAC to ensure the success of these multi-agency, first responder mobility deployments.

While advanced mobile technologies are consistently providing operational value in augmenting voice communications, they are still in their infancy in public safety. Additional work must be done to fully operationalize them to support diverse first responder user and operational requirements. The commitment and time invested by local public safety leaders is helping to improve each deployment and help position the entire region to adopt interoperable mobility technologies.